

STATE CAPITOL  
SACRAMENTO, CA 95814  
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# California State Senate

SENATOR  
**NOREEN EVANS**  
SECOND SENATE DISTRICT



February 16, 2011

2011 FEB 22 PM 2:21

Mr. Douglas Bosco, Chairman  
California Coastal Conservancy  
Attention: Mr. Sam Schuchat  
1330 Broadway, Suite 1100  
Oakland, CA 94612

**Re: Support for 500-acre The Cedars Area of Critical Environmental Concern**

Dear Chairman Bosco,

Save the Redwoods League currently has a unique opportunity to protect 500 acres of land in Western Sonoma County. The parcel known as the McCrory-Raiche property is immediately adjacent to a 1,500-acre parcel of land protected by the Bureau of Land Management (BLM), called The Cedars. Like The Cedars, the McCrory-Raich property is a combination of unusual geological features, rare plant species and distinctive beauty.

The Cedars and the McCrory-Raiche property are located just north of the town of Cazadero, in a remote region of my Senate District. This particular area of high biodiversity is home to dozens of plant species that have adapted to the region's serpentine soils. Several plant species that are not found anywhere else on the planet have been identified on these properties. In 2006, BLM designated The Cedars as an Area of Critical Environmental Concern (ACEC), their strongest designation of protected lands. Placing the McCroy-Raiche property under this same protection would fulfill a decade-long conservation effort to fully protect this region.

I strong support Save the Redwoods League and their proposal to protect this area of important open space through the purchase of the McCrory-Raiche property. I trust that the Conservancy will give this proposal its careful consideration and hope that it will grant funds necessary to move this project forward. I greatly appreciate your consideration of this award. Do not hesitate to contact my staff with any questions you may have regarding my support for this proposal.

Yours very truly,

A handwritten signature in black ink that reads "NoREEN EVANS".

NOREEN EVANS  
Senator, 2<sup>nd</sup> District

COUNTY OF SONOMA  
BOARD OF SUPERVISORS  
575 ADMINISTRATION DRIVE, RM. 100A  
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EFREN CARRILLO  
SUPERVISOR FIFTH DISTRICT  
  
ecarrillo@sonoma-county.org

February 24, 2011

Mr. Douglas Bosco, Chair  
California Coastal Conservancy  
Attention: Mr. Sam Schuchat  
1330 Broadway, Suite 1100  
Oakland, CA 94612

Re: Support for a 500-acre addition to The Cedars Area of Critical Environmental Concern

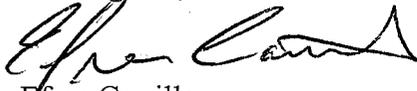
Dear Chairman Bosco:

Save the Redwoods League currently has a unique opportunity to protect 500 acres of land in western Sonoma County, the McCrory-Raiche property. This property is immediately adjacent to The Cedars, a 1,500-acre Area of Critical Environmental Concern (ACEC) owned by the Bureau of Land Management (BLM). The McCrory-Raiche property and The Cedars ACEC are located in an area of very high biodiversity that is home to dozens of rare, and sensitive plant species. Multiple plant species have been found in The Cedars ACEC and the adjacent 500-acre McCrory-Raiche property that have not been found anywhere else in the world.

The addition of the McCrory-Raiche property to The Cedars ACEC will increase protection for this area of great botanic, geologic, and scenic significance, as well as build and strengthen connections between protected lands in Sonoma County.

I strongly support the permanent protection of this important property and request that the Conservancy grant the funds that will ensure that this project moves forward. If I can in any way assist you or members of the Board, please do not hesitate to contact me.

Best regards,

  
Efrén Carrillo  
Supervisor, Fifth District



September 30, 2006

College of Letters,  
Arts and Sciences

Department of  
Earth Sciences

To Whom It May Concern:

This brief note concerns an area in northern California called The Cedars Peridotite (informally, just "The Cedars"), its extremely unusual properties, and the reasons that the site is a truly unique and valuable national treasure.

First let me introduce myself. I am Ken Nealson, the Wrigley Professor of Geobiology at the University of Southern California in Los Angeles. I have made a career of studying extreme environments around the world, ranging from polar and deep sea cold environments, to hot springs and deep sea hot vents, to deep subsurface sites (marine and terrestrial), to hypersaline and alkaline environments. Interspersed with these studies, I worked at NASA's Jet Propulsion Laboratory where I was the project scientist for the Mars Sample Return Mission, and founder and director of the Center for Life Detection. In all of these studies, the primary focus has been on understanding how the geology of the planet supports life, and how life in turn alters the geology of the planet – the science of Geobiology. Earthly Geobiology begins with the earliest reports of life on the planet, and continues up to the modern day, helping us understand the way that life and the Earth have co-evolved over time and formed an inseparable partnership. A simple way to view this is that the Earth is like it is because of life, and life adapts to exploit the geological resources of the planet.

Perhaps no where on Earth is this more vibrantly demonstrated than in The Cedars. Here we have the extremely rare occurrence of mantle rock called peridotite (usually found many - 10 to 100 - kilometers deep beneath the Earth's crust) readily available for study at the surface. Not surprisingly, The Cedars is in the earthquake zone of Northern California where, due to faulting and tectonic plate movements, peridotite was transported to the surface. Such happenings are not rare in California – peridotite is regularly uplifted, and when it interacts with water (usually groundwater originating from rainfall) it forms alkaline solutions, hydrogen, and the mineral serpentine, which is the state mineral of California.

What is surprising, and perhaps unique, is the massive and active nature of The Cedars Peridotite system. Instead of a small, isolated bit of peridotite, which is characteristic of many sites in California and Oregon, we have a site that covers hundreds of acres. This massive site is distinct from most other peridotite sites because it is geologically young, and extremely active: processes that have long since terminated in other sites are presently active at The Cedars site, exhibiting many different manifestations of the peridotite/water interaction that can be studied in real time. Furthermore, the site is remote and thus nearly pristine in terms of offering a location for scientific study (both short and long term).

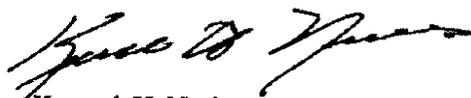
My own interests are focused on the basic microbiology of the region, asking such questions as "how can any life survive in such extreme conditions (pH ~ 12)?" and "what mechanisms are used by the organisms (which we already have in culture and are beginning to characterize) to eke out an existence where it should not be possible?" However, these interests are merely the tip of an intellectual "iceberg" of inquiry spanning topics such as whether such environments were abundant on early Earth and, if so, can the properties of these ancient ecosystems be predicted by the study of their modern counterparts. It is thought that peridotites were very common in the primordial Earth, and therefore the study of such a pristine site as The Cedars would provide insights into the earliest life on the planet.

Putting my NASA hat back on, one can imagine that similar environments could exist many places in the Solar System, and understanding The Cedars ecosystem might well provide keys to how to search for evidence of life in similar environments on extraterrestrial sites.

In summary, it is clear that The Cedars Peridotite is not only one of the most unique geological and biological sites on the planet but it also presents an excellent opportunity to conduct research in a site that is accessible by ground transportation, yet remote enough to be pristine. It provides a study site that both relates to modern processes occurring on Earth today and the extreme challenges to life as we know it, and may provide analogs for the earliest Earthly life, perhaps even for life that may have existed, or may still exist in extraterrestrial environments.

In nearly 40 years of studying the planet and its incredibly variable life forms, I have never seen such a magnificent site that relates to so many fundamental issues regarding the history of Earth and its life. It is my hope that an effort can be made to preserve The Cedars so that as science and technology continue to develop new methods and concepts, this site will be available to probe the mysteries of ancient and modern life both on and off the Earth.

Sincerely yours,



Kenneth H. Nealson  
Fellow, American Academy of Microbiology  
Wrigley Professor of Geobiology  
Departments of Geology and Biology  
University of Southern California

UNIVERSITY OF CALIFORNIA, DAVIS

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DEPT. OF ENVIRONMENTAL SCIENCE & POLICY  
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FAX (530) 752-3350  
EMAIL spharrison@ucdavis.edu

October 5, 2006

Dear Roger:

It's a pleasure to write in support of your efforts to conserve the Sonoma County Cedars through working with the Coastal Conservancy, Sonoma Land Trust, county Open Space District and other organizations. Your long-standing efforts on behalf of this amazing resource are a tremendous contribution to the cause of rare plant and community conservation.

Serpentine soils are a major contributor to California's status as one of the world's top 25 hotspots of botanical diversity; of the roughly 2,000 plant taxa that are uniquely found in California, well over 200 are serpentine endemics, or species that have evolved to depend on these unusual soils. (This is in spite of the fact that serpentine forms only <2% of the state's surface area.) Ecologists and evolutionists worldwide have long considered the California serpentine flora a model system for understanding how new plant species form and how they adapt to challenging environments. Many of California's rarest and most unusual plant species are serpentine endemics. In my experience, *no other single serpentine site can match The Cedars for its importance to the study and conservation of the Californian serpentine flora.* This is because as you know, several plant species and varieties are completely unique to The Cedars; I am not aware of any other such cases anywhere in the state. If I had to guess, I'd say that this is because The Cedars is a large exposure of serpentine, widely separated from other large serpentine outcrops, lying within a region that is generally botanically rich (western Sonoma and Marin counties), and that these factors have combined to make it a "hotspot within a hotspot" for serpentine plant evolution. In addition to its rare and unique species, The Cedars contains an extensive and pristine stand of a rare vegetation type - Sargent's cypress forest - and populations of a number of species at their geographic range margins, which are also important subjects for genetic conservation and scientific study. Finally, the scientific significance of The Cedars has been enormously enhanced by your botanical expertise and the tremendous time and effort you've put into gathering and disseminating information about its natural resources.

Having visited The Cedars in the company of geologists and geochemists, I am also aware that they consider The Cedars to be of outstanding significance, as the site where the unique chemistry of the seeps gave rise to a new understanding of how serpentine forms from the rocks of the oceanic crust. There is an ongoing interest here at UC Davis in studying various issues about geochemistry and plate tectonics at The Cedars. I don't think very many, if any, other geochemical seeps like the ones at The Cedars have been discovered in Northern California.

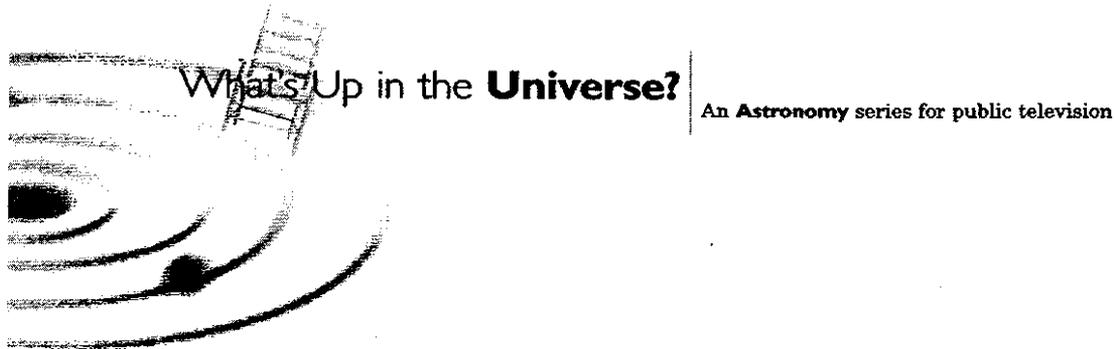
I've been fortunate to have used The Cedars in my various studies of serpentine plant diversity, and cannot think of any other site I would consider more essential to conserve in its present pristine state for the sake of its outstanding contribution to California's flora.

Sincerely,



Susan Harrison

Professor, Environmental Science & Policy  
Davis Campus Director, UC Natural Reserve System



To whom it may concern:

I am writing to you to support preservation of a unique environment known as the Cedars. Last year my production Company filmed a team of scientists from JPL exploring the Cedars for an astronomy film program called "*What's Up in the Universe?*" which is intended for both broadcast on public television, as well as educational distribution. This 60-minute special and 6-part educational series has been designed to lead viewers on an expedition of discovery by blending science, art and storytelling along with interviews with some of today's leading scientists in order to help connect astronomy to people's everyday lives.

We have an airdate on National Public Television of May 1, 2007 to coincide with International Space Day and Pacific Islander's month, *What's Up in the Universe?* explores our own planet's relationship and similarities with the other planets in our solar system and ponders in a truly contemporary matrix the age old question, "Are we alone?" - a question made more profound with the recent discovery of extra solar planets orbiting sun-like stars,

The Cedars was a chance for us to film in a unique living laboratory where important lessons are still unfolding. The peridotite is a unique feature that deserves to be preserved. The beauty of the landscape made a perfect backdrop for our film and we filmed both in the main Canyon where the springs are near the camp and along the trails to the ridge tops. We featured the Cedars in three sections of the film and intend to go back to film more for the educational part of the project. The premise was comparative planetology to understand what microorganisms might have been and might still be on Mars.

The Cedars could be used for future film work and for students in the arts and sciences to learn and study. I would think that anyone seeing the Cedars would want to protect the natural features in perpetuity and allow scientific research and artistic inspiration to continue there.

Exhibit 6: Project Letters

I'll be glad to answer any additional questions you may have and can be reached anytime at (650) 726-1693. Please visit our web site to see a clip from our program at [www.whatsupintheuniverse.org](http://www.whatsupintheuniverse.org)

Cordially,

Susan Friedman  
Director and Producer  
"What's Up in the Universe?"  
[whatisup@earthlink.net](mailto:whatisup@earthlink.net)  
[www.whatsupintheuniverse.org](http://www.whatsupintheuniverse.org)

Date 28 September 2006  
Contact person Prof.dr. J.G. Kuenen  
Telephone/fax +31 (0)15 27 85308/+31 (0)15 27 82355  
E-mail j.g.kuenen@tnw.tudelft.nl



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To whom it may concern

Since 2004 our laboratory is involved in the study of the microbiology of the hyperalkaline (ultrabasic) springs in the Cedars. For the last 25 years our lab has studied microbial life in a variety of extreme, natural environments as they occur on Earth with the aim to understand how microbial life can deal with such harsh conditions and what kind of special metabolism it must possess in order to handle such extreme conditions. This knowledge may later be applied in the management of natural resources as well as in waste water treatment.

For example, we have investigated and applied bacteria living in alkaline soda lakes, which have a pH of 10-11. These bacteria can grow as long as the pH is below 10.5-11.0, but when the pH gets even higher they must invest all their available energy in survival and most of them die at that pH. Based on the study of these soda lakes, we had assumed that the limits for life would be around pH 11.

The Cedars represent one of the few places on Earth, where mantle rock (peridotite) is exposed to the surface and subject to weathering and all kinds of geo-biological forces. This exposure has led to the development of a unique habitat including the emergence of hyper-alkaline (ultrabasic) springs, with pH values up to 11.9. In fact, the conditions that exist today in the Cedars may represent a rare remainder of what Earth looked like a few billions of years ago. When we learned from these natural springs we immediately realized that bacteria might exist that would be able to deal with these high pH values and, if so, this would represent a unique possibility to extend our understanding of what limits microbial life on earth. The recent research into the springs has now revealed that such bacteria do exist and that we are in the most fortunate position to learn more about life at the edge of biochemical possibilities. We are also convinced that such bacteria will possess properties that may be useful to help us in the proper maintenance and management of our environment.

It is evident from these considerations that, with the Cedars, California possesses a rare gem of Nature, which needs to be preserved and secured for future generations. Clearly, it is a habitat that will serve as an important source for scientific, i.e. microbiological, investigations, but it also is a place where future students might be exposed to unique features of combined geological and biological forces that have shaped the Earth in an early state of its existence.

A handwritten signature in blue ink, appearing to be "J.G. Kuenen".



The Delft University of Technology has a long tradition of top microbiological research. We appreciate the importance of unique sources for microbial diversity, as it can teach us so much about life, the importance of recycling of nutrients by microorganisms and the value of these microbes for a vast array of applications. As an academic centre at the other end of the world we admire the immense natural (re)sources of the United States of America. We hope that California will value the uniqueness of the Cedars as a beautiful addition to the spectrum of its natural sanctuaries, and as a rich source for future scientific research and education of students.

A handwritten signature in cursive script that reads "J. Gijs Kuenen".

J. Gijs Kuenen  
Professor of General and Applied Microbiology at the  
Delft University of Technology  
& Visiting Scientist at the University of Southern California