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Climate Change Fellows Begin Research in Parks this Summer

The George Melendez Wright Climate Change Fellowship Program is sponsored by the NPS Climate Change Response Program, in partnership with Dr. Lisa Graumlich of the University of Washington. The goals of this program are to support new and innovative research on climate change impacts to protected areas, and to increase the use of scientific knowledge toward resource policy and management decisions in parks. This fellowship allows the best and brightest upcoming climate change researchers a chance to develop their skills on National Park Service lands. The 2010 fellowship awards support 13 scholars in roughly 20 different parks or federal areas. Project descriptions and park units participating in the 2010 program include:

- **Chiricahua NM** - monitor streams and springs in the southwestern US to better understand how to protect threatened desert aquatic resources over the next century.
- **Denali NP and Preserve** – determine the rate Kahiltna Glacier is receding in order to help managers maintain a healthy water system in response to a changing climate.
- **Grand Teton NP, Bandelier NM, Great Basin NP** - assess how cottonwood trees respond to climate change, as the streamside habitat they create is important to many species like nesting birds and provides a home for wildlife in an otherwise dry landscape.
- **Great Smoky Mountains NP** - examine the past habitat of the montane salamander, which is native to Great Smoky Mountains to understand more about the effects future climate change will have on this ecosystem.
- **Haleakala NP** - The high elevation cloud forests at Haleakala are highly dependent upon moisture in the air, and as the air becomes drier the cloud forests are moving down in elevation. This study will help identify the critical locations to focus conservation efforts.
- **Jean Laffite NHP and Preserve** – analyze the salinity in the water in hummocky terrain to help guide wetland restoration work and protect the marquee baldcypress trees.
- **John Day Fossil Beds NM** – analyze the fossil record at John Day Fossil Beds to reveal how species naturally respond to environmental and climate change. By investigating shifts in habitat preferences in the past, managers can make more informed decisions to help species adapt to climate change.
- **Lassen Volcanic NP, Yosemite NP, and Sequoia NP** - analyze several bird studies that span the last century in these three national parks at different elevations to determine how over 100 bird species have shifted their habitat range due to climate change.

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Above: With climate change we walk together toward an unknown future, like these footprints in the sand at Point Reyes National Seashore. Photo courtesy Melanie Wood.

Monthly Climate Change Webinar Series

2nd Thursday of every month
2:00 pm - 3:30 pm EDT

Next Webinar: July 8th, 2010



July's presentation will feature Dr. Sabine Marx, Managing Director at the Center for Research

on Environmental Decisions (CRED) at Columbia University.

Her presentation titled, *"The Psychology of Climate Change Communication"* will use insights from psychology, anthropology, and the decision sciences, to discuss barriers to behavioral change. She will also discuss opportunities to improve the way we present information about climate change and the behaviors required to mitigate it.

The following topics will be addressed: know your audience, the impact of framing, analytical and experiential/affective processing of information, downsides of overusing emotional appeals, interpretations of uncertainty, self-interest vs. collective interest, participatory processes, and making behavior change easier by designing effective decision environments.

Follow this link to register for this month's webinar:

<https://www1.gotomeeting.com/register/726402584>

Climate Change Fellowships *Cont'd*

- **Mount Rainier NP** - examine and test the interaction between physical and biotic factors of conifers so we may better predict how forests will change under future climate scenarios.
- **Multiple parks with pikas** - analyze pika scat, as well as latitude, elevation, and other factors to determine the amount of stress these small critters are under due to climate change. This will help inform habitat restoration and protection of this species.
- **Noatak NP** - by recording the age-old place-based knowledge of subsistence fisherman as it relates to climate change in Noatak Alaska, we can use this knowledge to determine how to manage waterways to ensure proper health and numbers of fish and how to preserve the tradition of fishing for the Inupiat people.
- **Point Reyes NS** - test how temperature changes and the amount of salt in the water affect invasive snails and their native oyster prey at Point

Reyes, to enable managers to better prepare for future conditions, understand linkages between species, and rehabilitate conditions for the native oyster.

- **Yukon Flats National Wildlife Refuge** - To examine long-term changes in boreal wetlands and the effects of these changes on waterbird communities, this study will compare measures of wetland surface area, water chemistry, invertebrate abundance, and waterbird distributions of the Yukon Flats wetlands between the 1980s and the present.

For more information visit: <http://www.nps.gov/climatechange/internshipsresearch.cfm>
For a list of the fellows and their institutions, visit: <http://nrpcsharepoint/climatechange/default.aspx>

Contact: Lisa_Norby@nps.gov

Climate Change Scenario Training

This instructor-led course is intended to give an overall understanding of the scenario planning process as it applies to protected area management and climate change. The scenarios can be used as a tool to inform other planning processes in order to protect natural and cultural resources affected by climate change. Course participants will walk through the scenario building process using landscape scale case studies, develop climate drivers, identify uncertainties and impacts utilizing bioregional literature synthesis, create scenarios and narratives for the future using the framework and process learned in the course, and begin a dialogue about how this process can inform future planning at the park level for better decision making.

The course is most appropriate for, but is not limited to, natural and cultural resource managers, regional planners, Washington Office planners, other DOI bureaus land managers and resource conservation employees, as well as scientists, communicators and education experts. Participants can self-nominate with supervisory approval and will be notified of selection 6 weeks prior to the workshop chosen. Once notified of selection, participants will be given further guidance on pre-course work material. Those interested should choose from one of the workshops below and register in DOI Learn:

- **Great Lakes and Atlantic Coast Workshop:** covers case studies from the Great Lakes and Atlantic Coasts, held October 5th - 7th, 2010 in Duluth, Minnesota.

- **Urban Landscapes and Eastern Forests Workshop:** special emphasis on cultural resources for Urban Landscape and Eastern Forests case studies, held December 7th - 9th, 2010 in Washington, D.C.
- **Western Mountains, Pacific Islands, and Arid Lands Workshop:** covers case studies from the Pacific Islands, Arid Lands and Western Mountains, with special emphasis on cultural resources in the Pacific Islands, held February 8th - 10th, 2011 in Denver, Colorado.

Contact: Shelly_Clubb@nps.gov



Job Opportunities

GS-09 Science Communication Specialist located at Glacier National Park's Crown of the Continent Research Learning Center
Applications due **July 7th, 2010**.

Two seasonal GS-09 Park Ranger Interpretation positions related to climate change education work; one at Pictured Rocks NL and the other at Apostle Islands NL
Applications due **July 9th, 2010**.

These positions are listed at:
<http://www.usajobs.com>

NATIONAL PROGRAM UPDATES

The Climate Change Policy Working Group is Seeking Your Help

Climate change is creating numerous management issues as resources are threatened or suffer actual impact. As a resource or park manager, how have you dealt with these unprecedented resource protection issues? What additional tools and guidance do you need to meet this growing challenge? The CCRP Policy Working Group is collecting examples of past and pending management decisions made and actions taken to address issues arising as a result of climate change. Please submit a short description of the issue and how it was addressed or the barriers you face in addressing it to: Susan_Johnson@nps.gov

Workshop Summary

Gregg Bruff attended the Ecology of Lake Superior: Integrated Approaches and Challenges of the 21st Century workshop May 3rd-5th in Duluth, MN. He presented a poster session on "Climate Change and Lake Superior - How Can We Most Effectively Talk About It?". The workshop was sponsored by the Aquatic Ecosystem Health and Management Society and the Environmental Protection Agency. For more information, go to:

<http://www.aehms.org>
or Contact: Gregg_Bruff@nps.gov

Climate Friendly Parks Update

Cape Cod Hosts CFP Workshop

On May 19-20, Cape Cod National Seashore hosted three other Northeast Region parks (Boston Harbor Islands NRA, Saint Gaudens NHS and New Bedford Whaling NHP) for a Climate Friendly Parks (CFP) workshop.

In addition to the three guest parks, over 80 staff members from Cape Cod NS attended the first morning of the event to learn about climate change and the CFP program. This engaged the entire staff from Cape Cod in the climate action planning process and its implementation. A broad cross-section of NPS employees, including superintendents, regional and WASO staff, park division chiefs, interpretation staff and many others attended the two-day event, demonstrating support for the program at all levels of the Service.

The workshop included four talks about how climate change relates to the northeast region and coastal zones, as well as a presentation on integrating climate action plans into Environmental Management Systems and a peer learning segment where parks shared their inventory results and existing sustainability projects.

Later, parks worked individually to craft park-specific best practices to incorporate into their cli-

Climate Change Talking Points

The Climate Change Response Program has been developing talking point documents that are a synthesis of current climate change research organized by bioregion; there are 11 bioregions identified. These documents are intended to be a tool for resource managers and interpreters. The Arid Lands and Gulf Coast regions are now complete and available at: <http://nrpcsharepoint/climatechange/communication/Bioregional%20Talking%20Points/Forms/AllItems.aspx>



mate action plans. This summer and fall, the parks will finalize their plans, becoming CFP Member Parks.

CFP Training

The Climate Friendly Parks Program will be hosting a Climate Leadership in Parks (CLIP) greenhouse gas emissions inventory training at the end of July (dates to be determined).

Greenhouse Gas Data Collection

On June 1st, Steve Whitesell and Bert Frost sent a memo to all regional directors explaining the new Executive and Secretarial Orders that mandate that our agency begin tracking and reducing our Green House Gas emissions. As a result of these Orders, the National Park Service has proposed a goal to reduce our emissions by 5 percent annually with a cumulative reduction of 50 percent by 2020.

For more information about this memo, or how your park can become a climate friendly park, or how to integrate the CFP program into your regional planning process, please visit our website: <http://www.nps.gov/climatefriendlyparks>
Contact: Julia_Corby@nps.gov
Or: Julie_Thomas_McNamee@nps.gov

Upcoming Workshops & Meetings

The Ecological Society of America hosts its 95th annual meeting, "Global Warming: The legacy of our past, the challenge for our future," in Pittsburgh, PA on August 1-6, 2010.
<http://www.esa.org/pittsburgh/>

The Wildlife Society hosts its 17th annual conference in Snowbird, UT on October 2-6, 2010.
<http://www.wildlifesociety.org/>

The 10th Biennial Scientific Conference on the Greater Yellowstone Ecosystem titled "Questioning Greater Yellowstone's Future: Climate, Land Use, and Invasive Species," will be held at Mammoth Hot Springs Hotel, Yellowstone NP on October 11-13, 2010.
<http://www.greateryellowstonescience.org/gyesci-conf2010>

The American Geophysical Union hosts the "Chapman Conference on Climates, Past Landscapes and Civilizations," in Santa Fe, NM on March 21-25, 2011.
<http://www.agu.org/meetings/chapman/2010/ecall/>

World Climate Research Programme (WCRP) open science conference titled, "Climate Research in Service to Society," in Denver, CO on October 24-28, 2011.
<http://www.wcrp-climate.org/conference2011/vision.html>

Useful Resources Related to Climate Change

The National Research Council released three reports on May 19th from the America's Climate Choices suite of studies that emphasize the need for U.S. action in response to climate change. The full reports and all the materials based on the reports can be found at: <http://americasclimatechoices.org/>

A great article, "Warmest April Global Temperature on Record," from NOAA. The combined global land and ocean surface temperature was the warmest on record for both April and for the period from January-April. Additionally, April 2010's average ocean surface temperature was the warmest on record for any April, and the global land surface temperature was the third warmest on record. Check this out at: http://www.noaanews.noaa.gov/stories2010/20100517_globalstats.html

Gas Trees and Car Turds: A Kids Guide to the Roots of Global Warming, by Kirk Johnson and Mary Ann Bonnell



More Information

This newsletter is a monthly forum to share the latest news relating to NPS efforts to manage our parks in a changing climate.

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Program
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Comments, Submissions:
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Virgin Islands National Park

Seawater temperatures around Virgin Islands National Park (VIIS) have been abnormally warm since mid-October 2009. Elevated water temperatures are of great concern to resource managers as they can lead to coral bleaching events, where the coral loses its symbiotic algae, called zooxanthellae, with the coral then turning pale to white in color. Bleached corals are "weaker" or more stressed as the zooxanthellae provide a substantial source of energy for the corals.

In 2005, historically warm water temperatures that peaked in September caused over 90% of the corals at NPS-monitored sites in the VIIS to bleach, and was followed by an outbreak of coral disease that eventually caused the death of over 60% of

the living coral monitored. For more information, contact: William_J_Miller@nps.gov



Plate coral showing signs of bleaching. Photo taken on May 14, 2010 at 60' depth on Tektite Reef. It is extremely unusual to observe this amount of discolored or bleached coral so early in the "summer".

Golden Gate Climate Update

Golden Gate Climate Update is a new podcast series launched by Golden Gate NRA. The series offers interviews with scientific authorities, park staff and partners involved with climate change science, response and sustainability as it relates to National Parks; particularly those in the West. There will be more episodes posted throughout the summer, so check back often. For more

information, go to: <http://www.nps.gov/goga/photosmultimedia/climate-update.htm>
Contact: Will_Elder@nps.gov

The series is an outcome of the Earth to Sky partnership and also is posted as part of the Earth to Sky podcast series at: <http://www.earthtosky.org/climate-change/climate-cast-series.html>

Pushing Building Energy Performance in Pacific West Region

Since the dawn of human history, people in cold climates have always looked for ways to ensure comfort, i.e., stay warm. Their efforts focused on the conservation of heat through insulation provided by animal pelts & building shelters that kept heat in and cold wind out. Active heating (fire) was effective only in conjunction with insulation.

The "Passive House" method for new construction and rehabilitation concentrates on a high level of energy conservation embodied in practices relatively new in the US, but with a 15-20 year track record in Europe. Passive House specifies energy consumption targets (instead of percentage reductions,) and uses climate-specific design, highly insulated building envelopes, air tightness, super-efficient windows, and ventilation/heat exchangers to greatly reduce and simplify HVAC systems, even in extreme climates.

With this new construction, energy consumption is typically 90% less than in conventional buildings. Solar energy is usually limited to solar hot water, due to the expense and relative inefficiency of photovoltaic panels. These buildings provide greatly improved indoor air quality and year-round comfort, and can perform far better than even LEED-Platinum buildings.

Reducing energy consumption and waste truly reduces greenhouse gas emissions – and save lots

of money. Passive House initial construction costs may be 5-10% higher than conventional construction. However, operating costs over the life of the building will be significantly reduced.

Hoa Lam and Joseph Balachowski in the Pacific West Regional Office in Seattle have been working to implement Passive House in the Pacific West Region. They are promoting these principles in historic preservation projects, including three buildings at Mt. Rainier NP, two in Death Valley NP and one at Sequoia-Kings Canyon NP.
Contact: Joseph_Balachowski@nps.gov



This historic Mt. Rainier office building is nearly identical to the original after Passive House renovations. A couple of subtle differences include the new concrete foundation with crawl space vents, and new energy-efficient casement windows.