GEOS INSTITUTE



October 14, 2016

President Barack Obama
The White House
1600 Pennsylvania Ave., NW
Washington, DC 20500

**SCIENCE SUPPORT FOR CASCADE-SISKIYOU NATIONAL MONUMENT EXPANSION (SOUTHWEST OREGON)**

Dear Mr. President:

I am writing to thank you for your interest in expanding the ~66,000-acre Cascade-Siskiyou National Monument (CSNM) in southwest Oregon, the nation's only monument to biodiversity.

Expanding the Monument would represent a legacy gift for the region and the nation by building on your leadership to protect areas of nationally significant "*objects of scientific and historical interest*" (objects) using authorities granted to you by Congress under the 1906 Antiquities Act. Scientists overwhelmingly support the Monument's expansion (e.g., enclosed scientists letter) primarily because increased development in the surroundings and accelerated climate change have elevated risks to the Monument's objects since its designation in 2000. Geos Institute is uniquely qualified to comment on the expansion proposal given our extensive scientific publication record in the region, including the Monument area, emphasis on climate change, and we were part of a science team convened by conservation groups in 2011 to address the monument boundary.

The CSNM was established by presidential proclamation to protect "*an area of remarkable biological diversity*[1]." 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 species of plants and animals, whose survival in this region depends upon its continued ecological integrity*[1]."

[1]U.S. Dept. of Interior. Presidential proclamation 7318 establishing the Cascade-Siskiyou National Monument, Oregon. June 9, 2000, Washington DC.

Clearcut logging and road building outside the Monument have resulted in widespread degradation to the region's biodiversity particularly impairing recovery efforts of populations of the federally threatened northern spotted owl (Google Earth). The Monument contains some of the last intact forests in this area and is a vital land bridge to older forest dependent species facing widespread habitat losses in the surroundings.


*Google Earth image of Cascade-Siskiyou National Monument (black boundary) and surroundings. Note the extensive logging east of the monument.*

The science team[2] that I was part of in 2011 generally concluded that.

- Some of the objects of interest have important habitat outside the Monument where they would be subject to increased threats of development.
- Most of the existing Monument boundaries were not ecologically based, compromising the ability of the BLM to maintain the ecological integrity of the Monument.
- Unprecedented threats of climate change and land development are compromising the objects and the Monument's integrity.

[2]Frost, E. et al. 2011. Cascade-Siskiyou National Monument boundary study identification of priority areas for monument expansion.

- Areas adjacent to the Monument are facing ever increasing development and intensive land-use pressures, including unsustainable logging, residential expansion, and water diversions, that, if not abated, could undermine long-term persistence of the Monument's objects.

Scientists at our Monument workshop were concerned with: (1) inadequate protection of complete ecological gradients essential for climate change resilience; (2) lack of conformity of current boundaries with complete watersheds – threatening aquatic diversity and hydrology; and (3) incomplete landscape linkages essential to the Monument's biological crossroads functions. Additionally, climate change already is significantly affecting this region as observed by reductions in snowpack over the past few decades, increased temperatures, and other undesirable affects[3]. Such changes have prompted scientists to call for increasing the size and representation of protected areas[4], as protected areas are known to sustain higher levels of biodiversity[5] and may act as climate refugia because of relatively lower levels of land-disturbance[6]. There is strong scientific consensus for expanding the Monument into focal areas of the greater Cascade-Siskiyou landscape. As summarized herein, scientists recommended these areas for inclusion in an expanded monument boundary:

**Rogue Valley Foothills to Plateau**. A topographically diverse area extending 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). This area would allow for elevational migrations in response to climate change and includes: 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.

**Johnson Prairie – Fall Creek**. This area is most representative of the Southern Cascades ecoregion and also is an important elevational corridor for wildlife dispersal. Important patches of older forest provide 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.

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[3]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

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

[5]Coetzee, 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.

[6]Olson, D.M., et al. 2012. Climate change refugia for biodiversity in the Klamath-Siskiyou ecoregion. Natural Areas Journal 32:65-74. DellaSala, D.A. et al. 2015. Building on two decades of ecosystem management and biodiversity conservation under the Northwest Forest Plan, USA. Forests 6:3326-3352.

**Klamath River Ridges**. This area is characterized by moderately steep, dissected terrain and a dry, continental climate. 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 existing Monument. 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.

In addition, a group of aquatic scientists sent a letter to Senator Ron Wyden on November 22, 2013 requesting expansion of the Monument based on watershed integrity and climate change concerns (see enclosed aquatics letter). To summarize, they noted:

- **Protect Upper Jenny Creek and Keene Creek Watersheds** – current boundary does not encompass the watershed. Upper reaches of Keene and Jenny Creeks (to the north and northwest) and Johnson Creek (to the northeast and east) are priority stream reaches necessary to complete the Monument and to support Jenny Creek redband trout and Jenny Creek sucker.

- **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). 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.

Finally, what happens inside the Monument boundary regarding management is as important as the overall size of the Monument. The Monument's proclamation and its management plan specifically direct the BLM to *protect the objects of scientific and historical interest*. This means that logging, roads, livestock grazing, and inappropriate fire management are incompatible with the Monument's biodiversity proclamation.

The Monument also has an active fire history and the northern portion is within the Greensprings area and surrounding communities. Fire is a key ecosystem process recognized as a Monument object for its importance in maintaining fire-dependent objects. There are certainly responsible ways to co-exist with wildfire so that fire can be managed for ecosystem integrity purposes in the Monument and so communities can reduce their risks of fire through defensible space management. Several studies have shown that treating areas outside a 100-200 feet zone

surrounding home structures does nothing to improve home safety[7]. Importantly, in a recent publication in the journal *Ecosphere,* scientists[8] examined over 1,500 fires from 1984-2014 covering forests in 11 western states to determine if "actively managed" (logged) areas had lower levels of high severity fire, as often claimed, compared to protected areas like parks, monuments, wilderness, and roadless areas. After accounting for geographic, topographic, and climate factors, they found protected areas actually had lower levels of high severity fire and were burning the way nature intended them compared to logged areas that had much higher levels of high severity fire. The researchers hypothesized that logging slash and plantations likely contributed to high severity levels in actively managed areas.

Notably, observations of the August 2014 Oregon Gulch fire (>32,000 ac), 18 miles southeast of Ashland, burned uncharacteristically severe when the fire encountered dense slash piles and flammable plantations outside the Monument. This is consistent with regional studies showing the flammability of tree plantations[9], which are in abundance outside the Monument. Extensive road densities in the area also contribute to human-caused fires.

*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)*

In closing, the Monument lies within the 10-million acre Klamath-Siskiyou ecoregion that extends into northern California. The region has long been regarded by scientists as having globally outstanding biodiversity[10]; older forests and elevational gradients like those in the Monument and proposed in the Monument expansion have been recognized as critically

[7]Cohen, 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.

[8]Bradley, C.M. et al. In press. Does increased forest protection correspond to higher severity in frequent-fire forests of the western USA? Ecosphere.

[9]Odion, D.C., et al. 2004. Fire severity patterns and forest management in the Klamath National Forest, northwest California, USA. Conservation Biology 18:927-936.

[10]DellaSala, D.A., et al. 1999. A global perspective on the biodiversity of the Klamath-Siskiyou ecoregion. Natural Areas Journal 19:300-319.

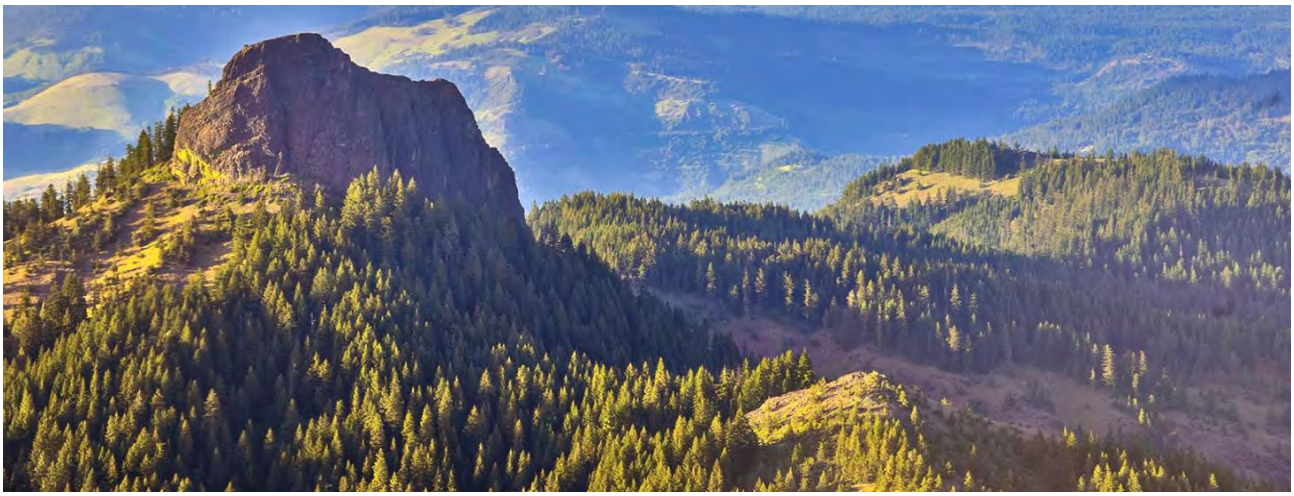
important climate refugia and for recovery of listed species[11]. Expanding the Monument would go a long way toward helping the larger ecoregion prepare for climate change given the Monument's unique biological cross-roads function.

Thank you, Mr. President, for your use of the congressionally vested Antiquities Act to protect – and expand protection of – historically and scientifically important places in our country. We urge you to now use the best ecological criteria to also expand the Cascade-Siskiyou National Monument as a welcome and important part of your lasting legacy.

Sincerely,

Dominick A. DellaSala, Ph. D.
Chief Scientist

[11]Olson, D.M., et al. 2012. Climate change refugia for biodiversity in the Klamath-Siskiyou ecoregion. Natural Areas Journal 32:65-74.



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 4, 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 topic[2], there are several important reasons why existing boundaries are unlikely to sustain the ecological integrity of this area:

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[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 areas[3];

- 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.

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[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,

Pepper Trail, Ph.D.
Ashland, OR

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Dennis Odion, Ph.D.
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Paul Hosten, Ph.D.
Kualapu'u, HI

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

November 22, 2013

Honorable Senator Ron Wyden *Submitted via e-mail*
221 Dirksen Senate Office Building
Washington, D.C. 20510

**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.
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Geos Institute

Michael Parker, Ph.D.
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Southern Oregon University

Jeannine Rossa, M.S.
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Ecolink Consulting

Jack Williams, Ph.D.
Chief Scientist
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