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H.R. 4200 "Forest Emergency Recovery and Research Act of 2005"

For more than a decade, we have witnessed growing concern for the plight of forests in our nation following uncharacteristically extreme disturbance events: wildfires, insect or disease epidemics, ice storms, hurricanes, or invasive species outbreaks. H.R. 4200 refers to these as catastrophic events. Each of these kinds of extreme disturbances, perhaps except for non-native species invasions, is normal to forests in the long run of hundreds to thousands of years. It is their recent and projected future severity in juxtaposition to contemporary human needs and communities coupled with active obstruction of federal land management agencies' attempts to take timely restoration and recovery actions that make them so troubling.

If millions of people did not now live in or near forests, or depend so heavily on their many renewable resources for their existence and quality of life, extreme disturbance events would be tolerable. But such events, as we have seen dramatically in recent years, can and do have significant short-term and sometimes long-lasting negative effects on one or more of the following forest-related benefits:

- Human communities;
- Forest-related renewable resources, jobs and economies;
- Water quality;
- Watershed functions;
- Soils;
- Fish and wildlife habitats;
- Threatened or endangered species;
- Landscape aesthetic values;
- Fire and insect risks; and
- Forest ecosystem capacity for contributing to biodiversity conservation and atmospheric processes such as carbon sequestration.

Some impacts of extreme disturbance events are so large that they force the redirection of dwindling public financial resources away from other worthy investments as society responds to the devastation wrought. Especially significant are events that are outside the normal range of impact area and intensities that ecosystems have evolved to withstand. Examples are the hurricanes we have witnessed this fall, the wildfires that are transforming many western forests to shrub lands for generations to come, and the exotic

weed and pest species invasions that permanently change forest species composition and function.

Three fixable barriers currently hamper the ability of federal agencies to take timely restoration and recovery actions:

1. Escalating gridlock, delay and high costs created by an imprudent emphasis on endless analytic and decision making processes over emphasis on on-the-ground results,
2. Conflicting congressional direction, interpreted by the courts in ways that enable vitally needed restoration and recovery actions to be hindered or stopped on the pretext of "environmental protection," and
3. The inability of federal agencies to create new wealth from renewable resource management actions, wealth that is vital to help defray the costs of restoration or recovery actions and alleviate their drain on federal discretionary budgets.

The Healthy Forest Restoration Act of 2003 addressed some of these barriers for forest health restoration actions. It did not address what to do for recovery after catastrophic events. Thus, H.R. 4200 is needed to help lower some of the barriers to responsible and successful recovery actions following catastrophic events.

Whenever extreme disturbances occur, four issues dominate post-event decision making:

1. **Designated purposes for disturbed areas,**
2. **Timeliness of action,**
3. **Financing recovery actions, and**
4. **Learning from choices to intervene or leave nature to its processes.**

I will briefly address each of these in light of the proposed legislation.

1. The designated purpose(s) for places affected by extreme disturbance events determines the nature of recovery intervention needed. Human-aided forest recovery after disturbance events is not universally necessary nor is it inherently good or bad. H.R. 4200 wisely acknowledges that human-aided restoration and recovery are not needed in all cases or places after disturbance events. There is nothing in nature that compels us to do something after an extreme disturbance event. Over time, nature will create some new condition. Taking action is relevant and warranted only in the context of designated purposes for specific places and whether people will like what nature alone would deliver. At issue is whether, according to relevant management plans, people will accept the likely consequences of what nature is likely to deliver in years following extreme disturbance events.

For example, if an extreme disturbance event such as a large, uncharacteristically severe wildfire occurs in a Congressionally designated Wilderness Area – areas specifically excluded from H.R. 4200 provisions -- no post-fire intervention is warranted. The purpose for the area is specified in law: there is to be no "trammeling" of the place by man. However, this does not mean that some kind of restoration or recovery is always unwarranted in such areas. Legal direction for Wilderness Areas ignores the issue of whether it was human action or inaction that set the stage for the severity of the

disturbance in the first place and whether anything should have or could be done about it. Decades of fire suppression in the West combined with reluctance to use fire as Native Americans did have left many lands, including Wilderness and roadless areas, vulnerable to the kind of uncharacteristically severe event that occurred in nearly half of the 400,000 acre Biscuit Fire of 2002 in Southwest Oregon. Severe fire burned through much of the Kalmiopsis Wilderness Area plus extensive roadless areas and lands designated to perpetuate late successional forests. According to a new Forest Service study on soil impacts of Biscuit fires, on the most intensively burned areas -- where most or all trees are dead and the fires burned extremely hot along the ground – soils are now missing both their organic and top soil layers. These soil layers are the ultimate source of forest productivity and resilience. Fire and wind convections caused by fire intensity either burned them or transported them off site. Nature alone will not return these places to the kind of forest that burned in 2002 for many centuries regardless of what Congress or local management plans had designated for those places.

If the clear, unambiguous purpose for places that experience extreme disturbance events is that nature is to prevail, that is they are to be left to experience disturbance events unabated or to recover unaided by human intervention following those events, then the choice for recovery in such places is also clear: let nature take its course. However, in many such places society must tolerate for many decades the visual, insect and future fire implications of massive volumes of standing and fallen fire-killed trees surrounded by highly flammable shrubs. Though H.R. 4200 excludes Wilderness and other such wild landscapes from its provisions, the need to determine how best to restore them to conditions less vulnerable to catastrophic events and what to do about them after such events remains an issue on which holders of traditional and local knowledge in addition to scientists could be extremely helpful .

H.R. 4200 focuses on lands where the designated purpose is for something other than what nature alone will deliver. On these lands it is necessary to thoughtfully and wisely consider intervention to alter the likely impact of disturbance – the focus of the Healthy Forest Restoration Act of 2003 -- or influence the course of ecosystem recovery following events – the focus of H.R. 4200. In this sense, H.R. 4200 completes what HFRA began, providing much needed clarification of Congressional intent on what is to transpire on lands vulnerable to or impacted by extreme disturbance events.

Intervention following extreme disturbance events will nearly always be the case on private forestlands and will also be the case on many areas of public and tribal forests where goals for sustainable yields of multiple-resource benefits guide management plans. Yet even in some of the places where it is judged that nature will not deliver desired outcomes, human-influenced restoration and recovery may not be deemed efficacious or worthy of priority for investment. Many places will simply not warrant costly interventions following disturbance events due to ecological, economic or logistic reasons. But for those places that need intervention and are deemed worthy of investment in actions that will place them on a course toward desired future conditions, H.R. 4200 appropriately provides much needed policy guidance for agency action.

To make this last point clear in law, Congress may want to consider clarifying the intended purposes for restoration or recovery following extreme disturbance events in H.R. 4200. There is some confusion in scientific and conservation communities about what forests should be restored to or recovered for. Places where management intent is for something other than what nature alone will deliver and that warrant human actions to aid restoration or recovery will not normally have as their reference points the illusionary concept of a pristine or "untrammeled" nature as that might have been in some distant past. For one thing, we can never go back to how things were once upon a time. For another, "pristine" ecosystems, however one might define such an elusive concept, have not existed in North America for at least 10,000 years, after retreat of the most recent glacial period and the spread of humans throughout the Americas. We have had culturally influenced ecosystems from that time since and will until people disappear from Earth's biodiversity inventory.

The reference points or targets for forest restoration or recovery in places designated for conditions other than what nature alone will deliver are the ecological conditions that either keep or place the lands on a trajectory toward desired future conditions for designated goals for the place. This point is more crucial to intelligent decision making than many realize. It sets the simple-minded precautionary principle of "do no harm" -- by doing nothing regardless of purpose for different ecosystems -- on a collision course with the reality that doing nothing in many places may in fact create the most harm for those places and their soils, waters, native plants and animals, and resources of value to humans.

Because forest restoration or recovery make sense only in relation to the designated purposes for places to be restored or recovered, thoughtful determination of whether nature or human intervention creates the most desirable outcome or poses the least "harm" is needed. H.R. 4200 is wise in calling for collaboration with states, Tribes, and citizens and for scientific peer and public review of assessments and environmental analyses to make those determinations.

Regardless of what recovery actions are deemed necessary locally, of vital significance is that those actions must occur soon enough after disturbance events to both capture the commercial value in high risk or event-killed or damaged trees and to result in heightened success of recovery actions. Rapid action is also needed to lower the net costs and increase the net benefits of recovery actions, such as survival of planted tree seedlings and their protection against competing vegetation in early growth years in places where growing trees for wood or other resource values is the policy direction. This need for timely action creates point 2.

2. Recovery must be timely to be successful. After extreme disturbance events occur, the old adage "possession is 9/10ths of the law" compels timely action. The earliest species to return or colonize a site after disturbance are usually the ones that "hold their ground" and dominate the ecosystem until their life span is spent and other species have taken over. For some colonizing species this may only last a few years but for many shrubs and trees and even some invasive grasses and herbs it can be many decades to

centuries. Further, if post-event ecosystem conditions change fire regimes from the original tree-dominated vegetation to highly flammable shrub dominated vegetation with high volumes of standing or fallen dead trees throughout the landscape they could create new fire regimes that preclude the recovery of complex forests until climate conditions are once again sufficiently cool and wet to favor the return of conifers.

Clearly, removal of unwanted trees following disturbance events must be quick to avoid loss of economic value due to decay, usually in the first year, two years at maximum. It must also be quick to set the stage for reforestation, which must also occur within the first 2 years for highest seedling survival and lowest costs of managing competing vegetation. For these reasons, H.R. 4200 is right to enable expedited decision making and public review. States, Tribes, and private forestland managers and conservation experts are routinely able to carry out post-event actions in such a timely manner to achieve successful outcomes. There is no reason other than debilitating process requirements and obstruction that federal forest managers cannot also be timelier in their recovery actions while still protecting vital soil, water, cultural, fish, wildlife, and recreation resources. H.R. 4200 clearly provides for this through its assessment and environmental analysis requirements.

Outside of areas that H.R. 4200 clearly designates as off limits to expedited restoration or recovery interventions, in forests so affected by extreme disturbance events that they are no longer on a course to desired future conditions, restoration or recovery will usually entail the removal of some to many of the trees impacted by the event. The timely removal of these trees can generate revenues to support other recovery actions, reduce safety hazards, reduce future fire or insect risks, or enhance the regrowth of future forests to desired structure and composition. This removal has historically been called salvage logging. Salvage is a poor term for an action that is designed to create both the wealth to finance recovery actions and sustain desired ecological conditions. And logging is only part of the recovery process on areas that warrant intervention.

Having said this, forest restoration or recovery need not entail removal of all trees to achieve their goals, as H.R. 4200 readily acknowledges. For example, successful forest restoration or recovery would not entail removal of all trees in places where desired multiple-resource outcomes include among their goals the well being of species and ecological processes associated with densities and distributions of standing and fallen large diameter live and dead trees that are commensurate with other objectives. H.R 4200 is ecologically sound in that it clearly provides for just such circumstances. But where event-damaged trees are to be removed, recovery actions must remove sufficient trees and other biomass to enable the achievement of overall objectives for recovery and help defray the costs of recovery activities.

In most cases human-aided forest recovery will entail planting tree seedlings, including genetic strains of disease resistant trees, and subsequent management of competing vegetation to hasten regrowth to desired forest conditions. This does not mean that these planted forests must be dense stands of single species of trees. Not does it mean that the planted forests must resemble forests where efficient wood production is the preeminent

goal. Tree planting and subsequent management of competing vegetation should be consistent with goals for places being recovered.

Because forest recovery actions are costly, financial resources to conduct them must come from somewhere. This creates point number 3.

3. Recovery must generate wealth to help defray costs of actions. My third point about the need to generate revenues from recovery actions is rooted in current and likely future trajectories of federal and state budget capabilities. The discretionary budgets of all governments are declining and priorities for their allocation are shifting away from long-term investments in natural resources to more immediate human needs. There simply will not be sufficient public money to finance forest recovery absent the creation of new wealth from renewable resources removed and processed for useful products as part of a total recovery strategy.

If the creation of net wealth from forest restoration or recovery is not possible due to resource consuming decision making processes coupled with delays caused by resistance to action -- as we have seen for restoration actions prior to Biscuit and many other western fires and then to proposed recovery actions following them -- there will be little restoration prior to or recovery following extreme events and less reason still to spend public resources trying to plan for restoration or recovery. Tactics that delay timely action or run costs up to levels that preclude investment in restoration or recovery bequeath to current and future generations nearly 100 million acres of impoverished western federal forests. Those who inhibit timely recovery where it is deemed needed by responsible and accountable agencies bear the responsibility if such forest conditions are handed to our children and grandchildren. Those who help accomplish the agencies accomplish needed work will have their gratitude.

Time is of the essence and creation of wealth to pay for essential work is vital to restoration or recovery success. Now to my final point: how to address the weak body of science supporting forest restoration and recovery.

4. Forest restoration and recovery must engage research, traditional knowledge and education outreach to build a body of knowledge and technologies needed for rapid and successful outcomes and then extend that body of knowledge and technologies widely and quickly. Here I address both forest health restoration and post-event forest recovery. HFRA did not address what is needed to fully engage research into forest health restoration. H.R. 4200 could fix that by extending its provisions in Title I, Section 101 to apply to forest health restoration as well as post-event recovery.

Current gridlock over proposed forest health restoration or post-event recovery projects is arguably founded in lack of science for how actions should be carried out to achieve desired outcomes and minimize undesired impacts. Historically, little research has been done on such problems and what traditional knowledge exists has been largely ignored or unsolicited. But there is a "Catch 22" in play here: those opposed to restoration and recovery have also argued against the experimental science or testing of traditional

knowledge that would show everyone how to best achieve desired restoration or recovery outcomes. Resistance to a proposed Forest Service study on recovery options following Biscuit fires is a classic example of opponents of active forest recovery blocking peer reviewed scientific studies. Why? Because they fear the results will not support their policy advocacy? The proposed study would test, through replicated experiments at a sufficiently large scale, a wide range of recovery approaches. It went through a double blind scientific peer review by 9 experts disciplines relevant to the scientific questions being addressed. Yet it was still challenged by people opposed to testing alternative recovery options. This study was and still is exactly what is meant by peer-reviewed science in H.R. 4200 and yet was still resisted by opponents of timely forest recovery.

We will never have the body of science needed to inform forest health restoration or recovery if we cannot take advantage of traditional knowledge and do research as we do restoration and recovery at relevant temporal and spatial scales. H.R. 4200 is right on to call for such integration of science and management. Adaptive management means integrating experimentation and testing plausible hypotheses in the design of problem-solving projects.

H.R. 4200 calls for more use of peer-reviewed science. How objectively peer review is handled is critical; peer review can in some scientific circles be a prescription for ideological conformity or a constraint on innovative thinking and risk taking. It is also important to understand that science alone may never elucidate all the knowledge that is needed to inform successful restoration or recovery of productive and resilient forest ecosystems. Native Americans and others with long-standing local, traditional knowledge can be vitally important to inform restoration, recovery, and research projects.

Title I, Section 101 of H.R. 4200 puts the nation's land grant and public universities directly into forest recovery strategies. H.R. 4200 also makes clear that collaboration with Tribes and others with useful local knowledge are keys to success. H.R. 4200 should go farther on these points. If the proposed integration of science and management is extended to actions taken under HFRA as well and implemented with sufficient funding and through effective collaboration with Tribes and others with valid local knowledge, proposed academia-agency Forest Health Partnerships will result in increased capacity in education, research and technology outreach. No single institution currently has such comprehensive capacity; only by combining forces do we have the potential for successful, adaptive problem solving. This increased capacity is needed to build the landscape-scale knowledge needed to improve forest restoration and recovery effectiveness, create new biomass and bio-materials technologies and products, graduate students better prepared to continue the kind of work that will be needed for many decades to come, and increase public confidence in state and federal resource management agencies.

As dean of a college of forest resources at a Land Grant institution, and as a member of the Executive Committee of the National Association of University Forest Resources Programs, I enthusiastically endorse Title I, Section 101 of H.R. 4200. I endorse this

provision also because our nation's university forest resources programs are where the nation's foremost forest resources education, research and outreach capacity now resides after many years of budget retrenchment in federal forest research institutions. As an ex USDA Forest Service Regional Forester in the Northern Rockies and Research Station Director in California, I also endorse the requirements to consult with Tribes, states and others with local knowledge to better inform restoration, recovery and related research projects.

I encourage Congress to also consider amending the current provisions in Title I, Section 101 to enable these Forest Health Partnerships to become in every state or region a specially trained cadre of university, state and federal agency, tribal and private sector personnel available for strategic deployment to problem-solving forest restoration, recovery, research and outreach education. A nation-wide cadre of specially trained teams of forest resources planners, managers, scientists and educators oriented to integrating forest restoration and recovery research and outreach education into timely, practical, adaptive management problem solving could be strategically positioned across the nation and prepared to respond rapidly following extreme disturbance events.

The proposed Forest Health Partnerships, if so mandated by the Congress, could become a management, research and outreach education analog to the Incident Command System now used so successfully in dealing with extreme disturbance events while they are underway. They could become a Forest Emergency Recovery and Research Implementation System if you will. Consistent with this proposal for strategic and efficient integration of research and outreach education with active adaptive management problem solving in forest restoration and recovery, I most strongly endorse the provision in H.R. 4200 to have landscape scale strategic plans for forest restoration, recovery, and research done ahead of time so that when events occur, decision making and mobilization of recovery and research personnel can be expedited.

We proposed a new partnership between agency and university scientists and educators for the Healthy Forest Restoration Act of 2003 but it was not timely then. It is timely now and we would be pleased to work with the Congress to shape how it might be put into action for both forest health restoration and post-catastrophic event recovery.

I also encourage the members to consider adding the USDA Cooperative State Research, Education and Extension Service to assist in implementing the proposed Forest Health Partnerships, and authorize and encourage the USDA Forest Service State and Private Forestry branch to enter into technology transfer agreements with the nation's university forest resources research, education, and extension programs to assist in implementing H.R. 4200.

Following are some specific areas where research, education and outreach would be most useful:

1. Economic and environmental performance of restoration and recovery under different levels of community capacity.

2. Economic and environmental performance of restoration and recovery under different initial forest and rangeland conditions.
3. New technologies and processes for cost-effective restoration and recovery treatments.
4. Options for use of small diameter materials for new wood products and wood milling residues as biomass for local energy.
5. Short and long-term implications to environments, communities, and economies of letting nature take its course versus actively intervening to reforest with desired native species following uncharacteristic disturbance events.
6. Monitoring the effectiveness of community-based forest restoration and recovery projects – ecological and economic impacts.
7. How the removal of different sizes and species of trees affects future forest resilience and resistance to drought stress and vulnerability to insects, fire and invasive species.
8. Effectiveness of stewardship contracting and local collaboration in problem solving to improve both the efficiency and effectiveness in forest health restoration and recovery treatments.
9. Roles of maintenance actions following initial recovery activities, e.g., prescribed use of fire, in sustaining ecosystems in desired conditions and preventing return to pre-treatment or immediate post-event conditions.

In conclusion, I support the intent of this proposed legislation and offer the assistance of our nation's university forest resources programs in furtherance of its aims.

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