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NATURAL RESOURCES DEFENSE COUNCIL

ON H.R. 5192,
THE FOREST ECOSYSTEM RECOVERY AND PROTECTION ACT

SUBMITTED TO THE COMMITTEE ON NATURAL RESOURCES,
SUBCOMMITTEE ON NATIONAL PARKS, FORESTS, AND PUBLIC LANDS,
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The Natural Resources Defense Council (NRDC) appreciates this opportunity to present testimony on H.R. 5192, the Forest Ecosystem Recovery and Protection Act, and on the important issues it addresses. NRDC and its 1.2 million members and activists have a deep and abiding interest in the welfare of public lands in general and the National Forest System in particular. Threats to those lands, and to members of the public who live among, use, and enjoy them, are of great concern to NRDC and a fitting focus of attention from the Subcommittee on National Parks, Forests, and Public Lands, and indeed from the United States Congress as a whole.

I. SUMMARY

A single principle will guide Congress to a good outcome as it grapples with insect outbreaks in federal forests: Be Prudent. Prudence dictates that your first and dominant priority be human safety. Securing people and community infrastructure from falling trees is a major task that needs all the resources and support you can provide. Funding authorization, coordination with appropriators, and agency oversight are your best tools for accomplishing this.

Prudence also requires that in the broader landscape, away from these immediate heightened hazards, due deliberation and public involvement be the order of the day. Responses to insect outbreaks and other disturbance impacts on forest ecosystems need to be guided by the best available scientific information, as well as input from a well-informed public and sister agencies with relevant expertise. The best available tool for ensuring that approach, and making sure we do not later regret today's hasty choices, is vigorous compliance with the National Environmental Policy Act (NEPA). Other forward looking laws, like the Endangered Species Act (ESA), that seek to avoid or minimize future problems, will also play a key role.

II. RESPONDING TO THE IMMEDIATE THREATS TO PEOPLE AND INFRASTRUCTURE.

H.R. 5192 was drafted to respond to a serious forest issue affecting much of the West, particularly in the Rocky Mountains and California. Relying on U.S. Forest Service data, the Western Forestry Leadership Council puts the number of forest acres in

the region at risk from beetle attack at 22 million.[1] Many of these acres have already experienced insect outbreaks, or soon will.

This situation is of grave concern to the residents of the affected areas, and others who care about the state of our Nation's forests. Pervasive beetle kill is unsightly, threatening, and distressing. It represents a loss of values that many people treasure and rely on from our forests, economic values as well as social and environmental ones. Responsible public officials will necessarily seek to address this situation, to restore the lost values as soon as possible, and to prevent their further loss.

If this were a simple problem to address, it would not have grown to its current extent. The conditions that give rise to insect outbreaks are complex, and the contributing factors manifold. Halting them, once underway, is, as discussed below, virtually impossible at landscape scales. Hastening recover of affected forests is by and large equally challenging, particularly at the magnitude the situation has reached.

One clear priority stands out, both for its urgency and for the straightforward best means of addressing it: the safety of people and communities. Dead trees may stand for decades, but they are also more prone than green ones to topple, from loss of root strength or rot. Thus, they threaten those who use and live near our affected forests. They can and do fall on forest visitors and residents, on homes, businesses, camps, and recreation facilities, on roads, pipelines, utility lines, and communications sites. In the Forest Service's Rocky Mountain Region alone, the agency estimates that by 2008, beetle kill affected 3,467 miles of road, 911 miles of trails, 21,455 acres of campground, and more than 230 miles of utility corridors and main transmission lines.[2] Prudence demands that full priority be given to alleviating the currently heightened risks to human safety and to infrastructure essential to public health and safety, from falling trees in these areas.

The magnitude of this problem means that federal resources need to be augmented to meet the challenge promptly. NRDC urges Members of this Committee to seek and support dedicated funding, both for U.S. Forest Service hazard tree removal and for companion measures on adjacent state and private lands. While some commercial value can be recovered from some of the logged trees, the current state of timber markets sharply limits how much that can contribute to the effort.

For the same reason, federal resources need to be focused on the areas and trees that pose the greatest risk. Generally, this will mean already or imminently dead trees that could reach into areas inhabited, travelled, or regularly occupied by people, or trees that could fall onto built infrastructure, including powerlines, water supply lines,

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[1] Western Forestry Leadership Council. 2009. Western Bark Beetle Assessment: A Framework for Cooperative Forest Stewardship – 2009 Update. Lakewood, CO. p. 9 (http://www.wflccenter.org/news_pdf/325_pdf.pdf).

[2] U.S. Forest Service. 2009. Resources and Land Areas Affected ; Statistics by Forest and County. In *Regional Bark Beetle Information*. (http://www.fs.fed.us/r2/bark-beetle/fact-sheets/CumulativeAcresNFs-Counties.pdf).

pumping stations, roads, trails, and similar facilities. In addition, where substantial numbers of live trees will be left within a tree height of such areas and facilities, nearby dead trees that could fall into and uproot or break off those live trees may also need to be felled. Focusing remedial action on these areas and trees will not only ensure that public safety is maximally protected. It will also help to keep the logging as uncontroversial and well-accepted as possible, an important element in expediting the result.

There is one common situation in which public safety calls for combined removal of dead and live trees. In many urban-interface and intermix zones in the region, homes and other structures are threatened not just by falling trees but also by fire. Thinning of fuels, whether live or dead, in the immediate vicinity of structures, is an essential step in preparing them to withstand wildfires.[3] Where that has not already been done, removal of dead hazard trees should be combined with live tree thinning to make sure that homes saved from falling trees do not then fall victim to burning ones.

Priority elimination of tree hazards can be done expeditiously, consistent with existing laws. The Forest Service has categorical exclusions (CEs) from NEPA review that permit logging of dead trees without an environmental impact statement (EIS) or environmental assessment (EA). In particular, up to 250 acres of dead and dying trees can be removed under one CE, enough to clear 5 miles of road or powerline 200 feet back on both sides. *See* 36 CFR § 220.6(e)(13). Where needed, larger treatment areas can likely be handled under an EA, given the proximity of the much if not all of the work to roads and developed areas, and its focused nature. These same factors should also usually keep properly designed thinning from triggering consultation under the Endangered Species Act (ESA).

III. IMPORTANT SAFEGUARDS FOR RESPONDING TO INSECTS AND OTHER DISTURBANCES IN THE BROADER FOREST LANDSCAPE.

As the federal government seeks good outcomes to other concerns that are understandably raised by forest insect epidemics, and by similar forest health issues, the safeguards provided by NEPA, the ESA, and related laws will make essential contributions. The sections of H.R. 5192 that would curtail these procedures are well-intentioned but dangerous, and should be dropped.

These issues are substantially more complicated, site-specific, and difficult than those posed by hazard trees. While they appear to cry out for urgent action, they do not generally represent actual emergencies. They should be responded to carefully and with due deliberation. Logging should be used, if at all, only with caution. The best available science indicates that:

[3] *See* Mall, A. and F. Matzner. 2007. Safe at Home: Making the Federal Fire Safety Budget Work for Communities. NRDC. New York, NY. Online at: www.nrdc.org/safeathome.

- Slowing the spread of bark beetles and other insects attacking western forests, once an epidemic has started, is only effective at very localized scales, not across landscapes.
- Fire threats in bug-killed killed forests are typically comparable to or lower than those in other similar stands, and may be aggravated by logging.
- Erosion from forestlands with substantial insect mortality is elevated only for higher precipitation sites and may also be worsened by logging.
- Logging to address other forest health concerns, like heightened fire hazard and stress to mature trees, is well-supported only in certain sites and needs careful design to avoid creating new problems.

The take-home message about these problems is that hasty action, without careful consideration of site-specific factors and all treatment options, is a recipe for later regret. Agencies need to approach them with all the help they can get, including full benefit of environmental review and input from sister agencies and the public. In particular, looking at alternatives to logging may be essential to getting a good outcome in any given situation. Below, I elaborate on the role of NEPA and other statutes in guiding federal agencies to good decisions in situations like these, and on the problems with common rationales for responding to them with logging.

A. The Value of NEPA

NEPA review serves two main functions, both vital in the context of landscape-scale treatments of federal lands. First, NEPA helps ensure that federal decisionmakers look before they leap, considering reasonable, science-based options that could improve their environmental results. This requirement to formulate and evaluate alternatives to an agency's first instincts is so central to environmental protection that it is often called the "heart" of the EIS process.[4] It is never more important than where routine, common sense, or apparently obvious courses of conduct may well produce undesired outcomes, where conventional wisdom, in short, comes up short. Responding to broad forest disturbances like pests and fire perfectly fits that category.

NEPA also empowers your constituents with full disclosure and a guaranteed voice. As a federal appeals court recently noted, "[a]t all stages throughout the process, the public must be informed and its comments considered."[5] This assurance that citizens can find out what is going on, and have an audience with federal decisionmakers is particularly appropriate and needed when the issue is how public officials will spend public tax dollars to manage public lands.

[4] *See*, for example, *New Mexico ex rel. Richardson v. Bureau of Land Management*, 565 F.3d 683, 708 (10th Cir. 2009); *13. Van Ee v. E.P.A.*, 202 F.3d 296, 309 (D.C. Cir. 2000); *Center for Biological Diversity v. U.S. Dept. of Interior*, 581 F.3d 1063,1071 (9th Cir. 2009).
[5] *New Mexico ex rel. Richardson v. Bureau of Land Management*, 565 F.3d at 704.

B. Slowing Insect Outbreaks.

While the march of insects across the landscape registers as an emergency that needs quick action, the reality is that conventional responses are not widely effective, once the beetles are well established. It is particularly questionable to respond to ongoing outbreaks with silviculture. Former Forest Service scientists and others conclude that "[d]espite nearly 100 years of active forest management to control mountain pine beetle, evidence for the efficacy of this approach is scant and contradictory."[6] They note that researchers have suggested that "management interventions have never controlled a large-scale outbreak."[7] In another study scientists concluded that once beetle outbreaks have reached landscape scales, "no known feasible management action can stop an eruption."[8]

Under limited circumstances, steps can be taken to save specific trees from insect outbreaks. High value trees can be sprayed with insecticide, though spraying may be required several times a year.[9] Taking precautions to avoid health risks and environmental contamination, this approach may make sense in the immediate vicinity of homes or campgrounds, or for individual specimen trees in parks or campuses. It is neither feasible, affordable, nor prudent, however, to try to spray widely.

C. Stopping Fire Threats.

The natural response to perceived fire threats in insect-attacked forests also probably is not a good guide to wise action. We tend to think of forests as we do fireplaces and wood stoves. Dead and dried wood burns best in our homes, and the more there is the hotter the fire. When we see thousands upon thousands of acres of bug-kill, especially around a community, the analogy with our in-home experience produces a sense of dread. We see huge flames coming, and think in terms of getting the dead wood out, to reduce the risk and size of fires.

Forests, however, do not behave like fireplaces. A recent study reports that "[o]ur findings suggest that, contrary to conventional wisdom, bark beetle infestations likely *reduce* the subsequent risk of active crown fire, and fire-damaged trees are unlikely to produce a subsequent bark beetle epidemic" (emphasis added).[10] Specifically, these researchers found that susceptibility of stands to crown fire decreased from those

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[6] Black, S.H. *et al.* 2010. Insects and Roadless Forests: A Scientific Review of Causes, Consequences, and Management Alternatives. National Center for Conservation Science and Policy. Ashland OR. p. 13.
[7] *Id*.
[8] Raffa, K.F. *et al*. 2008. Cross-scale drivers of natural disturbance regimes prone to anthropogenic amplification: the dynamics of bark beetle eruptions. *BioScience*, vol 58 no. 6. p. 514.
[9] Romme, W.H. *et al*. 2006. Recent Forest Insect Outbreaks and Fire Risk in Colorado Forests: A Brief Synthesis of Relevant Research. Colorado State University, Fort Collins CO. p. 15. (http://spot.colorado.edu/~schoenna/images/RommeEtAl2006CFRI%20.pdf).
[10] Tinker, D.B. *et al.* 2009. Reciprocal interactions between bark beetles and wildfire in subalpine forests: landscape patterns and the risk of high-severity fire. Final Report to the Joint Fire Science Program. p. 3. (http://landscape.zoology.wisc.edu/October%202009%20updates/JFSP_FnlRep_30Sept2009.pdf).

unaffected by insects to those with just-killed trees that had red needles, and decreased again from red-stage to grey-stage stands that were further still from date of mortality, in their simulations.[11]

Similarly, Black *et al.* reviewed a series of studies that showed lower fire risks after beetle attacks. In a fire in Yellowstone National Park in 1994, one such study showed that "[b]eetle-killed lodgepole pine stands, which were characterized by lower density, experienced significantly lower fire severity compared to adjacent burned areas that had not been affected by beetles."[12] Another study "found that ongoing outbreaks of mountain pine beetle and spruce beetle did not affect the extent and severity of fire."[13] A modeling study Black *et* al. reviewed "predicted a reduced risk of active crown fire five to 60 years after outbreaks."[14]

This is not a simple issue. Studies do exist that show an increase in fire severity in some stands that experience high insect mortality. However, a group of researchers in the Rocky Mountains summarized them this way: "[a]lthough it is widely believed that insect outbreaks set the stage for severe forest fires, the few scientific studies that support this idea report a very small effect."[15] The researchers theorized that fire hazards in beetle-killed stands may change with time, eventually rising back to or above baseline levels as dead trees fall over a span of decades and new trees grow up.[16]

D. Preventing Erosion.

Erosion prevention, a third rationale for logging beetle-killed trees, also breaks down on examination. In British Columbia, with a wet climate and vast tree loss to mountain pine beetles, the Forest Practices Board has taken a close look at this issue. Their investigation revealed that "hydrologic effects of a MPB attack are different from forest harvesting. The insect-killed trees can remain in place, and can intercept a portion of the snowfall. Secondly, the mortality is never 100% and individual trees continue to intercept and transpire water."[17] By contrast, the Board identified four processes through which removing trees can increase runoff: loss of snow interception; loss of shaded forest interior conditions; increased wind speed that hastens snowmelt; and loss of transpiration.[18]

The Rocky Mountain-based scientists mentioned above estimated that forest dieback, while it does not increase runoff at annual precipitation rates up to 20 inches,

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[11] *Id.*
[12] Black *et al.*, *supra* note 6 at 11.
[13] *Id.*
[14] *Id.*
[15] Romme *et al.*, *supra* note 9 at 8.
[16] *Id.* at 9.
[17] BC Forest Practices Board. 2007. The Effect of Mountain Pine Beetle Attack and Salvage Harvesting On Streamflows – Special Investigation. Victoria BC. Report No. FPB/SIR/16. p.4. (http://www.fpb.gov.bc.ca/WorkArea/DownloadAsset.aspx?id=2824).
[18] *Id.*

does increase it above those rates.[19] However, so does logging, they report.[20] Moreover, they point to additional ways that logging can increase degradation of water quality. Both soil compaction, as from heavy equipment, which reduces infiltration, and unpaved roads, a primary source of sediment, are associated with logging and harm streams; in part for these reasons hydrologic recovery of a watershed from clearcuts in Colorado lodgepole or spruce-fir forests takes about 60 years.[21]

E. Restoring Forest Health.

Thinning forests, another practice that H.R. 5192 would streamline and promote, is advocated by some as reducing fire hazards as well as future insect outbreaks. In both cases, there is some scientific support for the practice. In each, however, there are good, science-based reasons to proceed very carefully, including concerns about getting the opposite outcome from that desired and/or conflicting with other goals.

Thinning to reduce fire hazards has a spotty record. The Forest Service has seen some notable successes. Review of the Angora Fire around Lake Tahoe indicates that thinning treatments there generally performed as desired.[22] At the Blacks Mountain Experimental Forest, both pre-commercial and commercial thinning reduced fire effects (with the largest difference found where prescribed fire was also used).[23] And a careful retrospective study of fire effects in paired thinned and unthinned sites in the Southwest produced similar results.[24]

Other research, however, shows that thinning can be a counterproductive approach to fire hazard reduction. Looking at paired sites on national forests in the Sierra Nevada, one study reviewed all areas known to have been mechanically thinning and later burned, outside of experimental forests, between 2000 and 2005. It found that in every instance the thinned stands burned more lethally, irrespective of the time since thinning.[25]

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[19] Romme *et al*., *supra* note 9 at 13.
[20] *Id*.
[21] *Id*. at 14-15.
[22] *See* Safford, H.D., D.A. Schmidt & C.H. Carlson. 2009. Effects of fuel treatments on fire severity in an area of wildland-urban interface, Angora Fire, Tahoe Basin, California. *Forest Ecology and Management* 258: 773-87.
[23] Skinner, C.N., M.W Ritchie, and T. Hamilton. Effect of Prescribed Fire and Thinning on Wildfire Severity: the Cone Fire, Blacks Mountain Experimental Forest. Proceedings 25th Vegetation Management Conference, Jan. 2004, Redding, CA. Online at www.fs.fed.us/fire/fireuse/success/R5/ConeFire-Skinneretal.pdf. pp. 9-10.
[24] Cram, D.S., T.T. Baker, and J.C. Boren. 2006. Wildland Fire Effects in Silviculturally Treated vs. Untreated Stands of New Mexico and Arizona. Research Paper RMRS-RP-55. Fort Collins, CO. U.S. Forest Service, Rocky Mountain Research Station.
[25] Hanson, C.T. and D.C. Odion. 2006. Fire Severity in mechanically thinned versus unthinned forests of the Sierra Nevada, California. In: Proceedings of the 3rd International Fire Ecology and Management Congress, November 13-17, 2006, San Diego, CA. Online at: www.emmps.wsu.edu/2006firecongressproceedings/Extended%20Abstracts%20PDf%20Files/Poster/hanson.pdf.

Forest Service researchers looking at fires across the West found very mixed relationships between fire intensity and factors affected by thinning, including canopy cover, stand density, and height to canopy. Specifically, they found that "high stand densities and low canopy base heights do not necessarily lead to a crown fire or black stems."[26] On the contrary, "traditional thinned forest with high canopy base heights many not result in the desired burn severity. In fact, the stands with the highest canopy base heights we sampled (10m, 32 ft) had brown or black crowns after a wildfire []. Stands with canopy base heights less than 1.7m (5.5 ft) had green crowns…. Similarly, reducing total forest cover does not necessarily reduce burn severity."[27]

A large body of research shows how thinning forests can promote hotter, faster burning fires. Aggressive thinning that removes larger trees and reduces canopy closure is a particular problem. It opens up forests to sunlight. That warms and dries the understory, making it more readily burnable. It also promotes rapid in-growth of flammable young trees and other plants, including non-native species. And all substantial thinning, even just in the understory, increases wind speeds in the forest interior. That both dries out the vegetation and leads to faster spread of wildfire and greater fireline intensity.[28] Other mechanisms that may contribute to increased post-thinning fire hazard or intensity increases include: logging residues; stump sprouting; enhanced seedling germination; development of a mid-canopy layer; and vertical integration of fuel complexes.[29]

Thinning can reduce susceptibility of stands to future beetle attacks (though not outbreaks already underway). Several studies have found reduced beetle mortality in thinned stands, perhaps because reduced tree vigor in crowded stands contributes to

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[26] Jain, T.B. and R.T. Graham. 2007. The Relation Between Tree Burn Severity and Forest Structure in the Rocky Mountains. In Powers, R.F., tech. ed., Restoring fire-adapted ecosystems: proceedings of the 2005 national silvicultural workshop. U.S. Forest Service. Albany CA. PSW-GTR-203. p. 237.

[27] *Id*. at 245.

[28] Martinson, E. J. and P. N. Omi. 2003. Performance of Fuel Treatments Subjected to Wildfires, in Omi, P. N.; Joyce, L. A., technical editors. Fire, fuel treatments, and ecological restoration: Conference proceedings; 2002 16-18 April; Fort Collins, CO. Proceedings RMRS-P-29. Fort Collins, CO: U.S. Forest Service, Rocky Mountain Research Station. p. 7. U.S. Forest Service. 2000a. Final Environmental Impact Statement for the Roadless Area Conservation Rule ("FEIS"), volume 1. Online at: http:/www.roadless.fs.fed.us/documents/feis. p. 3-110. Collins, B.M. et al. 2007. Spatial patterns of large natural fires in Sierra Nevada wilderness areas. Landscape Ecology 22:545-557. p. 554. Whitehead, R.J. et al. 2006. Effect of a Spaced Thinning in Mature Lodgepole Pine on Within-stand Microclimate and Fine Fuel Moisture Content, in Andrews, P. L. and B.W. Butler, comps., Fuels Management-How to Measure Success: Conference Proceedings. 28-30 March 2006; Portland, OR. Proceedings RMRS-P-41. Fort Collins, CO: U.S. Forest Service, Rocky Mountain Research Station. Online at http://www.fs.fed.us/rm/pubs/rmrs_p041/rmrs_p041_523_536.pdf. p. 529. Keeley, J.E., D. Lubin, and C.J. Fotheringham. 2003. Fire and grazing impacts on plant diversity and alien plant invasions in the southern Sierra Nevada. Ecological applications 13:1355-1374. p. 1370.

[29] Keyes, C.R. and J.V. Morgan. 2007. Putting Out Fire With Gasoline: Pitfalls in the Silvicultural Treatment of Canopy Fuels. In Powers, R.F., tech. ed., Restoring fire-adapted ecosystems: proceedings of the 2005 national silvicultural workshop. U.S. Forest Service. Albany CA. PSW-GTR-203. p. 301.

beetle success.[30] However, other studies do not show this relationship, and thinning can precipitate some kinds of beetle attacks.[31]

Moreover, even if thinning remediates beetle risks, it may simultaneously increase fire hazards. Some serious tree-attacking insects, including the mountain pine beetle, are attracted to large, mature trees.[32] As Forest Service researchers recently noted, removing small diameter trees can leave stands heavily stocked with the trees that some beetle species prefer to attack.[33] Other scientists' field studies confirm that the more large trees there are in lodgepole stands, the more likely they are to be damaged by bark beetles.[34] Large trees, however, are the most fire resistant, and increased fire intensity in western forests is often ascribed to the ingrowth of small, fire-susceptible trees as a result of various management practices that include logging, fire suppression, and grazing (along with climatologic factors).[35] Thus thinning aimed at beetle risks can conflict with fire reduction goals and vice versa. Potentially aggravating the conflict is the fact that slash from logging projects provides preferred breeding habit for some tree-attacking beetles.[36]

F. Other Safeguards.

The complexities, counter-intuitive results, and goal-conflicts entailed by using logging to respond to insects and other disturbance agents in western forests counsels strongly against shortcircuiting NEPA in planning such projects. Similarly, glossing over the Endangered Species Act and other precautionary procedures is neither justified by the circumstances nor likely to make for good results. Species that are already endangered are least able to absorb harm from ill-considered federal action. The upshot of failing to consider them in the decision process now may well be greater endangerment later on, with additional need for restrictions, not just on federal lands but on private ones as well.

In the same way, over-riding existing Forest Service appeals regulations and substituting a truncated, Healthy Forest Restoration Act style objection process is neither indicated nor wise. The objection process does not reduce controversy or conflict. The General Accounting Office (GAO) recently reviewed appeals and objections over Forest Service hazardous fuel reduction activities. GAO found that only 18 percent of appeal-

[30] Black *et al*. *supra* note 6 at 14.
[31] *Id.* at 15.
[32] Amman, G.D. 1995. Silvicultural Control of the Mountain Pine Beetle in Ponderosa and Lodgepole Pines. Founders address at the Western Forest Insect Work Conference. (http://www.fsl.orst.edu/wfiwc/awards/speeches/amman-address.htm).
[33] McMillin, J.D. and C.J. Fettig. 2009. Bark Beetle Responses to Vegetation Management Treatments. In Hayes, J.L. and J.E. Lundquist, compilers. *The Western Bark Beetle Research Group: A Unique Collaboration With Forest Health Protection: Proceedings of a Symposium at the 2007 Society of American Foresters Conference.* U.S. Forest Service. Portland OR. PNW-GTR-784. pp. 29, 32.
[34] Tinker *et al.*, *supra* note 10 at 2.
[35] Romme, *et al*. *supra* note 9 at 5. Belsky, A.J. and D. Blumenthal. 1997. Effects of Livestock Grazing on stand Dynamics and Soils in Upland Forests of the Interior West. Conservation Biology 11:315-327. Hicke, J.A. et al. 2007. Spatial patterns of forest characteristics in the western United States derived from inventories. Ecological Applications 17:2387-2402. p. 2388.
[36] McMillin and Fettig. Supra, note 33 at 34.

eligible projects were appealed, while fully 40 percent of objection-eligible projects drew objections.[37] Squeezed timeframes and reduced information availability about final proposals reduce the meaningfulness of public participation in decisions governed by the protest process and may have increased challenges.

IV. USING INSECT-KILLED AND THINNED TREES FOR BIOMASS.

Finally, removal of insect-killed trees from backcountry national forests should not be incentivized by making them eligible as a source for the Renewable Fuel Standard in the Clean Air Act. Left in the woods, these trees will store carbon for decades.[38] Even if they subsequently burn at high severity, fire leaves most stored carbon behind, both above and below ground.[39] Meanwhile, growth of, and carbon uptake by, surviving plants accelerates.[40] In burned forests in Eastern Oregon, post-fire dead wood carbon emissions from decay were one-tenth to one-third of the carbon taken in from the atmosphere by other plants.[41]

Using insect-killed trees for biomass immediately releases carbon dioxide that would not otherwise be emitted over the near term (and burning them for energy production is worse still, since it releases much more CO_2 per unit of energy created than even coal[42]). And the removal of the biomass typically sets back forest regeneration that re-sequesters carbon from decaying (or burned) trees.[43] Similar problems mean that biomass sourcing from other non-plantation federal forests, outside of the immediate community protection zone, also probably worsens global warming over the near and mid-term.

V. CONCLUSION.

The Natural Resources Defense Council appreciates this opportunity to comment on H.R. 5192. We applaud Committee Members' interest in securing people and essential infrastructure from falling trees caused by insect infestations. The prudent response to this risk is to direct resources rapidly to the task of falling the trees before they themselves fall. This work is needed in the immediate vicinity of structures, pipelines, roads, and similar facilities.

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[37] U.S. General Accountability Office. 2010. Forest Service Information on Appeals, Objections, and Litigation Involving Fuel Reduction Activities, Fiscal Years 2006 through 2008. p. 5. GAO-10-337.

[38] Luyssaert, S. *et al*. 2008. Old-growth forests as global carbon sinks. *Nature* 455:214.

[39] Mitchell, S.R., M.E. Harmon, and K.E.B. O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. *Ecological Applications* 19:643.

[40] Tinker *et al*. *supra* note 10.

[41] Meigs, G.W., *et al*. 2009. Forest Fire Impacts on Carbon Uptake, Storage, and Emission: The Role of Burn Severity in the Eastern Cascades, Oregon. *Ecosystems* 12:1246-1267.

[42] Manomet Center for Conservation Sciences. 2010. Massachusetts Biomass Sustainability and Carbon Policy Study: Report to the Commonwealth of Massachusetts Department of Energy Resources. Walker, T. (Ed.). p. 20.

[43] Donato, D.C. *et al*. 2006. Post-wildfire logging hinders regeneration and increases fire risk. *Science* 311:352. Additional considerations come into play where natural regeneration will not succeed on its own.

Equally important is promoting a prudent response by the Forest Service to beetle infestations and other disturbance events in the broader forest. There, a high risk exists that uninformed, seemingly common sense decisions, made without considering an array of alternatives, will worsen the situation (or at best make no contribution to forest recovery and threat abatement). The last thing this Committee should be entertaining in that context is curtailment of NEPA.