

May 23, 2017

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Mr. James Cason,
Special Assistant, Delegated the Functions, Duties, and Responsibilities of
the Deputy Secretary of the Interior

Re: Geos Institute comments on Monument Review, MS-1530, U.S.
Department of the Interior, 1849 C Street NW, Washington, DC 20240

Submitted via:
<http://www.regulations.gov>; “DOI-2017-0002” in the Search bar and
clicking “Search,” or by mail.

Prepared by: Dr. Dominick A. DellaSala, Chief Scientist

Cc: Senators Ron Wyden, Jeff Merkley

Dear Special Assistant Cason:

Please accept these comments in support of the January 2017 expansion of the Cascade-Siskiyou National Monument in southwest Oregon and northern California. Monument expansion was overwhelmingly supported by the public at four Monument hearings; public input received by Oregon Senators Ron Wyden and Jeff Merkley was over 3:1 in favor of expansion; local landowners have supported expansion; as did newspaper editorial boards of the Portland Oregonian, Medford Mail Tribune, Eugene Register-Guard, and San Francisco Chronicle. Support for expansion includes Mayors, City Councils, and Chamber Boards of Ashland and Talent; Oregon State Senators Alan Bates and Kevin Talber, Representatives Peter Buckley and Pam Marsh; Klamath Tribes; Oregon Governor Kate Brown; and US Senators Wyden, Merkley, Boxer, and Feinstein. Additionally, the scientific community provided the scientific foundation for expansion in several landscape-scale assessments of the area and support letters, including recommending an even larger Monument than the recent expansion.

Geos Institute is uniquely qualified to comment in support of the Monument’s expanded boundaries given our extensive scientific publication record both in the region and within the Monument along with our climate change work. In general, Monument expansion is consistent with scientist recommendations that the nation’s first and only monument

to biodiversity needed to be greatly expanded given that conditions since its designation have changed drastically, as noted by the increased

development pressures, and, most notably climate change.

Geos Institute was part of a multi-disciplinary science team in 2011 that was tasked with determining whether the original Monument boundaries were sufficient enough to maintain the area's ecological integrity, its biological crossroads functions, and the special status plants and wildlife species and biological communities (Appendix 1) for which the Monument was initially designated (i.e., "objects of scientific interest")¹.

We were also part of a group of aquatic scientists that sent a letter to Oregon Senator Ron Wyden on November 23, 2013 supporting Monument expansion for aquatic integrity purposes (Appendix 2), and we were among the 85 scientists that sent a letter on May 28, 2015 to President Obama supporting expansion (Appendix 3). As mentioned in these scientist letters and the report, changes since the inception of the Monument have made it abundantly clear that a larger Monument with more precise ecologically defined boundaries was urgently needed to:

- Provide for greater representation of environmental gradients (e.g., slopes, up-down elevations, watersheds, latitudinal zones, plant communities) essential to dispersal of plants, fish, and wildlife in search of suitable climate and protected habitat in a rapidly changing climate (i.e., adaptation)²;
- Conform with more complete watersheds (i.e., intactness);
- Provide for landscape linkages essential to the Monument's crossroads function;
- Provide a refuge from the sea of development pressures (e.g., logging, residential expansion, water diversions) and rapidly expanding regional population likely to otherwise overwhelm the Monument's special-status plants and wildlife.

We summarize the primary functions supported by Monument expansion.

INCREASED BIOLOGICAL CROSSROADS FUNCTIONS

The Monument was established by presidential proclamation to protect "*an area of remarkable biological diversity*"³. Because it is located at the crossroads (convergence) of four distinct ecoregions, it is an "*ecological wonder*" and "*home to spectacular variety of rare and beautiful*

¹Frost, E., D. Odion, P. Trail, and J. Williams. 2011. Interim report: Cascade-Siskiyou National Monument boundary study identification of priority areas for monument expansion 14 pp (attachment 1).

²<http://climatewise.org/projects/799-rogue-river-basin>. DellaSala, D.A., et al. 2015. Climate change may trigger broad shifts in North America's Pacific Coastal Rainforests. Reference Module in Earth Systems and Environmental Sciences - <http://dx.doi.org/10.1016/B978-0-12-409548-9.09367-2>. Olson, D.M., D.A. DellaSala, R.F. Noss, J. R. Strittholt, J. Kaas, M. E. Koopman, and T.F. Allnutt. 2012. Climate change refugia for biodiversity in the Klamath-Siskiyou ecoregion. *Natural Areas Journal* 32:65-74.

³U.S. Dept. of Interior. Presidential proclamation 7318 establishing the Cascade-Siskiyou,

species of plants and animals, whose survival in this region depends upon its continued ecological integrity^{1,3}.” Specifically, the biological crossroads function of the Monument pertains to its multiple linkages within and across expansive mountain ranges (e.g., dark brown, high elevation linkage; Figure 1), intact watersheds, latitudinal gradients (north-south, east-west), elevation gradients (up-down mountain ranges), older forest types (e.g., Figure 2) and northern spotted owl critical habitat (e.g., Figure 3). Each of these linkages is vital to the integrity of the Monument, especially in a changing climate as plants, fish, and wildlife move across mountain ranges and up-down in elevation in search of suitable climatic refugia and protected habitat². The inverse of connectivity is forest fragmentation that is extensive in the surroundings (Figure 4) and disruptive to sensitive species also dealing with a rapidly changing climate. Fundamental to climate adaptation strategies is the utmost importance of reducing anthropogenic stressors so that wildlife can have the best possible prospects for adapting to climate change⁴.

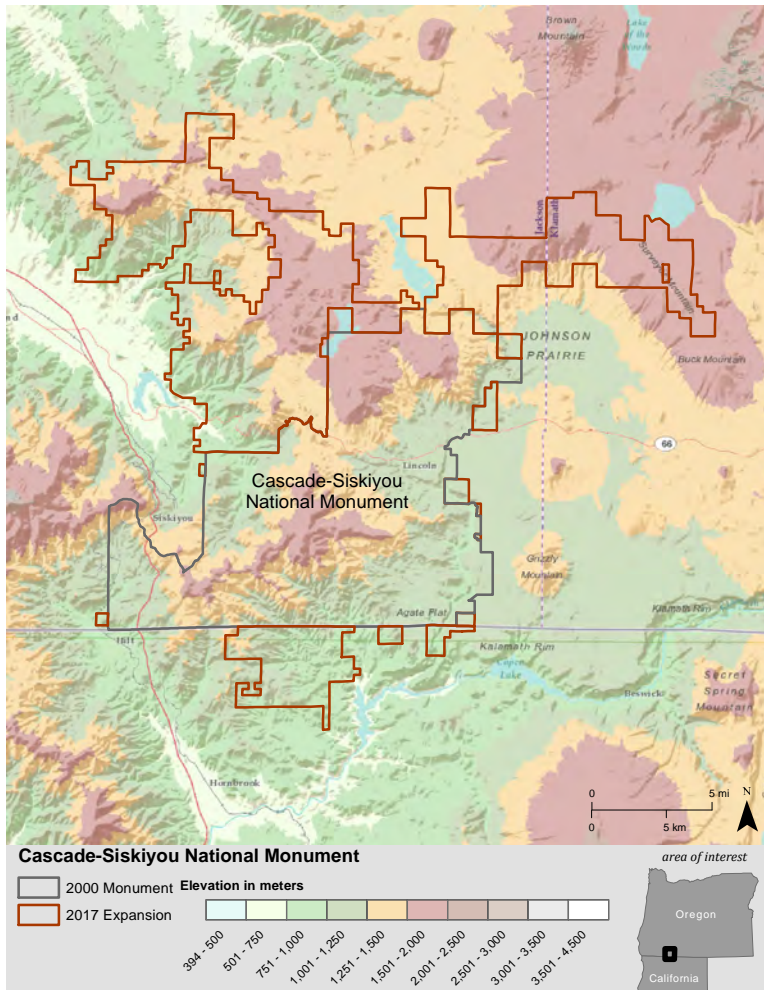


Figure 1. Example of the biological crossroads function of the original and current Cascade-Siskiyou National Monument 2000 boundary showing connection of high elevation areas (mainly yellow and pink) spanning the Cascade (north and east) and Siskiyou (west) ranges. In addition to the high elevation linkage, the Monument provides up-down connectivity across elevation zones.

⁴Watson, J.E.M., T. Iwamura, and N. Butt. 2013. Mapping vulnerability and conservation adaptation strategies under climate change. *Nature Climate Change* 3:989-994

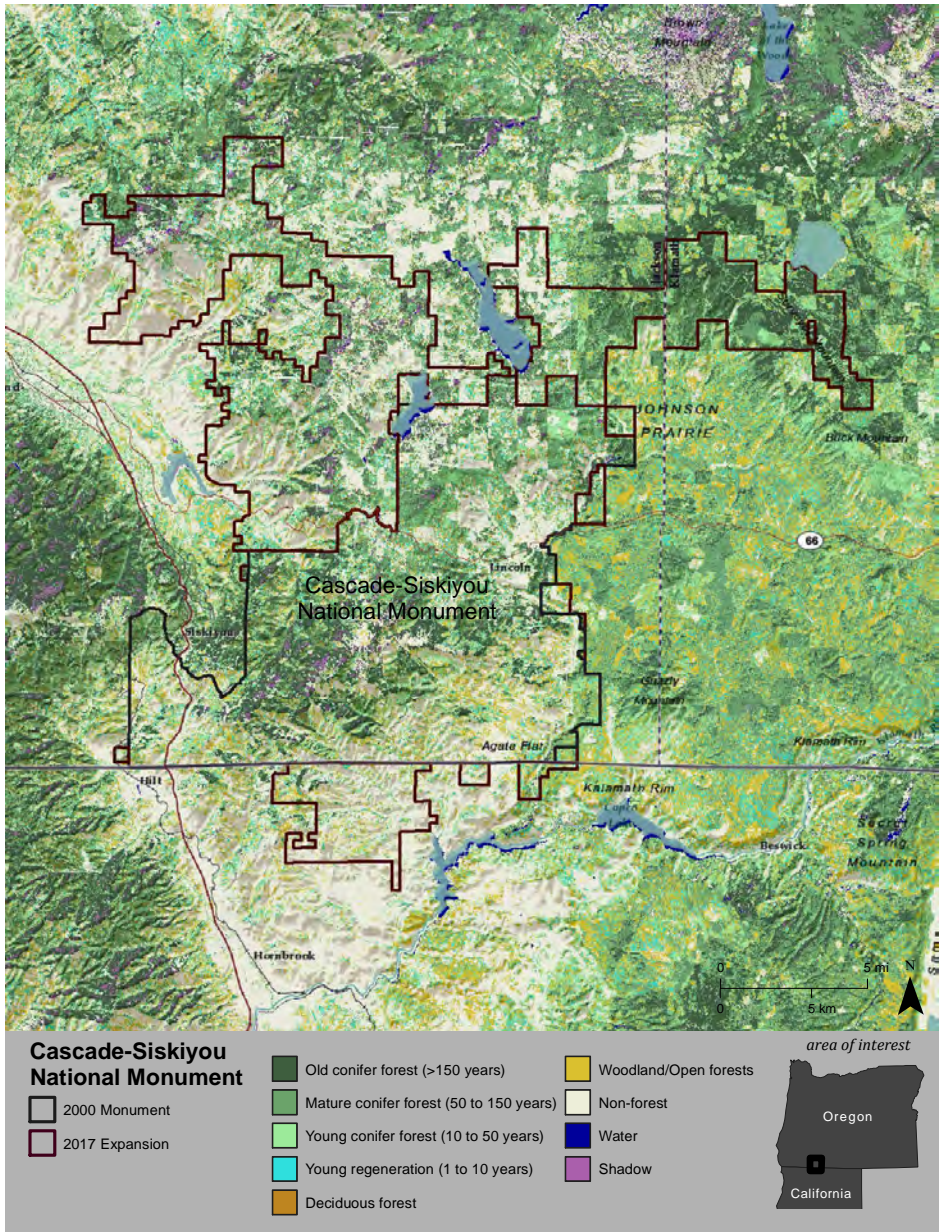


Figure 2. Late-successional forests (two darkest greens) connectivity within the Cascade-Siskiyou National Monument and surroundings showing connectivity function mainly from the northeast Monument addition across the Monument and into the Ashland watershed just west of the Monument.

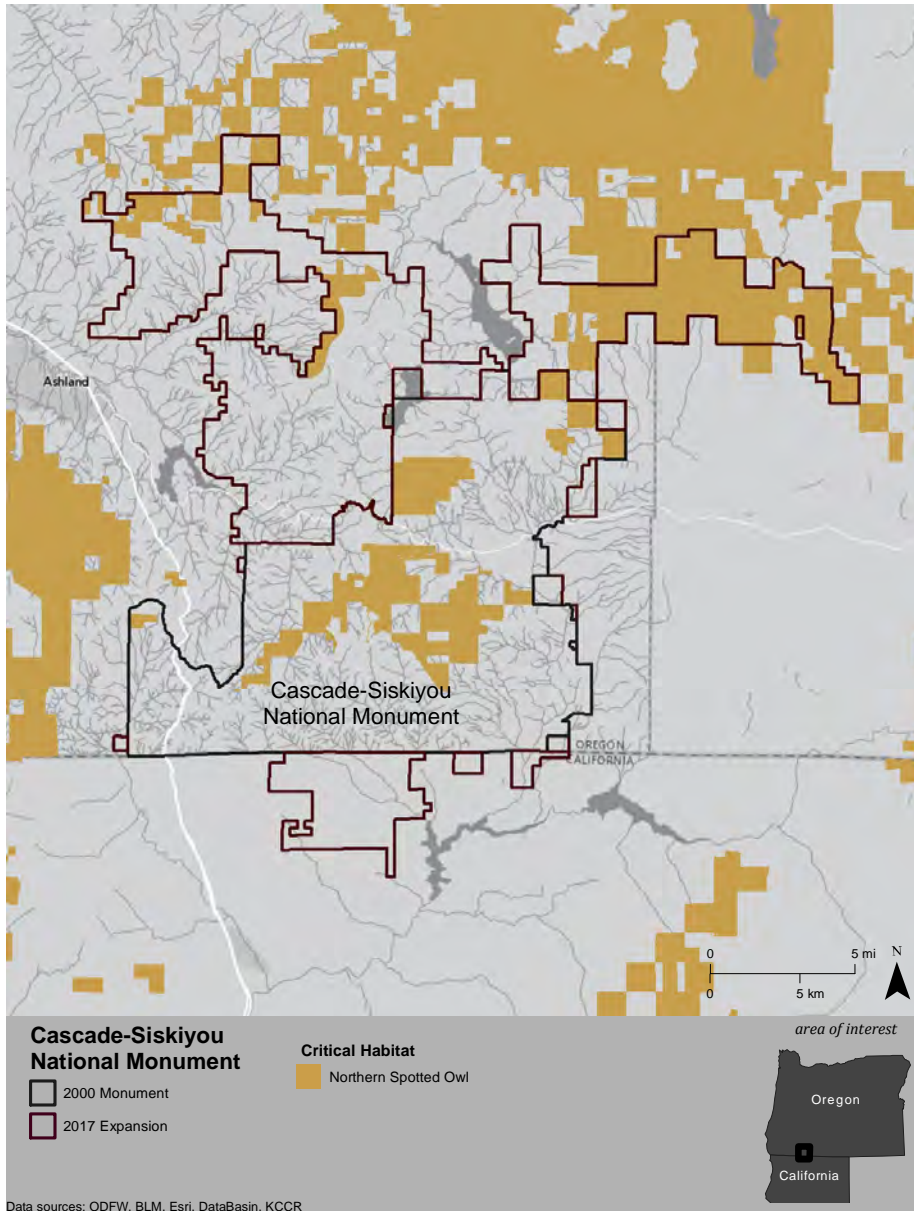


Figure 3. Northern spotted owl critical habitat showing importance of northern Monument additions. Connectivity for owls should increase overtime as forested areas within the Monument recover from prior clearcut logging.

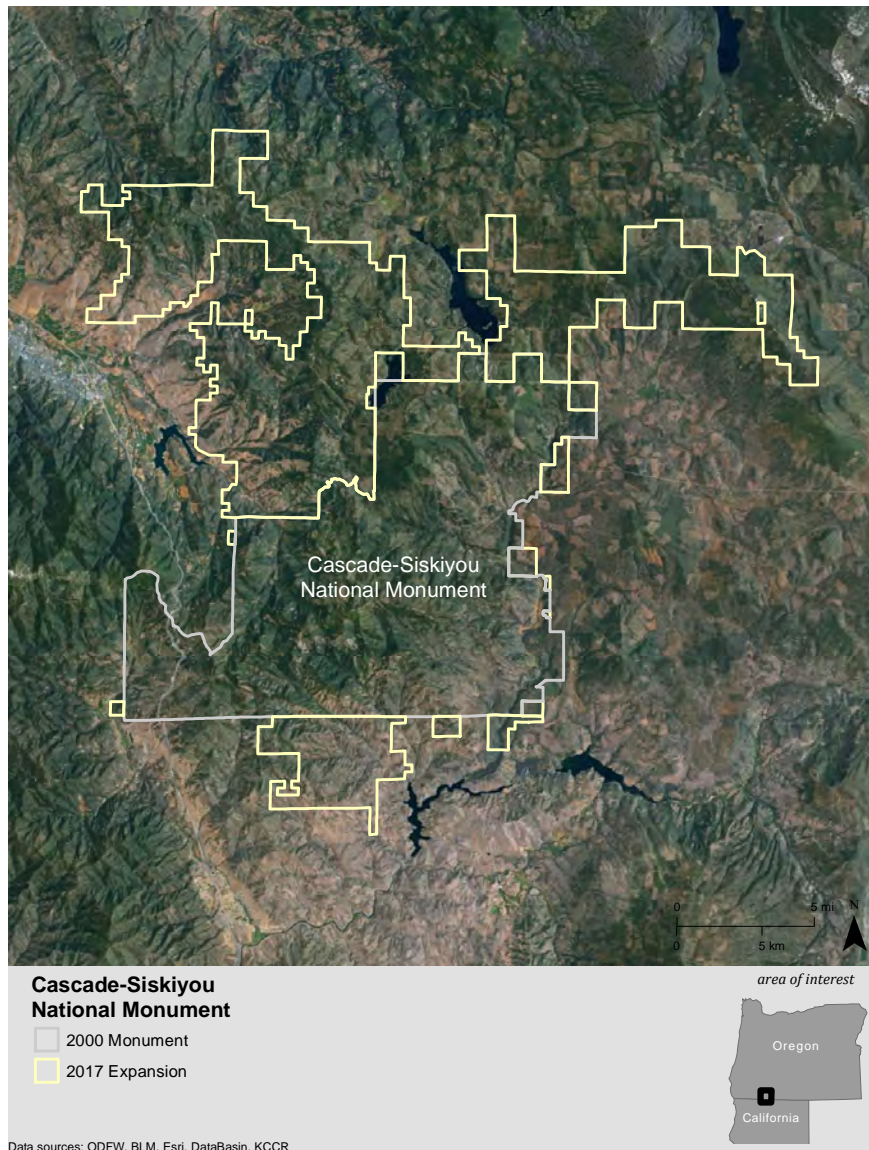


Figure 4. Extensive forest fragmentation mainly north and east of the Cascade-Siskiyou National Monument. Logging creates a barrier to wildlife dispersal and a more flammable landscape subject to uncharacteristically severe forest fires mainly due to slash build up and high fuel loads from densely packed plantations.

In sum, the Monument contains some of the last intact older forests and elevation linkages within the Cascade-Siskiyou biological crossroads. Protecting these broad terrestrial features is vital to the Monument's integrity and consistent with global recommendations of scientists calling for increases in the size and representation of protected areas⁵ to sustain biodiversity⁶ in a changing climate⁷.

⁵Noss, R.F., et al. 2012. Bolder thinking for conservation. *Conservation Biology* 26:1-4.

⁶Coetzee, B.W.T. et al. 2014. Local scale comparisons of biodiversity as a test for global protected area ecological performance: a meta-analysis. *PLoS ONE* 9:1-11. Johnston, A. et al. 2013. Observed and predicted effects of climate change on species abundance in protected areas. *Nature Climate Change* 3:1055-1061.

⁷Olson, D.M., et al. 2012. *Ibid.* DellaSala, D.A. et al. 2015. *Ibid.*

IMPROVED AQUATIC ECOSYSTEM CONNECTIVITY AND INTEGRITY

The endemic Jenny Creek sucker, Jenny Creek redband trout, and numerous unique, unnamed species of freshwater springsnails are objects of scientific interest. These important aquatic species are indicators of high quality water, particularly originating in headwater reaches. Many springs and spring-fed stream reaches within the expansion area are or will become increasingly important for maintaining aquatic species. Absent Monument protections, these areas are more likely to be subjected to development pressures that can substantially degrade their populations. Aquatic scientists supported Monument expansion because:

- Climate change threatens the Monument's freshwater objects and downstream users;
- Imperiled Jenny Creek redband trout and Jenny Creek sucker require intact watersheds;
- Springsnail diversity is exceptional (globally unique) and springsnails depend on the highest water quality and persistent spring flow; and
- A more expansive Monument would encompass more complete watersheds, allowing managers to maintain and restore watershed integrity and intactness.

Notably, the upper reaches of both Keene and Jenny Creeks (to the north & northwest) and Johnson Creek (to the northeast & east) are priority stream reaches necessary to better protect aquatic species, particularly as the climate shifts.

ADDITION OF CLIMATE CHANGE REFUGIA

Climate change was not a primary factor recognized when the Monument was initially designated but is clearly evident in this region² and unequivocally caused primarily by the burning of fossil fuels and deforestation/forest degradation. There is no debate in the scientific community about the existence or cause of climate change, although our ability to forecast the rate of change and effects at local scales is rapidly advancing. Nonetheless, we know that regional snowpack (Cascades, Siskiyou, Sierra Nevada) has been progressively declining since the 1960s, annual temperatures have been steadily rising and may increase another 4 to 8° F by 2080 with summers becoming increasingly hot and uncomfortable (7 to 15° F increases by 2080)². The Rogue Basin is likely to experience more severe storms, wide fluctuations in drought and flooding cycles, increased human health risks, higher utility bills, and substantial economic impacts to agriculture and power production mainly from reduced snowpack and greater summer cooling costs. This means that we need more undeveloped, protected landscapes and watersheds to sustain the regions' clean drinking water, wildlife habitat, and store more carbon in older forests to help prepare for climate change while providing local communities with the basic ecological necessities derived in their highest quality from intact and protected landscapes⁸.

⁸see DellaSala, D.A., J.R. Karr, and D.M. Olson. 2011. Roadless areas and clean water. *Journal of Soil and Water Conservation* 66:78A-84A. doi:10.2489/jswc.66.3.78A

Notably, in a regional assessment of likely climate change effects on the area's extraordinary biodiversity, scientists recommended protecting north-facing slopes with older forests, elevational gradients (up-down), riparian corridors, and latitudinal gradients to accommodate range shifts⁹. The Monument has each of these features and would therefore qualify as climatic refugia, making expansion even more urgent and timely.

IMPORTANCE OF MANAGING WILDFIRES FOR ECOLOGICAL INTEGRITY

The Monument has an active fire history and the northern portion is within the Greensprings community. Wildfire is a key ecosystem process recognized in the proclamation for its importance in maintaining ecosystem integrity and fire-adapted species. There are certainly responsible ways to co-exist with wildfire so that it can be managed for ecosystem purposes while reducing the risk of homeowner fire-losses through defensible space management¹⁰.

The science is solid that treating areas outside a 100-200 foot zone surrounding home structures does nothing to improve homeowner safety¹¹. Additionally, in a recent publication in the journal *Ecosphere*, scientists¹² examined >1,500 fires (>23 million acres) over a three-decade period (1984-2014) affecting mixed conifer and ponderosa pine forests in 11 western states, including Oregon. They tested whether "actively managed" (logged) forests had lower amounts of high severity fire (most trees killed), as often claimed, compared to protected areas like parks, monuments, wilderness, and roadless areas. After accounting for geographic, topographic, and climatic factors, they found that *protected areas actually had lower levels of high severity fire and were burning in more characteristic mixed severity patterns compared to logged areas that had much higher levels of high severity fire*. The researchers hypothesized that logging slash and plantations likely contributed to greater high severity fires as observed in other regional studies¹³.

Observations of the August 2014 Oregon Gulch fire (>32,000 ac), 18 miles southeast of Ashland,

⁹Olson, D.M., D.A. DellaSala, R.F. Noss, J. R. Strittholt, J. Kaas, M. E. Koopman, and T.F. Allnutt. 2012. Climate change refugia for biodiversity in the Klamath-Siskiyou ecoregion. *Natural Areas Journal* 32:65-74.

¹⁰Moritz, M.A., E. Batllori, R.A. Bradstock, A.M. Gill, J. Handmer, P.F. Hessburg et al. 2014. *Nature* 515:58-66. Schoennagel, T., J.K. Balch, H. Brenkert-Smith, P.E. Dennison, B.J. Harvey, M.A. Krawchuk, et al. 2017. Adapt to more wildfire in western North American forests as climate changes. *PNAS*: www.pnas.org/cgi/doi/10.1073/pnas.1617464114

¹¹Cohen, J.D. 2000. Preventing disaster: home ignitability in the wildland-urban interface. *Journal of Forestry* 98: 15-21. Cohen, J.D. 2004. Relating Flame Radiation to Home Ignition Using Modeling and Experimental Crown Fires *Canadian Journal of Forest Resources* 34: 1616-1626. Syphard, A.D., et al. 2012. Housing arrangement and location determine the likelihood of housing loss due to wildfire. *PLoS ONE* 7: e33954. Syphard, A.D., et al. 2014. The role of defensible space for residential structure protection during wildfires. *International Journal of Wildland Fire* 23:1165-1175.

¹²Bradley, C.M., C.T. Hanson, and D.A. DellaSala. 2016. Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western United States? *Ecosphere* 7: *Ecosphere* 7:1-13.

¹³Odion, D.C., J.R. Strittholt, H. Jiang, E. Frost, D.A. DellaSala, and M. Moritz. 2004. Fire severity patterns and forest management in the Klamath National Forest, northwest California, USA. *Conservation Biology* 18:927-936.

comport with this larger study findings in that heavily logged forests just east of the Monument burned uncharacteristically severe when fire encountered dense slash piles and flammable plantations (see Figure 4, Figure 5). Extensive road densities also contribute to heightened fire risks¹⁴ and thus roads need to be managed to reduce the potential for unwanted ignitions.



Figure 5. Slash piles like this one, the result of the BLM Cottonwood Timber sale, blow up in forest fires, if not properly treated (photo: D. DellaSala). Outside the Monument piles at least 12 feet high are a common occurrence along with densely stocked and flammable tree plantations.

In sum, a larger Monument with more expansive boundaries allows managers greater flexibility in being able to strategically direct fire suppression and fuel reduction nearest homes (defensible space), while managing wildfires for ecosystem benefits in the Monument back country¹⁵.

MONUMENT EXPANSION CORROBORATING EVIDENCE

Several lines of evidence provide extensive support from the scientific community for Monument expansion, including multiple independent, landscape-scale conservation assessments¹⁶. They can be summarized as follows:

- **Priority Conservation Areas (TNC)** - an ecoregional conservation assessment for the Cascades and Klamath Mountains conducted by The Nature Conservancy (TNC) was used to identify Priority Conservation Areas, including: Soda Mountain/Jenny Creek area (106,934 acres); Walker Creek (18,134 acres); Antelope Creek (6,354 acres); and Little Butte Creek (93,491 acres) as having high to very high conservation priority and high to very high vulnerability.
- **Conservation Opportunity Areas (Oregon Department of Fish & Wildlife Service-**

¹⁴Balch J.K, B.A. Bradley, J.T. Abatzoglou, R.C. Nagy, E.J. Fusco, and A.L. Mahood. 2017. Human-started wildfires expand the fire niche across the United States. *Proc Natl Acad Sci USA* 114(11):2946–2951

¹⁵DellaSala, D.A., R.L. Hutto, C.T. Hanson, M.L. Bond, T. Ingalsbee et al. in press. Accommodating mixed-severity fire to restore and maintain ecosystem integrity with a focus on the Sierra Nevada of California, USA. *Fire Ecology*.

¹⁶Trail, P., and E.J. Frost. 2015. Protecting the Cascade-Siskiyou National Monument from Climate Change: the ecological need for monument expansion. Frost, E., P. Trail. And D. Odion. 2016. The Ecological need to expand the Cascade-Siskiyou National Monument Part II: evidence from landscape-scale conservation assessments. Unpublished reports.

ODFW) – the Soda Mountain/Jenny Creek Conservation Opportunity Area and the Antelope Creek Conservation Opportunity Area identified by ODFW contain key wildlife habitats for species such as beaver, spotted frog, Pacific fisher (connectivity). Also, there are several “strategy habitats” (conservation concern) within the Monument, including: aspen woodlands; flowing water and riparian habitats; grasslands; late-successional mixed conifer forests; natural lakes; oak woodlands (also a priority of NatureServe); and ponderosa pine woodlands.

- **Critical Watersheds (NatureServe)** – the mid-Klamath River watershed is recognized by NatureServe for rare, imperiled, and endemic aquatic species, including Jenny Creek redband trout, Jenny Creek sucker, and speckled dace (objects of scientific interest). This also includes the Jenny Creek watershed recognized in the proclamation as an object of scientific interest due to its importance for these species.
- **California Essential Habitat Connectivity Project** – the California Department of Fish & Wildlife has identified large natural landscape blocks essential to connectivity for certain wildlife, including within the Monument such as Wadsworth Flat (connectivity to the west), California Cascades (south), and Modoc Plateau (east).

The overlap of conservation priorities from these assessments is summarized in Table 2 from Frost et al. (2016¹²)

Table 2. Summary of overlap between priority conservation areas identified by landscape-scale conservation assessments and five proposed additions to the Cascade-Siskiyou National Monument.

Conservation Assessment	Proposed Additions to the Cascade-Siskiyou National Monument				
	Rogue Valley Foothills	Southern Cascades	Grizzly Peak	Johnson/Fall Creeks	Klamath River Ridges
TNC - Cascades	X	X	X	X	
TNC - Klamath Mountains	X			X	X
ODFW - OR Conservation Strategy			X	X	
NatureServe - Critical Watersheds		X		X	X
CDFG - CA Essential Habitat Connectivity	n/a	(X)*	n/a	n/a	X
TOTALS	2	2(3)	2	4	3

* prioritization is inferred from report's map showing importance of interstate connectivity extending north of the existing Monument.

n/a - not applicable because this state-wide assessment across California did not specifically evaluate lands in Oregon.

This collection of large landscape assessment provides supporting evidence regarding:

- (1) Importance of the Monument as a land-bridge or biological crossroads; and
- (2) Significance of the expansion area in helping to make the terrestrial and aquatic features of the Monument whole and therefore more capable of sustaining the objects of interest, particularly in a changing climate and with increasing land-uses.

Additionally, the refugia concept along with landscape intactness has been established by scientific assessments as the gold standard for climate adaptation approaches regionally¹⁷ and globally¹⁸ for maintaining biodiversity in a changing climate¹⁹. Thus, the Monument's expanded boundaries are based on the best available science as demonstrated by independent assessments and broad support for expansion by the scientific community.

In closing, the Cascade-Siskiyou National Monument is the only monument ever designated specifically to protect an area's extraordinary biodiversity, is the only functional elevation land bridge between and within the Cascades and globally outstanding Siskiyou, and, when managed for intactness, has the greatest potential of sustaining the area's unique biodiversity in a changing climate within a sea of development. There is no scientific justification for reducing the boundaries – if anything the Monument could be further expanded to provide even greater assurances in a changing climate, which should be best option of any Cascade-Siskiyou National Monument review.

¹⁷Noss, R.F., A. P. Dobson, R. Baldwin, P. Beier, C.R. Davis, D.A. DellaSala, et al.. 2012. Bolder thinking for conservation. *Conservation Biology* 26:1-4. DellaSala, D.A., R. Baker, D. Heiken, C.A. Frissell, J.R. Karr, S.K. Nelson, B.R. Noon, D. Olson, and J. Strittholt. 2015. Building on two decades of ecosystem management and biodiversity conservation under the Northwest Forest Plan, USA. *Forests* 6:3326-3352.

¹⁸Watson, J.E.M., et al. 2013. *Ibid.*

¹⁹Thomas, C.D., P.K. Gillingham, R.B. Bradbury, D.B. Roy, B.J. Anderson, J.M. Baxter et al. 2012. Protected areas facilitate species' range expansions. *PNAS* 109:14063-14068.

Appendix 1
Interim Report

**Cascade-Siskiyou National Monument Boundary Study
Identification of Priority Areas for Monument Expansion**

April 28, 2011



Rogue Valley foothills, upper Sampson Creek watershed. This diverse ecotonal region is one of three priority areas identified for addition to the Cascade-Siskiyou National Monument. Photo by Pepper Trail.

Steering Committee:*

Evan Frost, M.S., Wildwood Consulting / Dennis Odion, Ph.D., Southern Oregon University / Pepper Trail, Ph.D., US Fish & Wildlife Service / Jack Williams, Ph.D., Trout Unlimited

Contributors:* John Alexander, M.S., Klamath Bird Observatory / Brian Barr, M.S., Geos Institute / Richard Brock, Siskiyou BioSurvey / Dominick DellaSala, Ph.D., Geos Institute / Paul Hosten, Ph.D., Terrestrial Ecologist / Steve Jessup, Ph.D., Southern Oregon University / Frank Lang, Ph.D., Southern Oregon University / Michael Parker, Ph.D., Southern Oregon University / Jeannine Rossa, M.S., Ecolink Consulting/ Daniel Sarr, Ph.D., National Park Service / Darlene Southworth, Ph.D., Southern Oregon University

Reviewers:* Robert Anthony, Ph.D., Oregon State University / Carlos Carroll, Ph.D., Klamath Center for Conservation Research / Scott Hoffman Black, Xerces Society

* Agency and university affiliations are listed for identification purposes only. This study has no formal affiliation with any government agency or public university.

Executive Summary

The Cascade-Siskiyou National Monument (CSNM) in southwestern Oregon was established by presidential proclamation in 2000 to protect an area of outstanding biological diversity located at the convergence of four distinct ecoregions. The monument proclamation identified a number of biological “Objects of Interest” as the focal points for protection, including unique vegetation communities and rare plant and animal species. At the time of establishment, the monument’s boundaries were stated to be “the smallest area compatible with the proper care and management” of these biological resources.

In late 2010, a diverse group of scientists with considerable experience in the CSNM and surrounding regions concluded that a scientific re-evaluation of the monument’s boundaries was needed to safeguard long-term protection of the area’s unique biological values. This conclusion was based on the following concerns:

- Some of the Objects of Interest described in the monument proclamation have significant portions of their habitat located outside of the existing boundaries;
- Most existing boundaries are clearly not ecological (e.g. the OR-CA state line), compromising the ecological integrity of the monument;
- The need for increased resilience in the face of significant, long-term climatic changes that are now underway; and
- Areas adjacent to the CSNM are facing increased development or intensive land-use pressures (e.g. logging, residential expansion, water diversions) that, if unabated, could undermine long-term persistence of the monument’s biological resources.

To conduct an initial review of the adequacy of the existing monument boundaries, a multi-disciplinary scientific working group met on January 29, 2011 in Ashland, Oregon. Participants were divided into four subgroups focused on Vegetation, Terrestrial Wildlife, Aquatic Resources, and Ecosystem Processes. Working independently, all subgroups concluded that monument expansion is required to safeguard persistence of the Objects of Interest that the monument was established to protect. In particular, participating scientists were concerned by:

- inadequate protection of complete ecological gradients, essential for climate change resilience;
- the lack of conformity of current boundaries with watersheds, threatening aquatic diversity and hydrological functions; and
- incomplete linkages with the four ecoregions that create the CSNM’s spectacular biodiversity.

Three broad priority areas for monument expansion were identified. These are designated as “Rogue Valley Foothills to Plateau,” “Johnson Prairie-Fall Creek,” and “Klamath River Ridges.” Expansion of the monument in these areas would greatly enhance resilience of the biological Objects of Interest to climate change. There was also broad agreement that additional steps should be taken to maintain and, where necessary, restore functional connectivity of the monument with public lands in adjacent landscapes. Maintaining these landscape-scale connections is critical to the monument’s long-term ecological integrity and will assist movements of the native biota in response to climate change.

Introduction

The Cascade-Siskiyou National Monument (CSNM) in southwestern Oregon was established by presidential proclamation in 2000 and is part of the BLM's National Landscape Conservation System (NLCS 2010). Unique among the nation's existing national monuments, the CSNM was created, in the words of its proclamation, to preserve an area of "remarkable biological diversity" (see Appendix A, CSNM Proclamation). The monument is located at the convergence of four distinct ecoregions: Great Basin, Southern Cascades, Oregon and California Interior Valleys, and Siskiyou Mountains. Along with varied topography, climate, and geology, this confluence creates one of North America's biologically richest landscapes, "an ecological wonder" that is "home to a spectacular variety of rare and beautiful species of plants and animals, whose survival in this region depends upon its continued ecological integrity" (Appendix A).

The monument proclamation specifically identified a number of biological "Objects of Interest" as the focal points for protection (Frost and Odion 2002; Appendix A). These include outstanding landscape features such as the connection from the Cascades to Siskiyou, as well as "a rich mosaic" of vegetation communities and "an exceptional range" of wildlife populations of regional significance (Appendix A). Also identified as Objects of Interest were butterfly diversity and abundance, and rare taxa such as the Jenny Creek redband trout and Greene's mariposa lily.

In keeping with Section 2 of the Antiquities Act, the proclamation stated that the CSNM's 52,947 acres was "the smallest area compatible with the proper care and management" of the numerous Objects of Interest. However, by late 2010, a diverse group of biological scientists with considerable experience in the region suggested that the "smallest area compatible" decision warranted a more rigorous scientific evaluation. This need for scientific re-evaluation of monument boundaries was based on the following concerns:

- Some of the Objects of Interest described in the monument proclamation have significant portions of their habitat located outside of the existing boundaries;
- At least some existing boundaries are not ecological (e.g. the OR-CA state line), compromising the biological integrity of the monument;
- The need for increased resilience in adapting to long-term climatic changes that are now underway; and
- Areas adjacent to the monument are facing increased development or intensive land use pressures (e.g. logging, residential expansion, water diversions) that, if unabated, could undermine long-term persistence of the monument's biological resources.

Methods

To conduct an initial evaluation of the existing boundaries of the CSNM, a multidisciplinary scientific working group met on January 29, 2011 in Ashland, Oregon. The members of this group, listed on page 1, have broad knowledge of the greater Cascade-Siskiyou landscape, as well as extensive research experience in the monument itself. The basic questions addressed by the group were twofold:

- Are the current boundaries and specific lands included within the monument sufficient to allow for long-term protection of all Objects of Interest for which the monument was created?
- If not, what modifications might be required in order to reduce risk of diminishment or loss of Objects of Interest?

A structured workshop process was used to conduct discussions, collect information, and elicit knowledge as well as professional judgments from participants. Based on primary areas of expertise, attendees were assigned to one of four technical subgroups: Vegetation, Terrestrial Wildlife, Aquatic Resources, and Ecosystem Processes. The subgroups were provided with a variety of maps, scientific reports, BLM documents and other supporting materials pertaining to the monument and surrounding landscape, as well as copies of the monument proclamation.

Five specific questions were addressed by each of the subgroups:

- 1) Are the monument's Objects of Interest adequately protected by the existing boundaries? That is, are the existing boundaries likely to sustain ecological integrity and the various Objects of Interest over time?
- 2) Are there key habitats, species occurrences, or important Objects of Interest in proximity to but outside the existing CSNM boundary?
- 3) In your professional judgment, what boundary adjustments would make Objects of Interest more resilient to climate change?
- 4) Are there other significant threats to Objects of Interest that were not considered at the time of monument designation?
- 5) If areas currently outside the monument are needed to increase resilience and/or protection of Objects of Interest, what would be the highest priorities for inclusion?

Results

As recognized in the proclamation language for the Cascade-Siskiyou National Monument (Appendix A), much of the area's outstanding biodiversity and ecological importance are attributable to the convergence of four distinct ecoregions. Working group participants agreed that the existing monument boundary captures the core of this biological crossroads. However, all four subgroups independently concluded that existing CSNM boundaries are unlikely to safeguard the monument's suite of Objects of Interest from future decline or loss. A number of different reasons were given as to why current monument boundaries are insufficient:

- Climate change will likely alter plant and animal species ranges, in some cases pushing Objects of Interest into habitats outside of the area currently protected by monument designation (Carroll et al. 2010, DellaSala et al. 2010, Stralberg et al. 2009);

- Many important special status plant and animal populations, as well as high quality examples of the area's unique plant community mosaic, remain outside of existing monument boundaries;
- The current monument boundary does not align with watersheds, precluding protection of water quality and the natural hydrological, biological and disturbance processes of the area's streams;
- Key areas that functionally link the monument to adjacent landscapes, including the Siskiyou Crest and High Cascades, are currently not being managed for conservation. This places at risk the ecological flows necessary to sustain biological connectivity; and
- Existing monument boundaries do not protect the full range of physical diversity (e.g. elevation, topography, aspect) and environmental gradients (e.g. climate) present in the greater Cascade-Siskiyou landscape. Such gradients are essential for creating and maintaining the area's biodiversity, and for providing resilience in the face of climate change.

While uncertainties inevitably remain about the magnitude and impact of climatic change in our region, there is clear evidence that significant changes in environmental conditions are already underway (Barr et al. 2010, Doppelt et al. 2008, Luce and Holden 2009). These changes threaten the effectiveness of isolated protected areas for conserving biodiversity (Halpin 1997), including the CSNM. One of the most effective ways to mitigate the effects of climate change is to focus on maintaining and, if possible, increasing resilience of ecosystems (Carroll et al. 2010, DellaSala et al. 2010, NABCI 2010). In accordance with this overarching goal, the working groups identified the following means to enhance resilience of the biological resources in the monument:

- Reduce anthropogenic stressors in and around the monument, including livestock grazing, commercial logging, road construction, off-highway vehicles and other ground-disturbing activities. These create habitat fragmentation, disturb wildlife populations, threaten water quality, adversely affect native vegetation, and encourage the spread of non-native weeds;
- Undertake aggressive science-based management of non-native weeds, particularly those invasive species that are not yet firmly established in the Cascade-Siskiyou landscape;
- Maintain and enhance functional ecological connectivity across environmental gradients in the Cascade-Siskiyou landscape. These gradients include elevation, aspect, longitude (east to west), soil moisture and riparian corridors. Particular focus should be on increasing protections for the gradient from open grasslands at lower elevations to montane conifer forest, because field observations indicate this ecotone makes a disproportionate contribution to the area's biodiversity;

- Provide increased protection and conservation-based management of areas that strategically connect the monument core to adjacent landscapes (e.g. Siskiyou Mountains to the west, Cascadian forests to the north, Klamath River canyon to the south and east);
- Maintain and, where possible, restore the natural hydrologic regime in streams and creeks that are essential for sustaining the aquatic biota and providing a “sufficient quantity of water” as called for by the monument proclamation (Appendix A); and
- Identify those elements of the monument’s biodiversity that are most at risk due to climate change, and prioritize protection of additional areas to reduce their vulnerability. For example, survey and protect areas that may act as important microrefugia for native species dependent on cool and moist conditions (DellaSala et al. 2010, Dobrowski 2010).
- Design and implement a biological monitoring program for the CSNM that effectively tracks the status of a wide array of monument Objects of Interest and the ecosystem processes upon which they depend. This monitoring effort should be integrated with ongoing regional monitoring efforts (e.g. Alexander et al. 2004, Sarr et al. 2007) and make use of compatible monitoring protocols.

Recommended Monument Additions

Strong consensus emerged at the workshop about specific focal areas in the greater Cascade-Siskiyou landscape that warrant priority consideration as monument additions. These areas, selected independently by each of the four subgroups for their Objects of Interest (Table 1), are shown in Figure 1 and briefly described here:

Rogue Valley Foothills to Plateau. This topographically diverse area extends from lower elevation foothills bordering the Bear Creek Valley upslope to mountain promontories along the Western Cascades Plateau, including Grizzly Peak (5,920 ft.) and Table Mountain (6,125 ft). Also included are several important streams that descend off the plateau, such as Sampson, Cattle, Cove, Frog and upper Keene Creeks (the latter is the primary tributary of Jenny Creek). Vegetation in this area is diverse, including the full range of plant communities celebrated by the monument proclamation: “a rich mosaic of grass and shrublands, Oregon white and California black oak woodlands, juniper scablands, mixed conifer and white fir forests, and wet meadows.” Particularly under-represented within the current monument boundaries are grassland and oak savannah habitats that are home to Western Meadowlark and Western Bluebird, both specifically mentioned in the proclamation.

Johnson Prairie – Fall Creek. This area is most representative of the Southern Cascades ecoregion and is characterized by moderately sloping mountains and broad valleys with extensive wet meadows. With an elevational range of 3,500 to 6,000 feet, vegetation is predominantly mixed conifer forests of ponderosa pine, sugar pine, incense-cedar, white fir and Douglas-fir. These mixed conifer forests provide habitat for such Objects of Interest as the Flammulated Owl and Pygmy Nuthatch. Patches of late-successional and old-growth forest remain on public lands and provide important habitat connectivity with the High Cascades for a diversity of wildlife, including Northern Spotted Owl, Northern Goshawk and American marten. Numerous low to moderate gradient streams are associated with an extensive complex of

montane meadows, wetlands and springs. These provide vital and insufficiently-protected habitat for many Objects of Interest identified in the monument proclamation, including butterflies, amphibians, freshwater snails, and native fish species. The Jenny Creek sucker utilizes the spring flows in Johnson Creek for spawning. Redband trout also occur in Johnson Creek.

Klamath River Ridges. This area is characterized by moderately steep, dissected terrain and a dry, continental climate. Elevation varies from 2,400 feet near the Klamath River in Siskiyou County, CA to 3,700 feet on higher ridges along the Oregon-California state line. The lower reaches of Hutton, Slide, Scotch, Camp, Jenny and Fall Creeks flow south toward the Klamath River (mostly into non-flowing reservoir portions) from their headwaters in or near the CSNM. Vegetation is diverse and varies dramatically with slope, aspect, and elevation. Higher elevations and north-facing slopes generally support ponderosa pine and white oak-juniper forests, while lower elevations and south-facing slopes are covered in a mosaic of oak-juniper woodland, chaparral and grassland communities. These communities, some of which are included in California's Horseshoe Ranch Wildlife Management Area, are vital winter range for deer populations that gather here from a wide swath of the southern Cascades and Klamath Basin. Several unique vegetation types identified as monument Objects of Interest (e.g. rosaceous chaparral, juniper scablands) occur here.

Landscape Connectivity.

Maintaining and, where necessary, restoring connectivity at the watershed scale was identified as an important goal by workshop participants. Although isolated fragments of high-quality habitat may have conservation value, protecting whole watersheds is widely recognized as the most effective strategy to ensure the long-term persistence of native species and aquatic ecosystem integrity (Doppelt et al. 1993, Henjum et al. 1994, Moyle and Sato 1991). Existing boundaries of the CSNM do not align with watershed breaks (e.g. OR-CA state line), which dramatically increases threats to aquatic Objects of Interest arising from adjacent land uses.

Several working groups also highlighted the importance of maintaining functional connectivity of upland habitats in the existing monument with public lands in adjacent landscapes. Specifically, natural areas located immediately to the west of the monument connect with the Siskiyou Mountains, those to the north with the High Cascades, and those to the east and south with the Klamath River Canyon (see Figure 1). Maintaining these landscape-scale connections is critical to the monument's long-term ecological integrity and will better allow for movements of the native biota in response to climate change. A stronger focus on conservation-based management of adjoining federal lands would greatly help to sustain landscape connectivity into the future.

Next Steps

This interim report highlights the importance of expanding the Cascade-Siskiyou National Monument in order to preserve the unique biodiversity and connectivity functions that the monument was established to protect. Going forward, the science working group will consider further analyses and work products, which may include more detailed review and documentation

of published, unpublished, and “gray” literature; proposals for more extensive spatial analysis and field surveys in priority expansion areas identified to date; and a peer-reviewed publication.

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Upper falls, lower Jenny Creek, located in the Klamath River Ridges priority expansion area for the Cascade-Siskiyou National Monument. Photo by Dennis Odion.

Figure 1. Map of Cascade-Siskiyou National Monument and general locations of three focal areas for potential monument expansion (arcs) and landscape connectivity zones (arrows) identified by science working group.

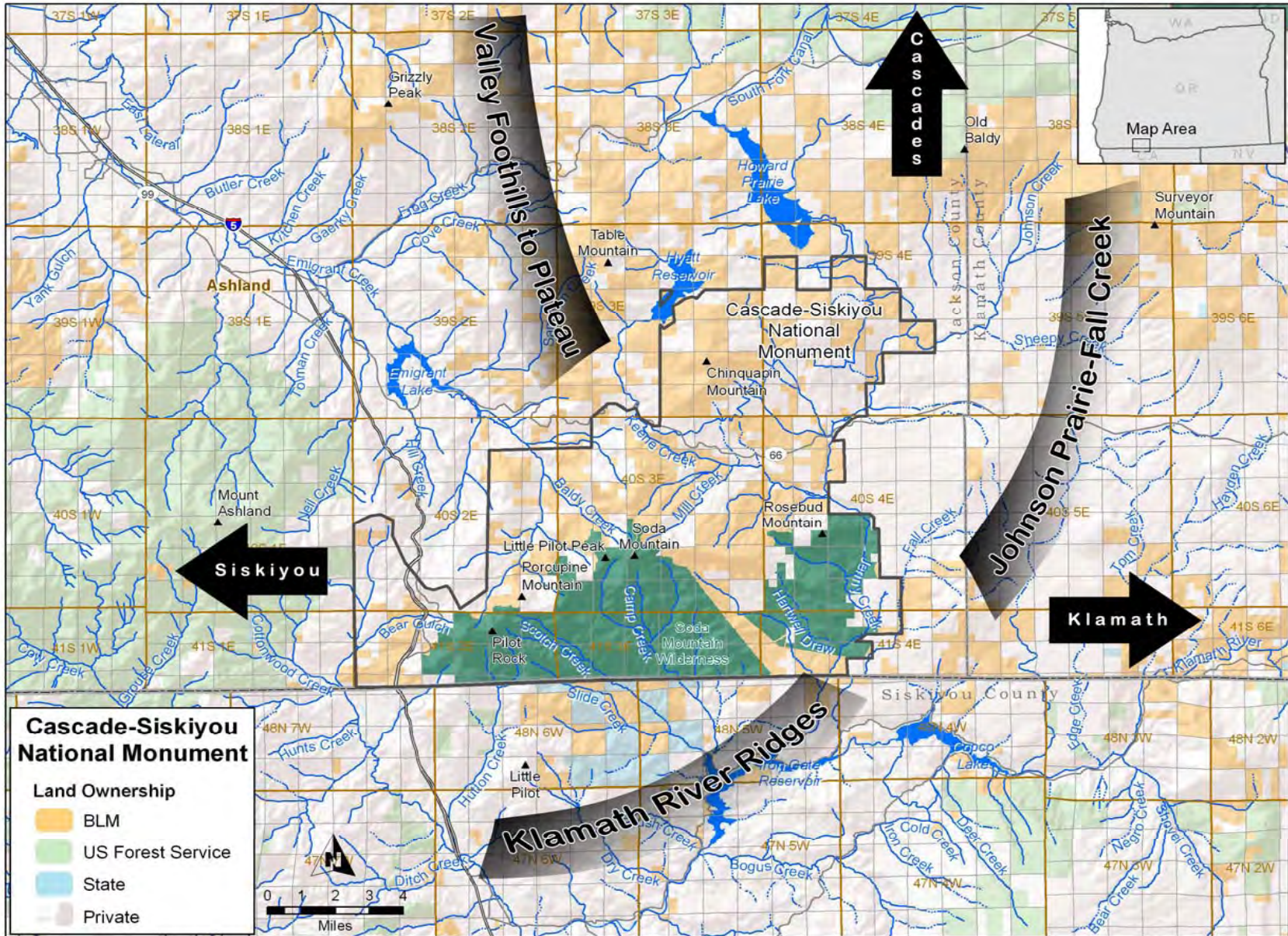


Table 1. Summary of significant conservation values associated with monument Objects of Interest for three focal areas identified by science working group as high priorities for monument expansion.

Focal Area	Aquatics and Fisheries	Terrestrial Wildlife	Vegetation	Ecosystem Processes
<p>Rogue Valley Foothills to Plateau</p>	<p>Increased protection of upper Keene Creek would help restore watershed integrity and natural flows in Jenny Creek basin.</p> <p>Several streams provide important habitat for rare and endemic springsnail species.</p>	<p>Late-successional forests along plateau provide important habitat for old growth forest birds, including Northern Spotted Owl and Northern Goshawk.</p> <p>Oak woodland mosaic supports a high diversity of butterflies, birds and small mammals.</p> <p>Supports populations of the rare Mardon skipper butterfly.</p>	<p>Intact, high quality examples of oak woodland / grassland / conifer mosaic at Table Mountain, Grizzly Peak area and throughout Sampson / Cattle Creek watersheds.</p> <p>Numerous occurrences of special status plant populations.</p>	<p>This diverse ecotone confers resilience and allows for elevational movements of plant and animal species in response to climate change.</p>
<p>Johnson Prairie and Fall Creek</p>	<p>Increased protection of Johnson Prairie would help restore natural flows and watershed integrity in the Jenny Creek basin.</p> <p>Johnson Creek provides important habitat for Jenny Creek sucker and redband trout.</p> <p>Fall Creek supports multiple populations of rare springsnail species, and is an important contributor of cold water to the Klamath River.</p>	<p>Extensive meadow, grassland and wetland habitats are a hotspot of butterfly, bird and mammal diversity.</p> <p>Acts as north-south corridor for wide-ranging mammals including migrating deer.</p> <p>Area supports populations of rare spotted frog, American marten and Great Gray Owl.</p> <p>Fall Creek supports rare foothill yellow-legged frogs.</p>	<p>Forests here may act as local refugia for cool / moisture-loving elements of the monument's native flora.</p>	<p>Johnson Creek improves hydrologic functioning in Jenny Creek watershed.</p> <p>Provides connectivity of late-successional forests to the High Cascades, facilitating plant and animal migrations.</p>
<p>Klamath River Ridges</p>	<p>Natural falls along lower Jenny Creek help maintain genetic purity of native redband trout and Jenny Creek sucker.</p>	<p>Critical deer winter range.</p> <p>Includes important habitats for a diversity of butterflies, birds and small mammals.</p> <p>Riparian corridors along lower stream reaches are key migration and dispersal corridors for Neotropical migrant birds as well as Great Basin-associated reptiles and small mammals.</p>	<p>Enhances the monument's largest elevational gradient up to 6,100' Soda Mountain.</p> <p>Contains low-elevation native grasslands and other rare community types identified as monument Objects of Interest.</p> <p>Acts as source point for the Great Basin influence in the monument's flora.</p> <p>Riparian corridors provide north-south connectivity for cool / mesic flora.</p>	<p>Increases capacity for allowing more natural fire regimes, hydrologic processes and wildlife migration.</p> <p>Captures entire watersheds as management units.</p> <p>Confers resilience and allows for elevational movements of plant and animal species in response to climate change.</p>

Appendix A: U.S. Dept of Interior 2000. Presidential proclamation 7318 establishing the Cascade-Siskiyou National Monument, Oregon. June 9, 2000. Washington, D.C.

ESTABLISHMENT OF THE CASCADE-SISKIYOU NATIONAL MONUMENT

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA
A PROCLAMATION

With towering fir forests, sunlit oak groves, wildflower-strewn meadows, and steep canyons, the Cascade-Siskiyou National Monument is an ecological wonder, with biological diversity unmatched in the Cascade Range. This rich enclave of natural resources is a biological crossroads – the interface of the Cascade, Klamath, and Siskiyou ecoregions, in an area of unique geology, biology, climate, and topography.

The monument is home to a spectacular variety of rare and beautiful species of plants and animals, whose survival in this region depends upon its continued ecological integrity. Plant communities present a rich mosaic of grass and shrublands, Garry and California black oak woodlands, juniper scablands, mixed conifer and white fir forests, and wet meadows. Stream bottoms support broad-leaf deciduous riparian trees and shrubs. Special plant communities include rosaceous chaparral and oak-juniper woodlands. The monument also contains many rare and endemic plants, such as Greene's Mariposa lily, Gentner's fritillary, and Bellinger's meadowfoam.

The monument supports an exceptional range of fauna, including one of the highest diversities of butterfly species in the United States. The Jenny Creek portion of the monument is a significant center of freshwater snail diversity, and is home to three endemic fish species, including a long-isolated stock of redband trout. The monument contains important populations of small mammals, reptile and amphibian species, and ungulates, including important winter habitat for deer. It also contains old growth habitat crucial to the threatened Northern spotted owl and numerous other bird species such as the western bluebird, the western meadowlark, the pileated woodpecker, the flammulated owl and the pygmy nuthatch.

The monument's geology contributes substantially to its spectacular biological diversity. The majority of the monument is within the Cascade Mountain Range. The western edge of the monument lies within the older Klamath Mountain geologic province. The dynamic plate tectonics of the area, and the mixing of igneous, metamorphic, and sedimentary geological formations, have resulted in diverse lithologies and soils. Along with periods of geological isolation and a range of environmental conditions, the complex geologic history of the area has been instrumental in producing the diverse vegetative and biological richness seen today.

One of the most striking features of the Western Cascades in this area is Pilot Rock, located near the southern boundary of the monument. The rock is a volcanic plug, a remnant of a feeder vent left after a volcano eroded away, leaving an out-standing example of the inside of a volcano. Pilot Rock has sheer, vertical basalt faces up to 400 feet above the talus slope at its base, with classic columnar jointing created by the cooling of its andesite composition.

The Siskiyou Pass in the southwest corner of the monument contains portions of the Oregon/California Trail, the region's main north/south travel route first established by Native

Americans in prehistoric times, and used by Peter Skene Ogden in his 1827 exploration for the Hudson's Bay Company.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

WHEREAS it appears that it would be in the public interest to reserve such lands as a national monument to be known as the Cascade-Siskiyou National Monument:

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), do proclaim that there are hereby set apart and reserved as the Cascade-Siskiyou National Monument for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Cascade-Siskiyou National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 52,000 acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument.

There is hereby reserved, as of the date of this proclamation and subject to valid existing rights, a quantity of water sufficient to fulfill the purposes for which this monument is established. Nothing in this reservation shall be construed as a relinquishment or reduction of any water use or rights reserved or appropriated by the United States on or before the date of this proclamation.

The commercial harvest of timber or other vegetative material is prohibited, except when part of an authorized science-based ecological restoration project aimed at meeting protection and old growth enhancement objectives. Any such project must be consistent with the purposes of this proclamation. No portion of the monument shall be considered to be suited for timber production, and no part of the monument shall be used in a calculation or provision of a sustained yield of timber. Removal of trees from within the monument area may take place only if clearly needed for ecological restoration and maintenance or public safety.

For the purpose of protecting the objects identified above, the Secretary of the Interior shall prohibit all motorized and mechanized vehicle use off road and shall close the Schoheim Road, except for emergency or authorized administrative purposes.

Lands and interests in lands within the monument not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

The Secretary of the Interior shall manage the monument through the Bureau of Land Management, pursuant to applicable legal authorities (including, where applicable, the Act of August 28, 1937, as amended (43 U.S.C. 1181a-1181j)), to implement the purposes of this proclamation.

The Secretary of the Interior shall prepare, within 3 years of this date, a management plan for this monument, and shall promulgate such regulations for its management as he deems appropriate. The management plan shall include appropriate transportation planning that addresses the actions, including road closures or travel restrictions, necessary to protect the objects identified in this proclamation.

The Secretary of the Interior shall study the impacts of livestock grazing on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics. Existing authorized permits or leases may continue with appropriate terms and conditions under existing laws and regulations. Should grazing be found incompatible with protecting the objects of biological interest, the Secretary shall retire the grazing allotments pursuant to the processes of applicable law. Should grazing permits or leases be relinquished by existing holders, the Secretary shall not reallocate the forage available under such permits or for livestock grazing purposes unless the Secretary specifically finds, pending the outcome of the study, that such reallocation will advance the purposes of the proclamation.

The establishment of this monument is subject to valid existing rights.

Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of Oregon with respect to fish and wildlife management.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this ninth day of June, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fourth.

WILLIAM J. CLINTON

Appendix 2

*Brian Barr – Geos Institute · Michael Parker – Southern Oregon University ·
Jeannine Rossa – Ecolink Consulting · Jack Williams – Trout Unlimited*

November 22, 2013

Honorable Senator Ron Wyden
221 Dirksen Senate Office Building
Washington, D.C. 20510

Submitted via e-mail

Subject: Biological need for expanding the Cascade-Siskiyou National Monument
(Aquatic species emphasis)

Dear Senator Wyden:

The Cascade-Siskiyou National Monument (Monument) in southwestern Oregon was established in 2000 to recognize and protect high diversity and unique assemblages of plant and animal species. At the time of designation, Monument boundaries were constrained for reasons that were not science-based, fragmenting watersheds whose integrity depends on continuity of management. Our understanding of the distribution of some of the aquatic animals that are listed in the Monument Proclamation as Objects of Interest has increased since Monument designation, showing that they depend on areas outside of the current Monument boundaries where activities that threaten their health are more likely to occur. In addition, climate change compromises the existing Monument's capacity to protect the Objects of Interest as some of these species will depend on areas upstream of the existing boundaries in Oregon. (There are downstream issues in California.)

For the above reasons, it has become increasingly clear that the existing Monument boundaries are inadequate to protect the Objects of Interest and that expansion is warranted. For aquatic species of interest, the Jenny Creek and Fall Creek watersheds are of particular importance. Expansion of current boundaries would better ensure the environmental legacy for this biologically rich region of Oregon.

The endemic Jenny Creek sucker, Jenny Creek redband trout, and numerous unique, unnamed species of freshwater springsnails are specifically mentioned in the Monument's Proclamation as Objects of Interest. ***All of these species are indicators of high quality water.*** The many springs and spring-fed stream reaches just outside the boundaries of the Monument are or will become increasingly important areas for maintaining the populations of the aquatic Objects of Interest. However, due to their location outside of the Monument, these areas are more likely to be subjected to development activities that can substantially degrade populations of these species.

Recognizing this problem, scientists with experience in the ecology of the Monument and familiarity with the biology of the Objects of Interest met in January 2011 to evaluate the current boundaries and their effectiveness at protecting the Objects of Interest. A report developed by leading scientists in the region summarizes the shortcomings of the existing boundaries that limit

the Monument's ability to protect to these species.¹ Although the focus of this letter is on aquatic animals and the streams and springs that support them, the 2011 report provides a broad assessment of the current boundaries for aquatic and terrestrial species and proffers recommendations for expansion that we summarize below.

- **Climate change threatens Monument objects and downstream users** – Based on localized climate change projections, we can expect: (1) water temperatures to rise in all seasons; (2) a shorter, more intense precipitation season with less snow; and (3) more and larger winter floods and changes in the timing of peak flows.^{2,3} An expanded Monument better ensures that localized pockets of cool water, areas protected from turbulent flood flows, and other climate refuges will be available and protected.
- **Imperiled Jenny Creek Redband Trout and Jenny Creek Sucker require intact watersheds** – Both of these fish have small distributions, confined to the local Jenny Creek Watershed. Yet, the current Monument boundary does not encompass the watershed. The upper reaches of both Keene and Jenny Creeks (to the north & northwest) and Johnson Creek (to the northeast & east) are priority stream reaches necessary to better protect these Objects of Interest. As climate patterns shift, we expect populations of both of these fish to rely more heavily on stream reaches in these areas to take advantage of cooler temperatures and stable sources of flow. The importance of the very uppermost reaches of Johnson Creek is magnified as much of the highest elevation habitat of both Keene and Jenny Creek is completely blocked by dams which prevent movement into some of the headwater stream reaches in those creek systems. Water management at these dams compromises downstream water quantity and water quality, primarily temperature, during most seasons.
- **Protect springs and headwaters essential to high water quality** - Springsnail diversity in this area, with 19 species inhabiting springs and spring-fed creeks in and around the Monument, is globally unique. Many of these species are new discoveries and are found *only* in and near the Monument (some found in only a few springs). **Springsnails are found solely in areas with the highest water quality and persistent flow – a true indicator species.** Because of these factors, they are particularly susceptible to disturbances that diminish spring flow or pollute water with suspended sediment, nutrients, or other contaminants. If these sorts of impacts affect enough of the springs in the Monument area, other Objects of Interest (Jenny Creek redband trout and Jenny Creek sucker) will be negatively affected. The limited mobility of springsnails and their need for cold, clear water do not allow for recolonization of habitats once a population has been eliminated. Most important to protecting these Objects of Interest is to encompass as many of the spring and spring-fed habitats within the Monument boundaries as possible so that they can be insulated from management activities that threaten habitat integrity and persistent flow. Priority habitats are found in the Keene, Jenny, Johnson, and Fall Creek drainages.

¹ Frost, E., D. Odion, P. Trail, and J. Williams. 2011. Cascade-Siskiyou National Monument Boundary Study: Identification of Priority Areas for Monument Expansion.

² Oregon Climate Change Research Institute. 2010. Oregon Climate Assessment Report.

³ Barr, B.R., M.E. Koopman, C.D. Williams, S.J. Vynne, G.R. Hamilton, and R.E. Doppelt. 2010. Preparing for climate change in the Klamath Basin.

The Cascade-Siskiyou National Monument was established to protect the incredible diversity of plants and animals that inhabit this junction of four distinct ecoregions. New scientific information demonstrates the need to expand the boundaries and is consistent with language in the Monument proclamation. Emerging threats likely not well enough understood at the time the Monument was established -- particularly rapidly changing climate -- and the ways that these threats will compromise the existing Monument's ability to protect the Objects of Interest have increased. This continuing increase threatens the Monument's capability to protect these species. We thank you for your support for the Monument's original designation. We ask that you help the Bureau of Land Management better fulfill the goals for which the Monument was originally established by expanding the Monument's boundaries accordingly.

Sincerely,

Brian Barr, M.S.
Aquatic Project Manager
Geos Institute

Michael Parker, Ph.D.
Professor and Chair of Biology Department
Southern Oregon University

Jeannine Rossa, M.S.
Owner and Aquatic Ecologist
Ecolink Consulting

Jack Williams, Ph.D.
Chief Scientist
Trout Unlimited

Appendix 3



Pilot Rock in the Cascade-Siskiyou National Monument. Credit: Ashland Daily Photo

RE: Recommended Expansion of the Cascade-Siskiyou National Monument

To Whom It May Concern,

May 28, 2015

As scientists with extensive professional experience related to terrestrial and aquatic ecosystems in the Pacific Northwest, we write to express our full support for expansion of the Cascade-Siskiyou National Monument (hereafter "Monument"). The existing Monument is located in southwest Oregon on the California border.

Established by presidential proclamation in June 2000, the Monument is unique among the BLM's National Conservation Lands in that it was established specifically to preserve an area of "remarkable biological diversity." Sitting at the crossroads of four distinct ecoregions and encompassing a wide range of topography, climate and geology, the greater Cascade-Siskiyou landscape is widely recognized as one of the most biologically diverse places in North America. The Monument proclamation describes it as an "ecological wonder" that is "home to a spectacular variety of rare and beautiful species of plants and animals, whose survival in this region depends upon its continued ecological integrity".¹

While we applaud the initial creation of the Monument as a means to conserve this area's treasure trove of biological resources, scenic beauty and recreational values, we are concerned that existing Monument boundaries are insufficient to assure persistence of the many biological "Objects of Interest" that the Monument was established to protect. As summarized in a 2011 scientific report on this topic², there are several important reasons why existing boundaries are unlikely to sustain the ecological integrity of this area:

¹ US Dept. of Interior. 2000. Presidential proclamation 7318 establishing the Cascade-Siskiyou National Monument, Oregon. June 9, 2000. Washington, D.C.

² Frost, E., D. Odion, P. Trail, J. Williams, J. Alexander, B. Barr, R. Brock, D. DellaSala, P. Hosten, S. Jessup, F. Lang, M. Parker, J. Rossa, D. Sarr and D. Southworth. 2011. Cascade-Siskiyou National Monument Boundary Study: Identification of Priority Areas for Monument Expansion. 14 pp.

- Many special-status plant and animal populations referenced in the Monument's proclamation, as well as high quality examples of the area's unique plant communities, remain outside existing boundaries, where they are vulnerable to incompatible management;
- Some existing boundaries have no ecological basis (e.g., the Oregon-California state line, incomplete watersheds), which over time, may compromise the integrity of the Monument;
- Climate change in the region is altering the ranges of plants and animals that are the focal points for conservation, in some cases pushing them outside of currently protected areas³;
- The human population of southwest Oregon is growing rapidly. As a result, more areas immediately adjacent to the Monument are facing increased development or intensive land use pressures (e.g., logging, residential expansion, water diversions) that are likely to undermine long-term persistence of the Monument's biological resources.

Without additional conservation investment, available scientific evidence suggests that some of the most valuable biological resources both within and immediately adjacent to the Monument are at high risk of irreversible degradation and loss.

Given these significant and overarching concerns, it is our professional opinion that expansion of the Monument is necessary for the area's extraordinary values to be sustained over the long term. Specifically, we endorse including five carefully selected areas of adjoining BLM and other public lands within the Monument, as recommended by the scientists' 2011 boundary report and detailed in an updated summary of these areas.⁴ Proposed additions described in this report:

- were identified using an interdisciplinary, science-based process;
- contain many biological "Objects of Interest" that were highlighted in the Monument proclamation;
- play a vital role in maintaining ecological integrity of the landscape the Monument was established to protect, and;
- improve habitat connectivity with nearby federal lands, a factor that is critical for sustaining populations of wide-ranging species.

Perhaps most importantly, expansion of the Monument to include these proposed additions will significantly increase the ability of native plants and animals to adapt to a changing climate, an issue that was not considered when initial Monument boundaries were created, but that will become critical to biodiversity conservation in the coming decades.

³ Olson, D.M., D.A. DellaSala, R.F. Noss, J. R. Strittholt, J. Kaas, M. E. Koopman, and T.F. Allnutt. 2012. Climate change refugia for biodiversity in the Klamath-Siskiyou ecoregion. *Natural Areas Journal* 32:65-74.

⁴ Frost, E.J. and P. Trail. 2015. A Summary of Ecological Values in Proposed Additions to the Cascade-Siskiyou National Monument. Unpublished report available from Soda Mountain Wilderness Council, Ashland, OR.

As professional scientists who value and understand the many benefits of biological diversity and ecological health, we appreciate the opportunity to offer our recommendations for the future of the Cascade-Siskiyou National Monument and urge decision-makers to expand the boundaries of the Monument so that it can successfully achieve the proclamation's stated goal of protecting the area's outstanding biological resources for present and future generations.

Sincerely,

Scientists that Contributed to the 2011 Cascade-Siskiyou Monument Boundary Study *

*affiliations for identification purposes only

Pepper Trail, Ph.D., Ornithologist
Ashland, OR

Dennis Odion, Ph.D., Vegetation Ecologist
Southern Oregon University, Ashland, OR

Jack Williams, Ph.D., Chief Scientist
Trout Unlimited, Medford, OR

Evan Frost, M.Sc., Conservation Biologist
Wildwood Consulting, Ashland, OR

Steve Jessup, Ph.D., Botanist
Southern Oregon University, Ashland, OR

Darlene Southworth, Ph.D., Professor (Emeritus), Department of Biology
Southern Oregon University, Ashland, OR

Frank Lang, Ph.D., Professor (Emeritus), Department of Biology
Southern Oregon University, Ashland, OR

Richard Brock, M.Sc., Senior Botanist
Siskiyou BioSurvey LLC, Ashland, OR

Paul Hosten, Ph.D., Terrestrial Ecologist
Kualapu'u, HI

Dominick DellaSala, Ph.D., Chief Scientist
Geos Institute, Ashland, OR

Michael Parker, Ph.D., Aquatic Ecologist, Department of Biology
Southern Oregon University, Ashland, OR

Daniel Sarr, Ph.D., Ecologist
Flagstaff, AZ

Scott Hoffman Black, M.Sc., Ecologist and Executive Director
Xerces Society, Portland, OR

Jeannine Rossa, M.Sc., Aquatic Ecologist
Ecolink Consulting, Kualapu'u, HI

Brian Barr, M.Sc., Fisheries Biologist
Gold Hill, OR

Additional Scientists in Support of Cascade-Siskiyou Monument Expansion*

*affiliations for identification purposes only

David A. Perry, Ph.D., Professor (Emeritus)
Department of Forest Science
Oregon State University, Corvallis, OR

Gary Tabor, Ph.D., Conservation Scientist
Center for Large Landscape Conservation
Bozeman, MT

Arthur J. Boucot, Ph.D.
Distinguished Professor of Geology
Oregon State University, Corvallis, OR

Jack W. Sites, Jr., Ph.D.
Professor of Biology/Curator of Herpetology
Brigham Young University, Provo, Utah

Calvin Maginel, M.Sc. (candidate)
Department of Natural Resources
University of Missouri, Columbia, MO

Thomas Rooney, Ph.D., Professor
Department of Biological Sciences
Wright State University, Dayton, OH

Gary Roemer, Ph.D., Professor
Dept. of Fish, Wildlife &
Conservation Ecology
NM State University, Las Cruces, NM

William D. Anderson, Jr., Ph.D.
Professor (Emeritus), Marine Biology
College of Charleston, Charleston, SC

Ke Chung Kim, Ph. D., Professor (Emeritus)
and Former Director, Center for Biodiversity
Research, Pennsylvania State University
University Park, PA

Jay Lininger, M.Sc., Senior Scientist
Center for Biological Diversity
Ashland, OR

Vicky Meretsky, Ph.D.
Professor of Conservation Biology
Indiana University, Bloomington, IN

Michael J. Vandeman, Ph.D.
Conservation Biologist
San Francisco Bay Area, CA

George Wuerthner, M.Sc., Senior Scientist
Foundation for Deep Ecology
San Francisco, CA

Mitchell M. Johns, Ph.D.
Professor of Soil Science
California State University-Chico
Chico, CA

Melissa Savage, Ph.D., Associate Professor
(Emeritus), Department of Geography
University of California, Los Angeles, CA

James H. Marden, Ph.D.
Professor, Department of Biology
Penn State University, University Park, PA

Sandra Mardonovich, M.Sc.(candidate)
Department of Botany
Miami University, Oxford, OH

D. Scott Samuels Ph.D.
Professor of Biological Sciences
University of Montana, Missoula, MT

Peter Bahls M.Sc., Fisheries Biologist
Northwest Watershed Institute
Port Townsend, WA

Peter B. Moyle, Ph.D., Distinguished
Professor, Dept. of Wildlife, Fish, &
Conservation Biology
University of California, Davis, CA

Wayne D. Spencer, Ph.D., Director of
Conservation Assessment, Conservation
Biology Institute, San Diego, CA

Paul Schaeffer, Ph.D., Associate Professor
Department of Biology
Miami University, Oxford, OH

F. Stuart Chapin III, Ph.D., Professor
(Emeritus), Department of Biology
University of Alaska, Fairbanks, AK

Stephen G. Weller, Ph.D., Professor
Dept. of Ecology and Evolutionary Biology
University of California-Irvine, Irvine, CA

Vicki Tripoli, Ph.D., Biologist
Moorpark, CA

Douglas J. Frederick, Ph.D., Professor
Dept. of Forestry & Environment Sciences
North Carolina State Univ., Raleigh, NC

Gary K. Meffe, Ph.D., Adjunct Professor
Dept. of Wildlife Ecology & Conservation
University of Florida, Gainesville, FL

Bitty Roy, Ph.D., Professor, Department of
Biology / Smithsonian Research Associate
University of Oregon, Eugene, OR

Don Waller, Ph.D., John T. Curtis Professor
of Botany and Environmental Studies
University of Wisconsin, Madison, WI

Gustav Paulay, Ph.D., Professor
Department of Zoology
University of Florida, Gainesville, FL

Richard O. Bierregaard, Ph.D., Research
Associate, Academy of Natural Sciences
Drexel University, Philadelphia, PA

Matthew Rubino, M.Sc., Conservation
Biologist, Dept. of Applied Ecology
North Carolina State University Raleigh, NC

Robin Salter, Ph.D.
Associate Professor of Biology
Oberlin College, Oberlin, OH

Dina Roberts, Ph.D., Professor
Department of Biology
The Evergreen State College, Olympia, WA

Rachel E. Golden, M.Sc., Department of
Environmental Science and Public Policy
George Mason University, Arlington, VA

Phil Myers, Ph.D., Professor (Emeritus)
Dept. of Ecology and Evolutionary Biology
University of Michigan, Ann Arbor, MI

Peter F. Brussard, Ph.D., Professor
(Emeritus), Department of Biology
University of Nevada, Reno, NV

Jesse Ford, Ph.D., Professor
Department of Fisheries and Wildlife
Oregon State University, Corvallis, OR

Craig W. Benkman, Ph.D., Professor
Department of Zoology and Physiology
University of Wyoming, Laramie, WY

Malcolm K. Cleaveland, Ph.D., Professor
(Emeritus), Department of Geosciences
University of Arkansas, Fayetteville, AR

Rick Van de Poll, Ph.D., Principal
Ecosystem Management Consultants
Center Sandwich, NH

Glenn R. Stewart, Ph.D., Professor
(Emeritus), Biological Sciences Department
California State Polytechnic University
Pomona, CA

Bruce G. Baldwin, Ph.D., Professor
Department of Integrative Biology
University of California, Berkeley, CA

David Janos, Ph.D., Professor
Department of Biology and Cooper Fellow
University of Miami, Coral Gables, FL

Robert Michael Pyle, Ph.D.
Lepidopterist and Founder
The Xerces Society, Portland, OR

Jon Rhodes, Ph.D.
Hydrologist
Planeto Azul Hydrology, Portland, OR

Jon Evans, Ph.D.
Professor of Biology
The University of the South, Sewanee, TN

Erik Jules, Ph.D., Professor
Department of Biological Sciences
Humboldt State University, Arcata, CA

Daphne Stone, Ph.D., Botanist
Biodiversity Research Collective
Eugene, OR

Trygve Steen, Ph.D., Professor
Department of Environmental Studies
Portland State University, Portland, OR

Jason Clark, M.S.
Senior Botanist
Siskiyou BioSurvey LLC, Ashland, OR

David Olson, Ph.D.
Conservation Earth Consulting and
Biodiversity & Wildlife Solutions,
Washington, DC

Craig C. Downer, Ph.D.
Wildlife Ecologist
Andean Tapir Fund, Minden, NV

Robert L. Beschta, Ph.D., Professor
(Emeritus), Forest Ecosystems and Society
Oregon State University, Corvallis, OR

Dennis Murphy, Ph.D.
Adjunct Research Professor
University of Nevada, Reno

Thomas Michael Power, Ph.D.
Professor (Emeritus), Dept. of Economics
The University of Montana, Missoula, MT

Reed F. Noss, Ph.D.
Provost's Distinguished Research Professor
Department of Biology
University of Central Florida, Orlando, FL

Rowan J. Baker, MS
Independent Environmental Consultant
Portland, OR

David J. Berg, Ph.D.
Professor, Department of Biology
Miami University, Oxford OH

Raymond A. Saumure, Ph.D.
Herpetologist and Director
WildFauna, Las Vegas, NV

Karen Stone, Ph.D., Professor
Department of Biology
Southern Oregon University, Ashland, OR

Douglas A. Miller, Ph.D., Professor
Department of Geography
Penn State University, University Park, PA

William Bridgeland, Ph.D.
Wildlife Biologist
Bandon, OR

Susan Harrison, Ph.D., Professor
Dept. of Environmental Science & Policy
University of California, Davis, CA

Gordon H. Orians, Ph.D., Professor
(Emeritus), Department of Biology
University of Washington, Seattle, WA

Frito Dolisca, Ph.D.
Forest Resource Policy and Conservation
Orange, NJ

Stephen C. Trombulak, Ph.D., Professor
Department of Biology
Middlebury College, Middlebury, VT

Sam Rich, M.Sc.
Conservation Land Manager
Wild Restoration LLC, Seattle, WA

Barry R. Noon, Ph.D., Professor
Dept. of Wildlife & Conservation Biology
Colorado State University, Fort Collins, CO

Jeff Wells, Ph.D., Senior Scientist
Boreal Songbird Initiative
Seattle, WA