Climate Change Response Program *News*
March / April 2012

National Park Service
U.S. Department of the Interior

Climate Change Response Program

SCIENCE • ADAPTATION • MITIGATION • COMMUNICATION

Enhancing Leadership through Dialogue on Climate Change

During the week of March 26th, I was fortunate to be part of an inaugural group of interpreters who gathered at the Mather Training Center to receive instruction on facilitated dialogue. Used by museums around the world, facilitated dialogue is a technique which provides a safe space for visitors to engage in conversations about some of the most relevant issues of the past and present, such as immigration and civil rights. It is a powerful way to bring people together to share differing perspectives about controversial topics in order to move beyond conversation and into action.

This training was a pilot course partially developed as an advanced component of the *Interpreting Climate Change* curriculum under development as a joint project of the Mather Training Center, the Climate Change Response Program, the Natural Resource Office of Outreach and Education, and the National Education Council.

While facilitated dialogue has been used successfully in museums for some time, it is fairly new for the park service and our front line interpreters. And I have to admit that at first I was not certain how this technique could be applied to a complex scientific topic like climate change. For issues like the civil war, civil rights and immigration, all of which have a substantial historical and modern context, facilitated dialogue enabled class participants to discover the relevance of these issues today through discussing the decisions that were made in the past, both good and bad. This empowered us (and ultimately the visitors with which we will facilitate these conversations) to learn about ourselves and each other, our differences and our common understandings. Through this deeper understanding and empathy for multiple perspectives, we were empowered to take action in regards to these issues today.

With climate change, we lack the deep historical context to use as the foundation for conversation. Instead, we are in a situation where we are looking to the future, and that future is uncertain. However, throughout the week it became clear to me that ultimately the goal is the same – to highlight decisions and actions we can take today to create a better outcome for the future. For example, one area where this technique could be highly effective is through engaging in dialogue on the management and operational decisions the NPS will have to make in the face of climate change, like to what extent should the NPS preserve historic resources like Ellis Island when it could be inundated with sea level rise, what actions can we take now to preserve salmon habitat that provides the livelihood for hundreds of people, and what role should parks play in providing renewable energy like wind and solar?

Facilitated dialogue can be used to help audiences move beyond debate about the realities of climate change and into the realm of the very real impacts and difficult choices with which our parks will be confronted. This opportunity would not only in-

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Above: Researchers are studying how climate variation may be contributing to declining population of the Karner Blue Butterfly in Indiana Dunes NL.

Monthly Climate Change Webinar Series

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

Next Webinar: May 10th, 2012

May's presentation will feature Dr. Cheryl Anderson, Director of the Hazards, Climate, and Environment Program at the University of Hawai'i Social Science Research Institute.

Dr. Anderson's presentation titled, *How do we manage cultural resources in the face of climate change?: A Framework for Collaborative Management* will discuss research she is conducting in collaboration with the Pacific Island Climate Change Cooperative. She will discuss how she has engaged communities to identify the expertise and information needed to consider and prioritize adaptation options for cultural resources impacted by climate change. Case studies from Hawai'i Volcanoes and Kaloko Honokohau National Parks will be highlighted.

Follow this link to register for the May webinar:
https://www1.gotomeeting.com/register/398456025

Upcoming Webinar

June 14th, 2012
A panel of George Melendez Wright Climate Change Fellows who conducted research projects in national parks during the 2011 field season will present the results of their work.

Follow this link to register for the June webinar:
https://www1.gotomeeting.com/register/410672977

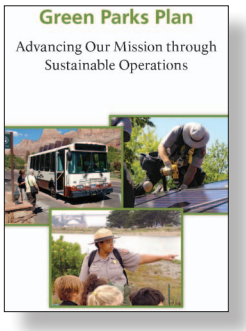
Enhancing Leadership through Dialogue *Cont'd*

crease visitor understanding of this complex issue, but also allow them to gain insights in how parks are managed and to participate in the management process in a unique way.

One of the most poignant conversations of the workshop happened during small group practice sessions at the culmination of the week. The facilitators of one of these groups asked their participants to express their reaction to the following hypothetical management decision, "In order to alleviate the desperate water shortage in California's central valley, which is dramatically impacting the lives of millions of people, the National Park Service has been asked to dam Kings Canyon to create an urgently needed reservoir to provide water for one of the world's most important agricultural areas." The dialogue that emerged from this group of NPS employees was diverse, passionate, and empathetic at the end of which one participant stated, "I can now see how climate change may affect me personally and I feel like I need to learn more about it." It was this provocative experience that revealed to me the potential of facilitated dialogue to engage park visitors in a way they have rarely been engaged before.

An additional insight I gained from this training is that facilitated dialogue is a delicate technique that may not be for everyone. As an agency, there are non-negotiable concepts that we do not want to unintentionally perpetuate through dialogue and we must carefully articulate what these concepts are. It requires a high degree of finesse and training, and not all field interpreters may be ready for this level of engagement. However, it is also a powerful technique that can truly transform the way we engage with our audiences, and when done effectively, can enhance the interpreter's leadership role in the management of parks through providing valuable insight to park managers into the perspectives, values and attitudes of visitors revealed in these conversations. I am excited to be part of this new wave of interpretation and to see it become fully realized and applied in the field. Contact: **Angie_Richman@nps.gov**

Green Parks Plan Released



On April 19th, we took a huge step forward in our commitment to climate change and sustainability by releasing the *Green Parks Plan* to NPS and the public. Building from the NPS *Climate Change Response Strategy* and the *Call to Action*, this plan articulates actions and best practices we can take at any level of the service to embraced sustainability and green practices into daily operations. The Park Planning, Facilities and Lands Directorate took the lead in developing this plan and has launched both an internal and external website where you can download the plan, find a toolkit of resources, and some highlights of park specific success stories. For more information: **http://inside.nps.gov/waso/custommenu.cfm?lv=3&prg=1074&id=10254**

Additional Webinar Series of Interest

NOAA's Digital Coast Series

This webinar series covers many climate change and coastal topics like impacts to coastal wetlands, ecosystem-based adaptation, sea-level rise and coastal flooding. They present tools and data through demonstrations, case studies, and offer opportunities to engage with experts in the field. They are held on the first Wednesday of every month from 2:00-3:00 p.m. ET. The next webinar will be held on June 6th and will discuss the history of hurricanes. **http://www.csc.noaa.gov/digitalcoast/webinar**

Alaska Climate Dispatch

This climate webinar series is designed to promote dialogue between scientists and people in government, land and resource management, industry, and individual residents who need information related to climate change in Alaska to make well informed decisions. Their goal is to create a forum for discussion and information exchange of the current state of knowledge about specific aspects of climate change in Alaska that is accessible to people state-wide and identifies existing information gaps and how best to fill them. Each webinar will start with 20-30 minutes of presentation followed by discussion and questions from participants. **http://ine.uaf.edu/accap/teleconference.htm**

POET Webinar Series

POET is a collaboration between parks in Alaska and along the pacific coast. This webinar series was developed to help promote the understanding of current marine science and research issues. **http://www.oceanalaska.org/education/multimedia-webinars.htm**

George Melendez Wright Climate Change Interns and Fellowships

The climate change interns and fellows for 2012 have now been selected. Forty students in all will spend their summer with the National Park Service addressing climate change impacts to parks. Fourteen fellows will conduct cutting-edge research ranging from climate impacts on pikas in Lassen Volcano, lake impacts at Isle Royale, to changes in brook trout at Saint Croix. Twenty-six interns will work in a variety of capacities conducting research, as well as developing communication products like science literacy videos, exhibit development, and interpretive programs for kids and the general visitor. For more insights into what these students will be doing in parks this summer, read the following 3 articles which are summaries from the 2011 intern and fellowship season. You can find a description of all the 2012 projects on our website at: **http://www.nps.gov/climatechange/internshipsresearch.cfm**

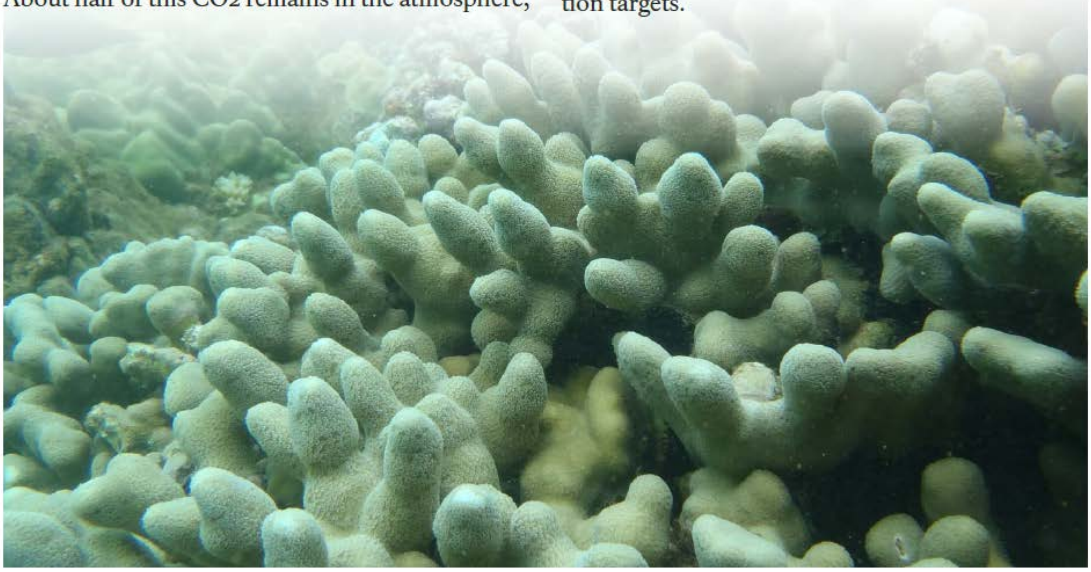
Adaptive Capacity of Coral Reefs in the Pacific Islands

Chris Jury is currently a Ph.D. candidate in biological oceanography at the University of Hawai'i at Mānoa and the research he conducted in part, as a climate change fellow, will help to identify which coral reef populations are at greater or lesser risk from climate change and ocean acidification within the Hawaiian Islands. This will enhance conservation and adaptation efforts across the archipelago.

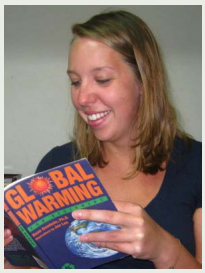
Corals are spectacularly beautiful animals, related to anemones and jellyfish, but unlike anemones or jellyfish, corals produce hard, limestone skeletons. Over thousands of years these skeletons are built up by the living coral animals into coral reefs. Reefs provide homes to one quarter of all marine species, though they occupy a mere 0.08% of the area of the world's oceans. They provide goods and services worth billions of dollars annually and hundreds of millions of people around the world depend directly on coral reefs for food and their livelihoods.

Human activities including burning fossil fuels, manufacturing cement, and deforestation are releasing carbon dioxide (CO_2) to the environment. About half of this CO_2 remains in the atmosphere, warming the climate, while another one quarter dissolves into the ocean. When CO_2 mixes with sea water it reacts to produce a mild acid called carbonic acid, changing seawater chemistry, and causing the phenomenon called ocean acidification. Higher temperatures and more acidic sea water are each stressful to corals, and the combination of the two may produce impacts that are more than the sum of their parts. However, some corals tend to tolerate these stressors better than others, and some reefs are likely to be able to better tolerate climate change and ocean acidification than others.

The leeward shores of the larger Main Hawaiian Islands are naturally warmer than the windward shores of the same islands. If the corals on these leeward shores have adapted to warmer conditions, they may serve as source populations for coral genotypes more tolerant of global change, making them important conservation targets. However, if leeward corals have not adapted to the higher temperatures then they are living closer to their upper temperature limits and will likely be more susceptible to global change, making windward corals especially important conservation targets.



Climate Change Education in Cuyahoga Valley NP



Emily Bacha shares the following about her intern experience.

My family has been fortunate to have Cuyahoga Valley National Park in our backyard for years. Cuyahoga protects important ecological and historic resources while connecting the urban environments of Cleveland and Akron, Ohio. This unique setting attracts thousands of visitors each year and provides a significant opportunity to lead climate change education efforts in the region.

While serving as the climate change intern at Cuyahoga, I investigated the need for climate change education programs in the park. I organized focus group sessions with local educators and park volunteers where I found there was a definite need to begin addressing climate change in the park's educational programs with kids, particularly given new state science education standards related to the subject.

I also found among members of the public there was a desire to learn more about the science and history of climate change, as well as tips on actions each individual can take to reduce their carbon footprint. These insights proved valuable in the creation of the interpretation materials which included field activities, "Do Your Part" campaign resources, and a park-specific climate change manual.

My "backyard" experience this summer truly enriched my understanding of climate change and my appreciation for the significant and complex work of the National Park Service.

Mark Your Calendars

July 12-13, 2012
Hosted by the University of Washington, *The Fourth International Conference on Climate Change: Impacts and Responses,* will be held in Seattle, WA. Bringing together perspectives from around the globe, this conference is for those who share an interest in, and concern for, the ecological and societal impacts of climate change. Within this context, this year's theme emphasizes local and regional responses to climate change. **http://on-climate.com/conference-2012/**

July 17-20, 2012
A symposium to inform the nation about the impacts of climate change on coastal indigenous tribes will take place at the National Museum of the American Indian on the National Mall in Washington, D.C. The symposium will bring together as many as 300 coastal indigenous tribal elders, leaders, scientists, and policy leaders from around the nation to discuss traditional ecological knowledge and what it can teach us about past, present, and future adaptation to climate change. **http://firststewards.org/**

August 4-5, 2012
The *Conference on Public Participation in Scientific Research* (PPSR) will hold their landmark event to convene science researchers, project leaders, educators, technology specialists, evaluators, and others from across many disciplines to discuss advancing the field of PPSR in Portland, OR. The deadline to submit abstracts and scholarship applications has been extended to May 15, 2012. **http://www.citizenscience.org/community/conference2012/**

Phenology in the National Capital Region

Climate change intern, Stephanie Juchs, spent her summer stationed at the National Park Service's Center for Urban Ecology in Washington, DC. Her project entailed developing a citizen science vegetation phenology monitoring program to be implemented along the Civil War Defenses of Washington and adjacent lands. For this project citizen scientists will help monitor plant phenology, the timing of seasonal biological events like budding, leaf-out, and fall color. Citizen science projects use everyday people to collect meaningful data to advance scientific understanding and can be a powerful way to demonstrate the local effects of climate changes since seasonal biological events are often sensitive to climate variation.

Over the summer she determined project details like the structure of the monitoring program, where it could be implemented, what species would be monitored, and how to engage citizen scientists. She consulted park staff who specialize in resource management and community engagement to develop successful guidelines for collecting valid scientific data as well as educating volunteer citizen scientists about environmental change. She held several stakeholder meetings and conducted site visits which led to the development of a framework for phenology monitoring in the National Capital Region. A long term goal was also set for the development of phenology trails where people would monitor vegetation along select trails that contained certain focal species. To seek funding for the implementation of these trails she completed a grant proposal for the establishment of Picture Posts. These Picture Posts (**http://picturepost.unh.edu/**) would allow visitors to use their camera or cell phone to take pictures of the surrounding environment which when compiled could create a record of environmental change.

On her overall experience, Stephanie states, "Working on this project allowed me to get better acquainted with the National Parks in my own backyard and interact with NPS professionals that helped develop a project that I'm very passionate about. I loved the opportunity to develop plans and write grant proposals that will contribute to the implementation of a phenology monitoring network in the National Capital Region."

National Capital Region Vulnerability Assessment

The NPS and Smithsonian Migratory Bird Center are conducting a climate change vulnerability assessment of forest birds within the National Capital Region. This assessment, funded by the NPS Climate Change Response Program, is evaluating the sensitivity, exposure, and adaptive capacity of forest bird species to climate change using quantitative and qualitative assessments. Qualitative assessments are based on surveys of bird experts on habitat associations and potential climate sensitivities for eastern forest birds.

The project, still in its first year, has collected sufficient qualitative information to evaluate twelve species, of these, the Louisiana waterthrush, wood thrush, and prothonotary warbler have the highest climate change vulnerabilities, and gray catbird and indigo bunting have the lowest.

The quantitative components of the analyses are based on data from the Breeding Bird Survey, and the analyses incorporate data on climatic events and habitat features on the species' temperate breeding grounds, and, when possible, on the tropical winter quarters. The statistical modeling approach links broad scale effects of habitat, climate, and weather to species-specific population processes and population growth. The project will be completed in December 2012.
Contact: Scott Sillett at **SillettS@si.edu**

From top to Bottom: Prothonotary Warbler, Wood Thrush, Indigo Bunting. Images courtesy of FWS.

Climate Change Updates from the Alaska Region

Status of Alaska Region's Climate Change Strategy

The Alaska Region just completed a review of progress on implementing the NPS Alaska Region Climate Change Response Strategy 2010-2014. The review shows at least 150 activities that have been undertaken across the region relative to climate change, with activities in more than half of the high-to-medium priority areas. For example, one accomplishment was in regards to transportation planning. The draft Alaska Federal Lands Long Range Transportation Plan identifies need for a long-term transportation system that addresses a changing climate, using scenario planning to assess risks, and mitigating transportation activities that may contribute to climate change where appropriate. The plan's Climate Change Technical Report describes known impacts and provides the basis for factoring climate change into transportation planning. Designs and construction of roads in known permafrost areas currently employ methods to minimize permafrost degradation and to simplify needed repairs and maintenance. For more information, contact: **Robert_Winfree@nps.gov**

Scenario Planning in Alaska

In April 2012, Alaska became the first NPS Region to complete climate change scenario planning exercises for every National Park, Preserve, and Monument in the Region. Five workshops were undertaken, organized roughly around the geographic boundaries of Alaska's four Inventory & Monitoring networks. Each workshop included about 30-40 invited participants and was led by a multidisciplinary core team comprised of University of Alaska - Scenarios Network for Alaska Planning (UAF-SNAP) scientists, and NPS employees from park management; natural, cultural, and subsistence resources; environmental planning; education & interpretation. About half of the workshop participants came from the national parks and networks, and the other half from cooperating agencies, organizations, and communities. With the initial series of workshops now completed, the core team will be shifting from workshops to work products: developing reports, maps, and educational and interpretive materials from this effort. Web pages containing all the presentations and products from each of the workshops are in the works, with the web page for Southeast Alaska the first to go live. **http://www.nps.gov/akso/nature/climate/scenario.cfm**

Two reports outlining the scenario planning process and results of the workshops were also recently published in the proceedings of the George Wright Society and Alaska Park Science journal.

Several other climate change educational and interpretive products will be developed by UAF-SNAP, NPS, and the DOI Alaska Climate Science Center over the next few years. If you have general or specific suggestions for types of products to meet your park's needs, Robert Winfree would like to hear from you. **Robert_Winfree@nps.gov**

Golden Gate National Recreation Area (GGNRA)

Golden Gate is collaborating with the City Of San Francisco, the California Coastal Conservancy, Army Corps of Engineers, and other agencies, in a master planning process convened by San Francisco Urban Research (SPUR) to identify a sustainable future for the Ocean Beach corridor. The Ocean Beach Master Plan, now in draft, presents recommendations for the management and protection of San Francisco's Ocean Beach, 3.5 miles of beach and rugged coastline that is part of GGNRA (the beach and parts of Fort Funston and Lands End), a popular urban open space, a major infrastructure complex, and a beloved San Francisco landscape. This plan lays out a wide range of complex challenges and charts a course for a more sustainable future in the context of complex jurisdictional challenges, severe erosion, a diverse population of beach users and points of view, and the looming challenge of climate-induced sea level rise. It is the result of a robust public process, in which a wide range of stakeholders and the public participated over an 18-month period. Several earlier efforts brought attention to the ongoing issues at Ocean Beach. This document is intended to translate that energy into implementable actions by the responsible agencies. For more information about the master plan visit: **http://www.spur.org/ocean-beach**
Or contact: **Brian_Aviles@nps.gov**

Image courtesy of the San Francisco Department of Public Works.

Climate Change Resources

The US Forest Service has developed a robust interactive climate change website. The site features training modules on climate science, video lectures, carbon calculator tools, and information on many of the natural resource climate change impacts to face our public lands. **http://www.fs.fed.us/ccrc/**

The 2010 annual report of the NPS Vanishing Treasures program focuses entirely on climate change impacts to cultural resources in the desert southwest and is titled, *A Climate of Change: Climate Change Issue*. **http://www.nps.gov/archeology/VT/2010yr.pdf**

Follow the YouTube link below to view a presentation which provides the background and results to date on the Climate Change Response Program funded *Ice Patches as Sources of Archeological and Paleoecological Data in Climate Change Research in Glacier National* Park project. This 60 minute presentation was given by Craig Lee, one of the project leads, at Salish Kootenai College and is a great example of how the NPS is collaborating with tribes to raise awareness on both sides of climate change issues. **http://youtu.be/Do9n7UmXqpg**

Strategy to Assess Vulnerability of Sierra Birds

Due to shifting bird distributions possibly connected to climate change, ornithologists are set to begin a year-long partnership to predict and compare how 140 common Sierra Nevada bird species will respond to climate change. In the process, these ornithologists seek to identify strategies land managers can use for reducing effects. Funded by the U.S. Fish and Wildlife Service, the new study partners The Institute for Bird Populations with Yosemite National Park, the U.S. Forest Service's Pacific Southwest Region, and researchers at the University of California-Davis. Yosemite, receiving $11,000 for its role, will be part of this first broad assessment of risks for Sierra bird species through the use of the NatureServe Climate Change Vulnerability index. The NatureServe index has been applied to ecological systems across the country; therefore, the Sierra Nevada project will be a highly transferable model for other regions or taxonomic groups to translate assessments into actionable adaptation plans useful to land managers. As the study's first step, Sierra land managers will use the index to identify common bird species needing targeted adaptation and conservation actions. As the second step, a strategy will lay out actions for bolstering resilience of species and their habitats and to maximize the likelihood that vulnerable species will persist. This project will address the current lack of information on climate change effects and counter measures, which currently leave the NPS and other land managers vulnerable to policy and legal challenges, particularly for special-status species. Contact: **Sarah_Stock@nps.gov** **Scott_Gediman@nps.gov**

Image to the right: Bullock's Oriole; FWS photo.

CCRP Website Updates

Intranet Launched

We have launched a new intranet site in order to provide relevant climate change information and a forum for parks to share information. The climate change science, planning, policy, and contact us sections are currently live. Look for additional content, including climate change communication, adaptation, youth initiative, and photo library pages to come soon. Check back often to see what's new.
http://www1.nrintra.nps.gov/climatechange/

Changes to SharePoint

The Natural Resource Stewardship and Science (NRSS) sharepoint site has now been upgraded to sharepoint2010. There is a new look and a new url. The old url will be phased out over the next few weeks, so please bookmark this new location.
http://sharenrss/default.aspx

To go directly to the climate change section of the new NRSS sharepoint follow this link:
http://sharenrss/climatechange/default.aspx

More Information

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

Dr. Leigh Welling
Climate Change Response Chief
Leigh_Welling@nps.gov

Comments, Submissions:
Angie_Richman@nps.gov

The Climate Change Response Program can be found on the web at: **http://www.nps.gov/climatechange**