Climate Change Response Program *News*
January 2011

National Park Service
U.S. Department of the Interior

Climate Change Response Program

SCIENCE • ADAPTATION • MITIGATION • COMMUNICATION

All that Glitters is not Gold

It has been said that from space, the most obvious landscape change by human hands is the light from cities. For many who see such images, they are a sign of civilization, human ingenuity, beauty, or dominion. But one can also see a poorly utilized technology that consumes resources and may contribute to climate change.

In the U.S., outdoor lighting uses about 4% of the total electrical demand. That may not sound like much, but there are no more large easy fixes remaining in the quest to reduce our energy footprint for a more sustainable future. Instead, what's left are many smaller fixes, among which, efficient outdoor lighting is one of the most easily addressed.

So how much of this 4% can be conserved? That answer depends on how one views sustainability. It turns out that over the last 5 decades, light bulb technology has become 4 times more efficient. What once took 400 watts to light now takes less than 100 watts. Unfortunately, the U.S. and nearly every other country have used these technological gains to simply apply more light outside. Essentially still using 400 watt bulbs and getting 4 times the light.

The above example of outdoor lighting illuminates an important facet of sustainability— that true conservation can only be achieved by moving beyond technical solutions, and looking at proper application and social solutions.

For outdoor lighting, we should first start by questioning whether or not more light is needed in a location before you install it and whether there are other alternatives that can be used rather than a light bulb. Simply because we can apply technology to the landscape doesn't mean we should. Demonstrated need should drive whether a light is installed, and when it is allowed to be on. Other novel approaches, such as reflectors, flashlights, motion sensor lights, and luminescent paint can meet our needs with far less energy use.

Another important concept in sustainability demonstrated by outdoor lighting is applying the light exactly where it needs to go. This is accomplished through shielding the light to minimize light pollution and the associated environmental impacts. By aiming light only upon the surface intended to be lit, and avoiding spill upward or onto adjacent areas, further efficiency gains can be made. The relatively low cost of electricity has hampered such efforts, although currently climbing energy prices and Life-Cycle Cost Analysis are beginning to support this approach through economics.

Through such simple rethinking of outdoor lighting, roughly 2% of U.S. electrical demand, 80 Billion Killowatt-hours, 10 billion dollars annually, and 44 million metric tons of CO_2 can be conserved. The image of Chicago is one small example of a broader global need for sustainability, driving us to ask the important questions to allow humans to walk a bit more softly on the planet. For more information, contact: **Chad_Moore@nps.gov,** Natural Sounds and Night Sky Division, Night Sky Team Leader.

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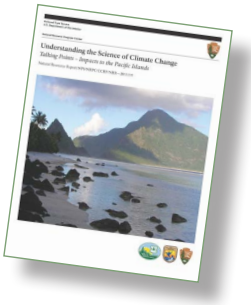
Above: Chicago as seen from the International Space Station at night. Image courtesy of the Image Science & Analysis Laboratory, NASA Johnson Space Center. ISS007-E-16525.

Great Blue Heron sketch courtesy of Chad Moore.

In Remembrance

The Climate Change Response Program would like to express our deepest sympathies to our NPS family at the Mather Training Center and the interpretive community at the loss of David Larsen. Our program was working closely with David to develop a new training module on interpreting climate change in the national parks. David was enthusiastic about communicating climate change to the public, and he was the driving force behind a new initiative to interpret critical resource issues. He has given so much to the NPS and those who have worked with him, and there was clearly more that he intended to accomplish. He was proud of those he worked with and we cherished how he fostered growth in those around him. His guidance, leadership, and vision will be greatly missed as we continue on without his keen mind and boundless enthusiasm. Please keep his family and friends in your thoughts at this difficult time.

We Are Seeking Your Feedback



The Climate Change Response Program has developed a series of bioregional "talking points", documents that summarize current research findings on the effects of climate change across 11 distinct bioregions: Alaska Maritime and Transitional, Alaska Boreal and Arctic, Arid Lands, Atlantic Coast, Eastern Woodlands and Forests, Great Lakes, Gulf Coast, Pacific Coast, Pacific Islands, Prairie Potholes and Grasslands, and Western Mountains and Forests. The intended audience is agency interpreters, planners, and resource managers.

As we complete the first version of these documents, we are beginning to plan how to update or utilize these documents in the future. We are specifically looking for feedback on who is using these documents and what types of programs or activities they serve. Please send comments to: **Amanda_Schramm@nps.gov**

Great Northern LCC Update

The Great Northern LCC is partnering with Yellowstone Ecological Research Center (YERC) to be trained with an analysis tool they developed for large data sets (including NASA TOPS data) called EAGLE (Ecosystem Assessment, Geospatial Analysis, and Landscape Evaluations). The EAGLE System is a decision support tool for species populations and their habitats. For more information, contact: **Tom_Olliff@nps.gov**

Director Jarvis Recently Interviewed on Climate Change

Michael Lanza, author of TheBigOutside website recently interviewed NPS Director, Jon Jarvis about the challenges parks face relating to climate change. This interview was posted to the website's blog page on December 21, 2010 and is a good read. The entire article can be read at: **https://thebigoutside.com/Home_Page.html**

Climate Friendly Parks in the News

The Climate Friendly Parks (CFP) program was highlighted in an online article demonstrating an example of how public and private parks are reducing their carbon footprint. The CFP program was launched in February of 2002 and dozens of parks have worked through the program and have taken substantial efforts to reduce their carbon footprint. Follow this link for a highlight on a few of these parks and to read the entire article: **http://magazine.continental.com/201010-iom**

NPS Phenofans list serve

The NPS just launched a new phenology discussion group, NPSPhenoFans (a list serve), to promote discussion and dissemination of information on all aspects of phenology that are relevant to parks, park staff, park visitors, and collaborators. More specifically, the list serve was created to facilitate communications among NPS staff interested in the many new and continuing phenological activities, to share and disseminate new results, methods, and techniques for implementing phenological monitoring, interpreting results, and to provide a forum where questions on phenology can be addressed.

The list serve is open to both NPS and non-NPS staff, and interested parties can self-subscribe at: **http://webmail.itc.nps.gov/mailman/listinfo/npsphenofans**
Contact: **John_Gross@nps.gov**

CALENDAR OF UPCOMING EVENTS

The US Environmental Protection Agency (EPA) will host a workshop titled, "Integrated Modeling to Characterize Climate Change Impacts and Support Decision Making," in Atlanta, GA on February 1-2, 2011. The EPA is convening this workshop to facilitate the use of integrated modeling to inform and improve local, regional and national policy decisions relevant to climate change adaptation and mitigation strategies. **http://www.epa.gov/crem/2011climate.html**

The US Geological Survey (USGS) will host an upcoming workshop, "Responding to Climate Variability and Change: A Prototype for Trans-boundary Assessment and Services in the Columbia River Basin,"in Portland, OR on February 10-11, 2011. For more information, contact Rachel Reagan of the USGS at: **rreagan@usgs.gov**

Useful Resources Related to Climate Change

In October 2010, the Department Of Energy (DOE) released a comprehensive report on offshore wind power in the U.S., titled *Large-Scale Offshore Wind Power in the United States: Assessment of Opportunities and Barriers*. This report analyzes the key factors impacting the deployment of offshore wind power in the U.S. It includes a detailed assessment of the nation's offshore wind resources and offshore wind industry, including future job growth potential. The report also analyzes the technology challenges, economics, permitting procedures, and the potential risks and benefits of offshore wind power deployment in U.S. waters. Available at: **http://apps1.eere.energy.gov/news/progress_alerts.cfm/pa_id=418**

In the May 2010 edition of the *News, A Publication of the Society for Applied Anthropology*, there is an article written by next month's webinar speaker, Marcy Rockman, on the contributions archaeology can make to climate change science and policy. The full article is on pages 5-6 and available at: http://www.sfaa.net/newsletter/may10nl.pdf

The winter edition of the Alaska Climate Dispatch is now available. This quarterly newsletter provides seasonal weather and climate summaries as well as Alaska weather, wildfire, and sea ice outlooks in one easily accessible document. You can download the current issue at: **http://ine.uaf.edu/accap/dispatch.htm**

A recent issue of the Solutions Journal had a number of interesting articles relating to climate change and sustainability. The main feature *Geoengineering: The Inescapable Truth of Getting to 350*, argues that it will be essential to reach the goal of getting to 350ppm of CO_2 in the atmosphere by the end of this century. Available at: **http://www.thesolutionsjournal.com/node/771**

To bring more visibility to the proposed limit of 350ppm of CO_2 in the atmosphere, environmentalist Bill McKibben, founder of 350.org, encouraged large-scale artistic demonstrations visible from space. Below is just one of the images from the demonstrations, others can be found on the website. To read the NPR story about this effort, go to: http://www.npr.org/blogs/pictureshow/2010/12/06/131697405/aerial

Monthly Climate Change Webinar Series

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

Next Webinar: Feb 10th, 2011

February's presentation will feature Dr. Marcy Rockman, a Science and Technology Policy Fellow with the American Association for the Advancement of Science (AAAS).

Her presentation titled, *"The Many Roles of Archaeology in Climate Change Mitigation and Adaptation Planning,"* will discuss how current definitions of climate change mitigation and adaptation, as well as the concept of resilience, entail at least some changes in present and future human behavior.

From this starting point comes the big question: how can the modern world actually go about doing the human behavior parts of mitigation and adaptation and increasing resilience? This talk will outline the contributions that archaeology can make to this question.

Follow this link to register for this month's webinar: **https://www1.gotomeeting.com/register/533476465**

A recording of archived webinars can be found at: **http://nrpcsharepoint/climatechange/communication/Web%20Seminars/Forms/AllItems.aspx**

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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Comments, Submissions:
Angie_Richman@nps.gov

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

We are also on InsideNPS at: **http://inside.nps.gov/waso/waso.cfm?prg=125&lv=2**

Apostle Islands National Lakeshore

Apostle Islands National Lakeshore (APIS) has long been recognized as a leader in environmental stewardship, participating in numerous programs that foster sustainable practices and promote innovative solutions. However, managing different initiatives and meeting mandatory compliance requirements while trying to enhance sustainability commitments can become time consuming and complex. As a strategy to address these challenges, APIS collaborated with the environmental management firm PRIZIM Incorporated to develop an Integrated Environmental Plan (IEP). Over the past two years a system that combines, streamlines, and simplifies management and reporting of sustainability and environmental management efforts has become a reality. The system is comprised of a procedures document, a few spreadsheet workbooks, and a calendar that are all hyperlinked for easy access to the information needed to guide the park's environmental management activities and sustainable practices.

Key components are:

- IEP procedures document – provides overarching guidance for, and links to, all the supporting workbooks that together comprise the IEP.
- Impacts and future visions workbook – identifies significant impacts of park activities on the environment, the key operational controls to mitigate impacts, and future visions of environmental performance that park staff ultimately aspire to.
- Environmental stewardship matrix – captures ideas for future projects, identifies environmental best management practices adopted and instituted into park functions, and houses past achievements. On an annual basis, ideas are drawn from the Matrix and developed into goals with objectives and targets in the IEP Management Workbook.
- Annual calendar – where tasks and responsible parties are identified to achieve annual goals and objectives, as well as to fulfill environmental compliance requirements.

The IEP is an adaptive management system, defined by national mandates, legal requirements, and dedicated environmental actions. It is based on proven environmental management system and strategic planning principles, allowing park staff to focus their precious resources on what's most critical during the current year, while keeping track of the longer term progress towards their collective vision. The IEP is guided by the Park's impacts and visions; fueled by the Park's annual targets; and evaluated through a management framework that is fully integrated into the park's existing organization and culture.

The IEP allows scientific input to better support park decisions regarding environmental management, and helps discover the synergies among different park priorities, including those relating to climate change. Annual updates of goals and re-examination of park visions provide an avenue for management adaptation, mitigation efforts, and communication of on-going scientific research. As a central repository for the different environmental protocols, the IEP supports more effective data collection and maintenance. Finally, it is a tool that allows for efficient and creative responses to the diverse array of future impacts that park resources, ecosystems, and residents are likely to experience based on projected and potential outcomes of climate change in the Great Lakes Region. Innovative approaches such as the IEP allow APIS to continue leading by example and fulfill obligatory management responsibilities. For more information, contact: **Monica_Magari@nps.gov**

Raspberry Island Lighthouse from Lake Superior in Apostle Islands National Lakeshore.