February 6, 2014

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<tr><td>Sen. Ron Wyden, Chair
Committee on Energy & Natural Resources
United States Senate
Washington, DC 20510</td><td>Sen. Lisa Murkowski, Ranking Member
Committee on Energy & Natural Resources
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Re: Statement for the Record for the Hearing on February 6, 2014 on S.1784, the "Oregon and California Lands Act of 2013" by the American Fisheries Society (AFS) and Society for Conservation Biology (SCB)

Dear Senators Wyden and Murkowski,

Our professional societies represent leading scientists on issues related to conservation and restoration of endangered and other native species and their habitats. We would like to submit this testimony to the official hearing record regarding our review of the scientific underpinnings of S.1784 as it pertains to the 2.1 million acres of Bureau of Land Management (BLM) lands in western Oregon known as the Oregon and California Railroad and Coos Bay Wagon Road Grant Lands ("O&C lands"). These lands play a vital role in the overall conservation design and functionality of the science-based Northwest Forest Plan (NWFP). They are some of the only high productivity, low-elevation federal public forest and stream reaches in the region, contain important late seral forests older than 80 years that are relatively intact, and provide important connectivity functions for wildlife dispersing across the Cascade, Siskiyou, and Coast ranges (Staus et al. 2010). Unfortunately, S.1784, would approximately double logging levels on BLM lands to 300-350 million board feet annually and this would come with significant risks to fish and wildlife as detailed below.

We were encouraged by Senator Wyden's 9 December 2013 statement about the need to "[use] science to guide management of the O&C lands while upholding bedrock environmental laws" and that "forest policy should be dictated by science." However, we are concerned that the proposed legislation misses these intended purposes and does not use the best available science. Therefore, we are also providing suggestions to remedy sections of the bill where we believe the legislative is inconsistent with the intent of the Endangered Species Act (ESA) and ecosystem management standards and guidelines of the NWFP—especially the Aquatic Conservation Strategy (ACS). Our concerns are mainly related to how the legislation would: (1) eliminate or weaken key provisions of the NWFP; (2) present inconsistencies with recovery of ESA-listed species; (3) increase fragmentation and cumulative impacts to fish and wildlife; (4) rely on risky, untested "ecological forestry" provisions; and (5) pose inconsistencies with climate change policies such as President Barack Obama's Climate Action Plan.

AFS is the world's oldest professional fishery society and has 9,000 members in 60 nations working in government agencies, universities, and the private sector. Its mission is to improve the conservation and sustainability of fishery resources and aquatic ecosystems. SCB is a 5,000 member international professional organization dedicated to promoting the scientific study of biological diversity. Our membership includes resource managers, educators, government and private conservation workers, and students.

I. ELIMINATION OR WEAKENING OF THE NWFP

The NWFP was developed to provide a minimum 80% likelihood that the populations of over 1,000 late-seral (mature and old growth combined) species would remain viable over a 100-year period if the late-successional reserve (LSR) network, survey and manage program, and ACS—in its entirety—were implemented across the range of the Northern Spotted Owl. For two decades, implementation of the NWFP has slowed the decline in aquatic ecosystems (Anlauf et al. 2011), slowed the decline of spotted owls relative to nonfederal lands (Anthony et al. 2006), and provided habitat for hundreds of species dependent on late-seral forests (Molina et al. 2006). We see no compelling scientific reason for departing from the protective provisions of the NWFP and have identified places where S.1784 conflicts with its science-based approach.

Weakening of NWFP ACS - Monitoring of the NWFP ACS suggests less disturbance and faster growth by unlogged trees as a result of riparian thinning and decommissioning of roads (Reeves et al. 2006). However, Reeves et al. (2006) state that the aquatic effect *"remains to be seen."* The NWFP ACS applies clear and unambiguous management objectives, standards and guidelines, or clearly documented, site-specific science-based assessments in watershed analysis. S.1784 re-states core process components of the NWFP ACS, but does not preserve substantive provisions in several important respects. For instance, S.1784 leaves decisions affecting water and aquatic biota to relatively un-delineated agency discretion—in effect a return to pre-NWFP operations that were unsuccessful in protecting water quality and aquatic resources in the past. We raise two additional substantive problems with the aquatic provisions of S. 1784.

First, smaller Riparian Reserves are proposed in Forestry Emphasis Areas along with reduced protection on streams of "minimal ecological importance" (Sec. 2(15) and Sec. "102 (f)(3)(C) – Riparian Reserves and Buffer System). We question the bill's implicit assumption that reduced riparian protection is ecologically justified on any portion of the landscape. Regional climate change models predict more frequent rain on snow events, flashier floods, and changes in the timing of peak flows (Daltron et al. 2013). Given these projections and highly fragmented landscape in the surroundings, a management scenario requiring even wider buffers than the NWFP ACS is needed to maintain riverscape connectivity, mitigate flood damage and anticipated erosion, and allow fish to adapt to cumulative impacts and channel migration. We note that the main reason the NWFP ACS requires Riparian Reserves on fish-bearing streams that are two site-potential trees-wide is, in part, to control the rate of management induced disturbance and limit watershed-scale cumulative impacts. Shrinking the reserves as proposed would increase the risk of cumulative effects. For instance, Rhodes (2007) found that 1.5 acres of landings and 1.8 miles of roads were constructed for every 100 acres thinned in 60-80 years old stands with an average removal of 140-180 trees per acre in three national forests. The cumulative effects of such changes include increased stream temperature (Allen and Dietrich 2005; Nelitz et al. 2007), greater flood frequencies and magnitudes (Alila et al.

2009), and altered ground water fluxes that disrupt hyporheic (stream-ground water interactions) biota (Hancock 2002)—all of which are compounded by logging on non-federal lands in conflict with recovery goals for Oregon Coast Coho (Stout et al. 2011).

Second, there is insufficient funding for the rigorous monitoring needed for definitive effectiveness and assessment monitoring and rational adaptive management in both current and proposed monitoring efforts. The current BLM and USFS aquatic monitoring program (AREMP) is based on hydrologic units vs. true watersheds, which hinders making reliable inferences to true watershed condition as well as linking true watershed condition to stream responses (Omernik 2003). Also that monitoring incorporates a statistically insufficient number of sites to yield useful confidence intervals needed for reliable stream assessments (Anlauf et al. 2011). Presumably these decisions were driven by insufficient monitoring funds. Likewise, S.1784 does not provide enough funding to do an adequate job of monitoring multiple aquatic effects of BLM practices. Without adequate monitoring, we cannot assess aquatic effects --now or in the future.

It is important to note here that earlier researchers of paired streams reported increased salmonids in logged oligotrophic headwater streams in the Oregon Cascades (Hawkins et al. 1983). However, others have found that logging and road building reduce the richness and densities of aquatic amphibians (Corn and Bury 1989), and that aquatic amphibians are often more sensitive disturbance indicators than salmonids (Whittier et al. 2007). Hughes et al. (2004) reported that aquatic vertebrate assemblage condition was reduced in Coast Range streams having low bed stability, low instream cover, and low riparian cover and structural complexity but with high percent fine substrate, high road density, and high human disturbances of riparian areas. Streambed instability and excess fine sediments were associated with riparian disturbance and road density in Coast Range streams, as were lower scores in a vertebrate assemblage index of biotic integrity (Kaufman and Hughes 2006). Bryce et al. (2010) found that for sediment-sensitive aquatic vertebrates and macroinvertebrates, minimum-effect sediment levels were 5% and 3%, respectively, for fine sediments expressed as areal percentages of the wetted streambed surface. Thus, small levels of riparian disturbance can reduce the condition of aquatic assemblages, and moderate disturbance of headwater sites can have substantial downstream effects. In addition, rather than studies of paired stream sites, it is important to assess many sites along natural and disturbance gradients (Alila et al. 2009; Bryce et al. 2010) and to consider entire riverscapes to fully assess effects of logging and road building (Fausch et al. 2002).

Elimination of Survey and Manage Requirements in Forestry Emphasis Areas - Section 104 of the bill would eliminate the survey and manage program in Forestry Emphasis Areas where it is needed most, as matrix older forests in the NWFP provide irreplaceable habitat for hundreds of late-seral species. Because many species that benefit from survey and manage are habitat specialists (e.g., red tree vole), and others are highly localized in distribution (e.g., endemic spring snails, amphibians, lichens, fungi) that use forest age classes generally of 80 + years (which are particularly vulnerable in this legislation), we anticipate accelerated population declines of rare species. This could result in potential future ESA listings as habitat within the Conservation Emphasis Areas will not be enough to sustain populations. Moreover, monitoring of numerous survey and mange species will be required to avoid future ESA listings yet there is no provision or funding for such monitoring.

II. INCONSISTENCIES WITH ESA RECOVERY PROVISIONS

Many of the provisions of the legislation conflict with ESA-listed species and their recovery objectives as follows:

Northern Spotted Owls

- Logging of nest sites can occur in unoccupied nest sites that have experienced crown fire (Sec. 2(11)(B) - Exclusion), which conflicts with spotted owl Recovery Actions 10 and 12.
- The Secretary of Interior would be able to declare exemptions to vegetation treatments inside critical habitat if deemed "necessary to address a severe threat of disease, insects, or fire." Recent studies (Bond et al. 2009, Clark et al. 2013) show spotted owls using burned areas if those areas are not salvage logged. Other have documented thinning impacts to owl prey (summarized in DellaSala et al. 2014). The legislation is ambiguous as to what constitutes severe threat and how it is determined.
- Greater fragmentation from a landscape divided into Forestry and Conservation Emphasis Areas will increase Barred Owl invasions (Dugger et al. 2011, Wiens et al. 2013).
- The owl recovery plan requirements for nest survey protocols of at least three surveys for breeding pairs per nest in each of three consecutive years would be replaced with an untested protocol whereby "an employee [would] search for nest trees at a rate of 1 day for each 100 acres of a timber sale" (Sec. 103 - Duration).
- The functionality of the LSR network would be reduced in moist forests less than 120 years old and dry forests with trees that are less than 150 years old. Notably, approximately 40% of the LSR network region-wide consists of forests previously logged (Strittholt et al. 2006) that will eventually attain old forest characteristics over time but many of these areas would lose NWFP protections.
- Reclassifying NWFP land-use designations into Conservation or Forestry Emphasis Areas will result in risky tradeoffs. The LSR network was designed specifically with the dispersal requirements of spotted owls in mind. As the reserve system shrinks and spacing among reserves increases, connectivity for owls is expected to decline, thereby diminishing prospects for recovery, stated intentions of the NWFP and owl recovery plan. Notably, extensive fragmentation in the owls' southern range (O&C lands) already limits recovery options.
- Prescribing a third of the Forestry Emphasis Areas in closed canopy conditions while reducing basal area down to 35% of pre-logged conditions in dry forests (Sec 103 - Ecological Forestry Principles in Dry Forests) will degrade owl habitat more than wildfires (in review , D. Odion, U. California Santa Barbara).
- Reducing stream buffers by one-half within the Forestry Emphasis Areas will reduce connectivity of the integrated NWFP reserve network and increase risks to owls and a wide variety of terrestrial wildlife dependent on intact forests. The

rationale for reducing these reserves appears to be based on a narrowing of the objectives of reserves to remove consideration of terrestrial wildlife.

Importantly, habitat conservation plans (HCP) on private lands (e.g., Weyerhaeuser Millicoma Tree Farm) depend on the long-term functionality of the NWFP in shouldering the majority of conservation for owls and others species so that private landowners can then be issued “incidental take” permits under the ESA. Reducing protections on federal lands, therefore, could negate key assumptions of this HCP.

Marbled Murrelets
We are unaware of any scientific studies that demonstrate habitat losses to murrelets from “[a decline] in the scarcity of early successional habitat” (Sec 103 – 7 – “Marbled Murrelet Habitat”). In fact, this late-seral species is known to decline when old forests are fragmented, triggering elevated risk to murrelets from nest predators (Malt and Land 2009). However, complex younger forests less than 120 years old that have trees with platforms do provide nesting habitat. Thus, typing stands by their main cohort (e.g., 120 years) and ignoring scattered older trees with platforms in mature trees, and then placing them into Forest Emphasis Areas, is inconsistent with murrelet recovery.

III. VASTLY DIFFERENT MANAGEMENT REGIMES INCREASES HABITAT FRAGMENTATION

Scientific research from the Pacific Northwest and around the world clearly demonstrates that the more dissimilar reserves are from their surroundings, the more likely they will fail to maintain biological diversity, including endangered species (Lindenmayer and Franklin 2002). S.1784 fails to recognize this scientific fact by requiring highly incompatible land uses and management regimes in close proximity to one another. Because the legislation prescribes the use of “ecological forestry,” a scientifically untested and unproven management technique, to be practiced on moist forests adjacent to “legacy old growth” stands, the likely result will be diminished ecological function and integrity in old-growth forests at the landscape scale in Forestry Emphasis Areas. Notably, Section 103 would create Forestry Emphasis Areas within which a rolling percentage of variable retention harvests (8-12 percent per decade) would populate the landscape with ecologically deficient early seral forests (partial clearcuts) and few intact stands (Sec 103(3) – Variable Retention Harvests).

IV. UNTESTED ECOLOGICAL FORESTRY PROVISIONS ELEVATE RISKS TO COMPLEX EARLY SERAL FORESTS

Recent research has demonstrated the importance of complex early seral forests (young forests created by natural disturbances) for many plants and wildlife, including those dependent on high severity fires such as Black-backed Woodpeckers (Hanson et al. 2008). We are unaware of scientific studies that demonstrate complementarity of variable retention harvests with unlogged post-fire landscapes. The only known way of establishing complex early seral habitats of high habitat quality is through natural disturbance processes (Swanson et al. 2010), particularly fires in mature forests that generate pulses of biological legacies (large dead, live, and down trees) essential for the new forest and its ability to one day become old growth (Donato et al. 2012).

While ecological forestry theoretically represents some improvements over traditional industrial forestry, many scientists have challenged it due to a lack of empirical evidence that it "mimics natural processes" and because the impacts to fish and wildlife, particularly ESA-listed species, have been grossly understated. For instance, SCB, The Wildlife Society, and American Ornithologists' Union raised considerable concerns about its widespread, untested application in owl recovery and its use in critical habitat (www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/CriticalHabitat/default.asp) Notably, there have been documented problems with implementing ecological forestry on BLM lands in the southwest Oregon dry-forest pilots where large fire-resistant trees have been removed under the assumption that surrounding trees will more quickly attain late-seral characteristics. While this may be the case from a silvicultural standpoint, many BLM lands are already quite deficient in large trees, particularly in dry forests where prior high-grade logging has removed most of the large sugar pines, and other large trees that otherwise may be growing naturally in dense clumps, depending on site conditions. Thus, the language in Section 103 that sets tree protection guidelines prescriptively at 150 years for dry forests will result in continued loss of large fire-resistant trees in areas already facing large-tree deficits (van Pelt 2008).

Similarly, BLM's ecological forestry pilots in moist-forest areas have resulted in loss of complex older (80+ years) forests, which contain a legacy of old trees that survived a stand-replacing event. The provision in the bill to retain trees over 100 years but not over 150 years old may result in those trees being surrounded by the ecological equivalent of a clearcut. It is also likely that many retention trees dispersed in logging units will not survive high-wind events. Consequently, it is important to retain trees older than 80 years old as originally conceived in the NWFP reserves.

V. INCONSISTENCIES WITH CLIMATE CHANGE POLICIES

Implementation of the NWFP has indirectly allowed these forests to function as a net sink for carbon sequestration and long-term storage (Krankina et al. 2012). Increased logging proposed in S. 1784 would diminish important ecosystem services that BLM lands are uniquely providing, not the least of which is water quality and carbon uptake and storage. While Section 105 recognizes the need for carbon storage in the Conservation Emphasis Areas, we anticipate extensive carbon dioxide emissions will be generated from increased logging in Forestry Emphasis Areas. Emissions will be proportional to the age, biomass, and acreage of the stands harvested annually and cumulatively and are difficult to assess at this time. However, logging of mature forests is known to reduce carbon stores by 40-50% and these losses are not made up for by planting trees or storing carbon in wood products (Harmon et al. 1990). Thus, under S.1784, much of the carbon storage potential, for which these forests are so well suited, will be lost. Such would contradict the stated intent of President Obama's Climate Action Plan with regards to forest carbon. It will also increase forestry-related emissions at a time when the states of California, Oregon, and Washington (along with British Columbia) have agreed to collectively cut emissions. Additionally, carbon storage potential of non-federal lands compared to BLM lands is already significantly compromised by short-rotation forestry that holds the carbon capacity of highly productive private lands at low levels, hence the importance of BLM lands for carbon storage.

Finally, one of the key factors in enhancing the resilience of forests to climate change, a stated objective of President Obama's Climate Action Plan, is landscape connectivity. Large connected reserves allow wildlife to migrate from areas that are less climatically stable to those that maintain suitable climatic conditions. S. 1784 would shrink NWFP reserves, increase fragmentation, and reduce the resilient properties of large blocks of forests so they may no longer act as potential refugia. Climate resilience also can be enhanced by reducing human-induced stressors such as those that have accumulated in space and time from the extensive network of roads, clearcuts, ORVs, mining, livestock grazing and other stressors on federal lands and the surroundings. While thinning can increase forest resilience by reducing high stocking densities in flammable tree plantations, variable retention harvests will place additional stressors on ecosystems recovering from decades of unsustainable logging that will diminish the resistant and resilient properties of BLM forests to climate change.

CONCLUSION

We appreciate the opportunity to offer our professional opinions on the scientific underpinnings of S.1784 and recommendations for making improvements to the bill so it can better meet its stated purpose of using science to resolve land management conflicts. We request that you revise the legislation to retain important provisions of the NWFP such as the LSR and full riparian reserve network, survey and manage, and all elements of the ACS and you address inconsistencies with the recovery of ESA-listed species. The legislation should also comport with climate change policies nationally and regionally. Scientists have broadly recognized the NWFP's regional approach to ecosystem management and its conservation biology emphasis. Reducing its protective elements will lower the viability of late-seral species, particularly those dependent on intact forests at a time when climate change and land use pressures are accelerating. Because "ecological forestry" remains unproven, any legislation that prescribes this type of forestry should require it be limited in scope as the true experiment that it is and should include both a mandate and sufficient funds to conduct basic research and monitoring to test the efficacy of "ecological forestry." Without such improvements in S.1784, it is likely that it will set back efforts to recover ESA-listed and other rare fish and wildlife species by years, if not decades. Specifically, the increased logging may jeopardize recovery of murrelets and spotted owls requiring the need to uplist these now "threatened" species as "endangered" under ESA.

We respectfully request that this letter be included in the official hearing record on S.1784. Thank you.

Sincerely,

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Carlos Carroll, Ph.D.
Global Policy Chair, Society for Conservation Biology

Dominick A. DellaSala, Ph.D. (corresponding author)
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