No More Horsing Around: A Case Study of Equestrian use at Ozark National Scenic Riverways

What will I get out of this?

Visitor/manager conflict will continue to rise as competition for resources becomes more intense. This poster will explore ways to mitigate these conflicts.

Abstract

Keywords

potential conflict index

Park managers must understand visitor attitudes toward various managerial actions to successfully conserve and protect the resource and the visitor experience. The purpose of this study was to investigate the relationship between horseback riders' level of support for various management actions based on attitudes towards social and resource conditions at Ozark National Scenic Riverways (OZAR). This poster will shed light on the relationship of equestrian recreation users' perceptions of management scenarios and the predicted conflicts between managers and said recreationists while utilizing the Potential for Conflict Index. It is hypothesized that as the level of conflict between users and potential management scenarios increases, the satisfaction at OZAR will decrease if said management scenario is enacted. The trails see use levels as high as 3,000 horseback riders during week-long trail rides (during high-use times in October), thus, the impacts may need to be mitigated regardless of user satisfaction.

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The Cultural Resource Stewardship Assessment in the National Capital Region of the National Park Service

What will I get out of this?

Conference participants will learn about the piloting of a new initiative of the NPS that will help park managers to establish new resource management priorities.

Abstract

Keywords

Stewardship, Resource, Management

In response to the National Park Service (NPS) Director's memorandum calling for the development of a new Director's Order D0-100, Resource Stewardship for the 21st Century, and in support of the NPS Call to Action and Cultural Resource Challenge, the NPS has launched a new Service-wide centennial initiative to assess the status of cultural resource baseline documentation, resource conditions, and overall program health. This effort, the Cultural Resources Stewardship Assessment (CRSA), is presently being piloted in two regions: the National Capitol Region (NCR) and the Mid-West Region. Within each region, individual parks form cultural resource teams to provide input from each program area. Regional staff also provide input to support the park's CRSA review, leading to a report that will inform park management and help to establish future resource management priorities. The principal author of this poster, Christopher G. Allen-Shinn, is the CRSA Project Coordinator for the National Capital Region.

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10674 Challenge Session

Learning while Doing: Cultural Resources Stewardship through Youth and Teacher Engagement

What will I get out of this?

This Depth Session will challenge our understanding of who "does" cultural resources management, and how "we' resource them, by examining successful youth and education programs.

Abstract

Stewarding, protecting, and documenting cultural resources is often the work of "professionals." This depth session will explore case studies of programs that connect diverse high school students and teachers with cultural resources fields and professionals to engage not just in learning about, but in participating in cultural resources stewardship. This session will challenge our notion of who "does" cultural resources, and asks how "we" can resource, support, and develop this work to meet both community and resource needs. This session will examine several case studies across the National Park Service, including paid youth employment programs, and partnerships with education communities.

Keywords

youth, education, outreach

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Urban Archaeology Corps

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Mather High School for Building Arts & Craftsmanship

Branching Out Youth Program

ArchaeoBlitz

Evergreen Cemetery Preservation

10678 Fasttrack Session

Connecting with Conservation: Youth Urban Archaeology Corps Participants Share their Stories

What will I get out of this?

Instead of talking at youth, this program will create a space for conference participants to listen to them.

Abstract

As cultural resources professionals, teachers, professors, and mentors, we often fall into the trap of talking at young people. This FastTrack will turn this dynamic over, creating a space for the youth to talk to us, and share their experiences as archaeologists and cultural resources stewards through the Richmond National Battlefield Park Urban Archaeology Corps Program. These four participants were part of an 8-week program (for three of the students, for the second time in two years) in 2016, where they conducted archival, archaeological, and oral history research into a community of color within the park boundary. Youth participants will discuss what they learned during the program, what archaeology and cultural resources stewardship means to them, and how participating in a paid youth program to conduct historical and archaeological research has shaped their lives and thinking.

Keywords

youth, archaeology, outreach

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Urban Archaeology Corps

Urban Archaeology Corps

Urban Archaeology Corps

Urban Archaeology Corps

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Reconnecting with a Forgotten War: Building curriculum resources with indigenous teachers

What will I get out of this?

This will examine a project to work with indigenous education communities to develop classroom resources exploring the history and legacies of the War of 1812.

Abstract

While the question "who won the War of 1812" meets with many different responses, there is much more consensus around who lost: Native Nations. As part of the National Park Service's 2012 – 2015 commemoration of the bicentennial of this "forgotten war," NPS staff consulted and collaborated with tribal communities to ensure that the commemoration produced public history and interpretive media which told the story of indigenous involvement, and especially the genocide perpetuated in its aftermath. While Anglo-American society quickly moved on and forgot this conflict, Native Nations still live with the scars and legacies of this conflict today. The last component of a three-part project, this paper will explore a collaboration with curriculum specialists, Native nations, indigenous communities, and dedicated teachers serving tribal students, to develop curriculum materials for teachers to explore the history and legacies of the War of 1812 from an indigenous perspective.

Keywords

indigenous, education, youth

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Lucas Crane, Macomb Public Schools

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Connecting with Conservation: Urban Archaeology Corps in the National Park Service

What will I get out of this?

This poster will present a model for engaging urban youth to conduct archaeological research through a Nationwide partnership program model called the Urban Archaeology Corps.

Abstract

This poster will evaluate goals, objectives, and outcomes of five Urban Archaeology Corps programs across the National Park Service. The poster will present the benefits and challenges of the model, summarize successes during the 2016 field season, and outline opportunities for program model development in the future.

Keywords

youth, archaeology, outreach

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Erik Kreusch, National Park Service

Dania Jordan, American Conservation Experience

Giles Harnsberger, Groundwork Richmond

Heather McMann, Groundwork Lawrence

Integrating Coastal Climate Adaptation in National Parks: Part 2 of 2

What will I get out of this?

We provide updates on the latest projects and case studies of coastal climate adaptation for national parks integrating across natural resources, cultural resources and facilities.

Abstract

Faced with rising sea level and other climate change impacts to coastal parks, the National Park Service is moving forward with strategies and taking action in parks so that, as the climate changes and affects parks, we can continue to serve visitors and provide stewardship and protection of natural and cultural resources. This session will span updates on guidance to coastal national parks to sharing examples of scenario planning, vulnerability assessment and adaption in progress in parks. It will have examples from natural resources, cultural resources, facilities and integration across them.

Keywords

coastal, climate adaptation

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Courtney Schupp

Scenario Planning to Adaptive Management: A Case Study from Saint Croix Island International Historic Site

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Perspectives of place: Stakeholder sentiments about adaptation strategies for historic buildings at CALO

Piloting an Integrated Vulnerability Assessment at Colonial National Historical Park Across Key Resources and

Bringing Historical Perspectives on Climate into Current Adaptation Practices

Developing adaptation planning through detailed, asset-level vulnerability assessment in coastal parks

Science to Support Ecosystem Resilience post-Hurricane Sandy

What will I get out of this?

Share highlights of the extensive research on ecosystem resilience undertaken in parks post-Hurricane Sandy.

Abstract

Following Hurricane Sandy, a broad range of research and monitoring focused on understanding coastal ecosystem resilience was undertaken in parks to help inform restoration and natural resource management, in preparing for future storms and sea level rise. This session shares results from those projects across a range of ecosystems and management questions, from a barrier island breach to urban ecosystems. The goal is to share both the science and park examples of applying the science to inform management decisions. This research directly benefits the management of each of the affected parks, and similarly can improve adaptation planning at other parks facing increased impacts of future storms due to sea level rise.

Keywords

Hurricane Sandy, resilience

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Hurricane Sandy's Silver-lining: Science-based Management for the Wilderness Breach at Fire Island NS

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Toward Understanding Resilience: Measuring and Modeling Hurricane Sandy Impacts and Recovery at Fire Island

Post-Sandy Research Projects to Understand and Manage Social-Ecological Resilience in Jamaica Bay, NY

Lessons learned and generalities from looking across a range of coastal marshes

Tracking Change and Recovery: Metrics of Resilience

Integrating Coastal Climate Adaptation in National Parks: Part 1 of 2

What will I get out of this?

We provide updates on the latest projects and case studies of coastal climate adaptation for national parks integrating across natural resources, cultural resources and facilities.

Abstract

Faced with rising sea level and other climate change impacts to coastal parks, the National Park Service is moving forward with strategies and taking action in parks so that, as the climate changes and affects parks, we can continue to serve visitors and provide stewardship and protection of natural and cultural resources. This session will span updates on guidance to coastal national parks to sharing examples of scenario planning, vulnerability assessment and adaption in progress in parks. It will have examples from natural resources, cultural resources, facilities and integration across them.

Keywords

climate adaptation, coastal

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Sharing NPS guidance, strategies and examples through the Coastal Adaptation Strategies Handbook

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Climate Change Adaptation Strategies: Case Studies from Coastal National Parks

Lessons Learned: Evaluating the Effectiveness of Cultural Resource Management Actions

Sea level rise by the numbers

Bringing Back Lost Coastal Habitats for Climate Adaptation

Commemorating the 150th Anniversary of the 1868 Treaty of Fort Laramie

What will I get out of this?

Attendees will learn insights, challenges, and benefits of the collaborative planning process being employed by Fort Laramie NHS and its 25 traditionally associated tribes.

Abstract

This session details the collaborative planning process occurring between the Great Plains tribes and the NPS to appropriately commemorate the nationally significant 1868 Treaty of Fort Laramie--the genesis of the reservation system, which has impacted tribal life across the country. American Indian nations--having survived colonization, assimilation, and cultural genocide--are seizing this opportunity to discuss the importance of recognizing, understanding, and celebrating indigenous cultures thriving in the 21st century. This process will result in appropriate commemoration events at and around Fort Laramie National Historic Site and, ultimately, interpretation of the complete story of the Great Plains Indian nations at this crossroads of the West. This collaborative planning process is occurring with the park's 25 traditionally associated tribes.

Keywords

collaborative, treaty, indigenous

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Commemorating the 150th Anniversary of the 1868 Treaty of Fort Laramie

What will I get out of this?

Attendees will gain greater appreciation for the 1868 Treaty of Fort Laramie, and tribal nations/NPS engagement in collaborative planning to commemorate this nationally significant event.

Abstract

This poster illustrates the historical perspective of Treaty Council proceedings at Fort Laramie in 1868, language of the treaty, 'signatures' of the principals, and the aftermath for indigenous lifeways. It also details the collaborative planning process occurring between the Great Plains tribes and the NPS to appropriately commemorate the nationally significant 1868 Treaty of Fort Laramie—the genesis of the reservation system, which has impacted tribal life across the country. American Indian nations—having survived colonization, assimilation, and cultural genocide—are seizing this opportunity to discuss the importance of recognizing, understanding, and celebrating indigenous cultures thriving in the 21st century. This process will result in appropriate commemoration events at and around Fort Laramie National Historic Site and, ultimately, interpretation of the complete story of the Great Plains Indian nations at this crossroads of the West.

Keywords

treaty, indigenous, commemoration

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Public Perception of timber harvesting for biodiversity in a National Forest

What will I get out of this?

Participants will learn about the typology of a national forest user in the southeast, and three data collection techniques, a map, questionnaire, photos and interviews

Abstract

This study examined the public perception of the harvesting over a three-year period with the aim of aiding biodiversity. The study site was the Nantahala National Forest, specifically the Fontana area.. Data was collected from two sources: The first were visitors in many different areas of the National Forest, and they were gives a series of three surveys (map and list of activities, questionnaire, and photos of harvests to respond to. The second data source was in-depth interviews with local forest harvesters in an effort to examine harvesting in small patches from their perspective. Results indicate a higher proportion of local users, and a perception of harvesting that is mutable with information about aim. On the other side the greatest barrier for small selective harvesting are the harvesters themselves, many unsure of the effectiveness of this small patch cutting on their business.

For	ests, pu	ıblic perce	eption
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Building capacity for sustainable tourism in protected areas of the Brazilian Amazon

What will I get out of this?

Participants will learn how Brazil, the largest country in Latin America and a biological superpower, is expanding tourism opportunities in its protected area system.

Abstract

razil, the largest, most populous nation in Latin America and a biological superpower, began creating its protected area (PA) system 70 years ago. However, with few exceptions, levels of visitor services and tourism in Brazilian PAs are still low. In the Amazon basin, half of Brazil's territory yet far from major cities to the south, poverty, threats to PAs and dependence on natural resources are high. In the Amazon, sustainable tourism can play a critical role in conserving biodiversity and improving rural livelihoods. This paper reviews the approach being used by Brazil's federal protected area agency, ICMBio, working with partners including the USDA Forest Service, USAID, and cooperating universities, to expand public use opportunities in Amazonian PAs. This includes developing demonstration sites such as Tapajos National Forest, Analvilhanas National Park, and Soure Extractive Reserve and conducting training programs to build a community of tourism practitioners.

Keywords

Brazil, ecotourism, Amazon

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10816 Compass Session

Natural Sounds Advisory Group organizational meeting

What will I get out of this?

The IUCN Natural Sounds Advisory Group business meeting will build on momentum gained at the 2016 World Conservation Congress, co-create objectives, and identify new leadership.

Abstract

The IUCN Natural Sounds Advisory Group (NSAG), whose mission is to understand and regulate noise as it affects protected areas, and nature and natural soundscapes more generally, was established in 2012 in part by the Natural Sounds and Night Skies Division of NPS, but was never fully populated or operationalized. Since then, rapidly accumulating evidence recommends managing anthropogenic noise to reduce impacts to wildlife, outdoor recreational experience, and human health. The business meeting will provide an update on the state of the soundscape protection within IUCN and build on the momentum gained at the 2016 IUCN World Conservation Congress to co-create draft objectives and action items intended to functionally and realistically elevate its international importance, as well as identify individuals who will take an active role in the next four years and beyond. We invite researchers, practitioners, and spatial planners interested in the noise regulation and soundscape planning to join.

Keywords

soundscapes, noise pollution

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10756
Collaboration Session

Addressing biological resource stewardship needs through community stewardship

What will I get out of this?

Explore opportunities for community stewardship of biological resources, share stories of challenges and successes, and discuss appropriate metrics and strategies for addressing park needs.

Abstract

The National Park Service Biological Resources Division is developing a new Community Stewardship Program (CSP) to promote and support biological programs and partnerships that engage youth, diversity, and underserved communities through citizen science. These programs will address park needs, build community relationships, and foster the next generation of park stewards. In order to build a strong foundation for this program, CSP is hosting an interactive Café Conversation to gather input from parks and partners to ensure the program can successfully support parks and engage new audiences. Attendees will (1) share stories of challenges, successes, and priorities from their experience with citizen science projects, (2) identify measurable outcomes and metrics for success, and (3) identify park needs for biological resource stewardship that could be addressed through citizen science.

Keywords

Engagement, Citizen Science

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Making a global connection to cultural landscapes

What will I get out of this?

Learn and share international trends in international cultural landscape practice an approach suited to incorporate dynamic processes as well as natural and cultural values.

Abstract

The session will update participants on the innovative US/ ICOMOS Cultural Landscape Knowledge Exchange, a partnership between US/ICOMOS, academia and the National Park Service (NPS) to connect heritage practitioners, particularly in the United States, with the best ideas from around the globe in this dynamic field. Presentations will cover the mission of US/ICOMOS including opportunities for international internships and professional development. An overview of the elements of the Knowledge Exchange, the connections to the cultural landscape work in the NPS, as well as ways to share the best of international research, scholarship, and case studies. Topics will include challenging issues such as the evaluation and management of change in both designed and vernacular landscapes. Participants will also be invited join the newly revitalized US National Committee on Cultural Landscape to both share ideas and to stay connected into the future.

Keywords

Cultural Landscape, International

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William Pencek, Executive Director, US ICOMOS

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Executive Director, US ICOMOS

Associate Adjunct Professor University of Vermont

Indigenous Cultural Landscapes: From Concept to Research, Results, Rewards, and the Future

What will I get out of this?

Since the concept's 2010 introduction, research on the Indigenous Cultural Landscape has resulted in increased indigenous involvement, intriguing findings, and expanded perspectives. What comes next?

Abstract

The Indigenous Cultural Landscape concept provides a Native perspective on landscapes that contain the natural and cultural relationships that could have supported an indigenous community prior to non-Native contact. First introduced at GWS 2011 from the National Park Service Chesapeake Bay office, this idea has led to research in identification, shared priority modelling, and mapping in the Chesapeake Bay tidal watershed, inspiring opportunities for collaboration, public interpretation, and resource management. This update session aspires to provide an overview of the research history, methodology and results, which include increased indigenous involvement and renewed connections to ancestral places; growing interest from other areas in adapting similar research methodology to their own regional geology and indigenous perspectives; and potentially new theories in pre-Colonial history and archaeological interpretation. Our goals with this panel are to explore new potential uses for this concept and discuss the challenges of its future use.

Keywords

indigenous, cultural, landscapes

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Progress of the Indigenous Cultural Landscape in the Chesapeake Bay: 2010-2016

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Chesapeake Bay Priorities Research and the Rappahannock River Indigenous Cultural Landscape

Tribal Cultural Landscapes and Studies in the Western United States

Challenges at the Intersection of Indigenous Landscape Perspectives and Established Preservation Practices

Modernizing Plant Records Management in National Parks

What will I get out of this?

Audience members will learn about digital tools that can be used to manage plant records to the benefit of resource managers, scientists, and visitors.

Abstract

In 2016, the Olmsted Center for Landscape Preservation, a program of the National Park Service, partnered with NCPTT and four national historic sites across the country to evaluate digital plant records management tools. These software applications, widely used by botanical gardens and arboreta, are largely new to U.S. land management organizations. Through aggregated information about cultivated and wild vegetation, plant records management databases enhance landscape preservation, inform conservation research, and provide innovative tools for interpretation that promote understanding and appreciation for parks' plant collections. Utility of these databases is scalable as well, from discrete sites to networks to large landscapes. This poster explains the findings of the software evaluation; presents lessons learned from allied professionals at academic institutions, arboreta, gardens, and land management agencies around the world; and answers common questions, including the relationship between plant records management databases and FMSS, ICMS, and natural/cultural resource inventories.

Keywords

landscape, plants, database

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10767 Paper	Friday in the park with students: a semester's teaching on parks and policy
What will I get out of this?	
Abstract	In 2016 the author taught a fourth year course on parks and parks policy as a specialized follow-up to a course on Canadian cultural policy. She introduced students to the history of parks in Canada, the U.S. and other countries, and to topics including Indigenous co-management, parks funding trends and the marketing of parks to recent immigrants. The course featured field trips to three parks that are part of municipal, provincial, and federal parks systems, all within a short distance from the downtown Vancouver campus of SFU. In this paper the author assesses her experiment in experiential learning and its relationship to the more conventional aspects of the course. In particular, she focuses on how she and the students responded to, integrated and will carry forward the unanticipated outcomes of their encounters with parks, parks interpreters and managers.
Keywords	pedagogy, parks, policy
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Communicating the Impact of Climate Change: A Partnership for the National Capital Region

What will I get out of this?

Audience members of this presentation will learn about creative ways to communicate about climate change impacts and apply it to their own work.

Abstract

This presentation will provide an overview of the challenges that parks in the United States are facing due to climate change and discuss current NPS standards for communicating the complexities of climate change. This presentation will highlight an internship program that was developed between NPS' Urban Ecology Research Learning Alliance and George Mason University's Center for Climate Change Communication in 2012 in order to help the National Capital Region communicate with their visitors about impacts on natural, cultural, recreational, and historical resources. Undergraduates and graduate students from various disciplines (natural sciences, social sciences, graphic design, and film) develop communication materials discussing the impacts of climate change in their particular assigned park through numerous outlets, such as ranger briefs, guidebooks, social media, web pages, and videos. This presentation will highlight created materials from the past four years and discuss the process of development for interns and parks.

Ke		

Climate change; communication

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10629 Challenge Session Preserving Ecological, Historical, and Cultural Integrity: The Next Century of NPS Resource Management

What will I get out of this?

This session will encourage audience members to think critically about how DO-100 will change NPS natural and cultural resource management in the future.

Abstract

NPS faces increasingly widespread, complex, and accelerating environmental and social changes, including cultural shifts, climate change, and other dynamic pressures. Addressing these challenges while fulfilling our preeminent responsibility for resource stewardship requires managers to have access to the best available science and scholarship. Building off recommendations presented in Revisiting Leopold: Resource Stewardship in the National Parks, Director's Order 100 (DO-100) articulates policies and actions to support resource stewardship in the next century while providing a framework for NPS decision-making. Given the complex environmental and social forces affecting parks, and the irreversible consequences of these changes, what does the future of NPS resource stewardship hold? How can we work collaboratively to ensure science and scholarship is helping create transformational park experiences? This session will encourage NPS leaders to articulate their views, while challenging audience members to think critically about how DO-100 will change future NPS natural and cultural resource management.

Keywords

Resources, management, policy

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Using ecosystem services to develop narratives relating ecosystem responses to public values

What will I get out of this?

We are developing scientific relationships within ecosystems that can be translated to stories to engage the stakeholders around ecosystem components that they value.

Abstract

National Park ecosystems are changing due to factors such as climate change, increased fire frequency, and pollution. Scientists generally rely on specific species that respond to these changes to understand ecosystem health. Since most people don't care directly about the most sensitive species in an ecosystem, we developed a framework to link the change of a single species to a change in a component of the ecosystem that people value; an ecosystem service. Within a workshop setting, we used the framework to link changes due to air pollution to broader impacts. The participants identified 184 relationships across the US and associated these with 25 unique user groups. We used these relationships to develop narratives to explain the broader impacts of air pollution including: reducing the quality of Major League Baseball bats, the loss of charismatic fauna, a decrease in local honey production, and increased wildfire risk to your home.

Keywords

Ecosystems, Communication, Policy

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Jennifer Phelan, RTI International

Indigenous Cultural Landscapes in the Chesapeake Bay

What will I get out of this?

The audience will view an example of how Indigenous Cultural Landscapes can be researched with stakeholders and academics.

Abstract

The Indigenous Cultural Landscape (ICL) concept recounts how indigenous peoples of North America have regarded and used this abundant land for countless generations. ICL identification and the accompanying interpretive process began along the Captain John Smith Chesapeake National Historic Trail as a trail-related resource in 2010. Descendant communities are in partnership with conservation organizations and researchers to assure stakeholder respect in Chesapeake watershed tourism, interpretation, and resource protection. This poster will highlight a 2016 ICL study on the Rappahannock River in eastern Virginia. Using examples of GIS mapping, documentation from primary resource material, and American Indian collaboration with National Park Service entities, this presentation locates the possibility and urgency of deepening contemporary perceptions of land using community oriented approaches in the field of conservation.

Keywords

Indigenous research approaches

Lead author / Session organizer

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Deanna Beacham-author of Indigenous Cultural Landscape

The Science and Politics of Restoring the Black Bear in Big South Fork NRRA

What will I get out of this?

Wildlife restoration involves the science and techniques for restoring wildlife but a successful effort includes working with the public, other agencies and politicians.

Abstract

A bear research project that began in 1997 at the Big South Fork National River and Recreation Area has led to the successful establishment of a black bear population on the Cumberland Plateau of Tennessee and Kentucky. In 2014, the population estimate was 300. The opportunity for visitors to experience a bear sighting and the responsibility of the park to protect visitors and the bears has increased. Proactive bear education; increased coordination with state game departments around the park; installation of wildlife proof trash, recycling and food storage containers; food storage enforcement; and aversive conditioning of bears has resulted in no bear incidents in the park. Hunting seasons have been established around the park in both Kentucky and Tennessee and to date 81 bears have been legally harvested. Wildlife restoration is more complex than just the science of wildlife biology, it also includes challenging public and political issues.

Keywords

Bear, Restoration, Management

Lead author / Session organizer

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10667 Skills Session

Crafting Internships: Setting Your Interns up for Success

What will I get out of this?

What makes for a great internship? Come learn about and discuss elements that set interns up for positive experiences.

Abstract

A great many careers are rooted in successful internships. In a time where recruiting young, diverse, motivated students and recent graduates is critical to the future of conservation and preservation organizations, how do you develop internships that help interns grow and produce real work products? Come learn about the elements of being a successful intern host and discuss your experiences with interns and internships. This session will also introduce attendees to ways the NPS is using hiring authorities to retain talented interns.

Keywords

youth, internships

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NPS National Internship Programs

What will I get out of this?

Audience members will learn about the NPS national internship programs, which provide paid work experience to hundreds of college and graduate students each year.

Abstract

This poster will summarize the national internship programs organized by the NPS Washington office. The NPS Youth Programs Division collaborates with the Cultural Resources, Partnerships, and Science and the Natural Resources, Stewardship, and Science directorates to administer several internship programs aimed at introducing diverse undergraduate and graduate students to career fields in the NPS. Learn about how these internship programs work; how they're funded, the types of intern projects, program partnerships, and how parks and programs can become involved.

Keywords

internships, youth, partnerships

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Marine Wildlife in the National Park Service

What will I get out of this?

What are conservation concerns for marine wildlife in parks? This Servicewide analysis provides insight into specific research, conservation, and management needs for marine wildlife stewardship.

Abstract

Beginning in 2015, the Biological Resources Division's Migratory Species Program conducted an extensive review of marine wildlife stewardship and science Servicewide in order to better understand the current status, impending threats, and resource needs of the coastal and marine parks with regards to marine mammals and sea turtles. Most marine wildlife species are highly migratory, but protected areas like parks serve as migratory pathways and areas of refuge, often protecting key foraging, breeding, and resting habitat. As threats and obstacles steadily increase, continued assessment and growth of management and conservation programs insures the vitality of these protected places. This project entailed in-depth interviews with coastal and marine parks, Regional staff, Inventory and Monitoring Division biologists, and park partners to amass a snapshot of marine wildlife stewardship Servicewide, identify current and impending threats, and ascertain science and resource needs, and create action items for NPS marine stewardship in the next century.

Keywords

marine wildlife, stewardship

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Glenn Plumb, Chief Wildlife Biologist, Biological Resources Division, National Park Service

Costa Rica Science Exchange

What will I get out of this?

Learn about a successful international conservation model, The Costa Rica Science Exchange, which promotes youth involvement and public engagement through citizen science and strong partnerships.

Abstract

What do Continental Divides, migratory birds, and high school students have in common? The Costa Rica Science Exchange! In this program, youth from Monteverde, Costa Rica and Estes Park, Colorado spend ten days experiencing the ecosystems, wildlife, and culture of each other's homes. Students conduct citizen science projects in both locations that focus on conservation issues shared by the parks, such as: migratory bird counts, willow vegetation surveys, water quality monitoring, predator/prey transects, and setting up camera traps for wildlife. During these exchanges, students and instructors create an international network with colleagues involved in natural resource conservation and share ideas about how protected areas are managed. This program engages today's youth in better understanding scientific data collection and how it relates to global conservation efforts. It also exemplifies a successful international partnership between cities, nonprofits and parks.

Keywords

science-literacy, youth, partnerships

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Therese Johnson - NPS

Dispersed Fishing Use Monitoring Using GPS: Proof of Concept

What will I get out of this?

Audience members will see results and analysis of a low-cost visitor-use monitoring technique including determination of sample sizes for meaningful management application.

Abstract

Description of a project demonstrating a new fishing-activity sampling technique along Fire Island National Seashore beaches summer of 2012. Location-time when fishing was observed was recorded using handheld touchscreen GPS by existing park interns and staff. Sampling times-locations were dependent on people's regular work and varied by location. Most waypoints were logged between May and August 7, 7 am to 6 pm. Combined, searches summed to 1794 kilometers, 228 hours, 209 one-directional search-tracks, and 532 waypoints. Visitor use fishing activity was low to non-existent at the times-locations sampled, except near four locations. Fishing activity increased from May through August. The unstructured sampling provided adequate numbers of observations to compare results between areas and times that were sampled, and to statistically estimate confidence intervals. Some areas, times of day, and many months were not sampled during this proof of concept. The minimum number of samples needed in future studies was estimated.

Keywords

none

Visitor-use, GPS, fishing

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Public Service Announcements for Fish and Shellfish Consumption Advisory Education

What will I get out of this?

People will see Public Service Announcements (PSAs) created to remind fishermen to check for specific types of fish and shellfish consumption advisories.

Abstract

Short Public Service Announcements (PSAs) have been developed by the NPS Ocean and Coastal Resources Branch, Office of Education and Outreach, Colorado State University and others to help spread the word about checking for fish and shellfish consumption advisories before fishing and harvesting fish and shellfish. Individual short-video cartoon PSAs that can be viewed on mobile phones and other screens have been created for shellfish, mountain lake mercury, tropical fish toxins, and freshwater fish. These PSA's will be on display along with information on how to find them for use in park areas.

Keywords

PSA, advisory, education

Lead author / Session organizer

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none

Maintaining ancient forests for viable ecosystems in public places to protect endangered species

What will I get out of this?

Participants will gain a clear understanding of proven methods of maintaining and preserving valuable heritage and wildlife trees across the landscape.

Abstract

Trees throughout North America are host to resident and migratory species depending on elevation and location within a watershed and forest type. Vertical standing structure is required for 33-46% of these species to maintain good habitat, nesting and foraging as well as safety trees for species that have no care for boundaries. Horizontal structure, (downed woody debris,) maintains more life than green trees and logs and transfers nutrients to many stages of the ecosystem. Soils enriched by these decaying trees are the placenta of any ecosystem. This lecture will demonstrate examples of modifying trees from hazards to safe structures to maintain these biodiversity components. With climate change and the rate of extinction it is critical that we maintain safe vertical structures in national parks by trimming hazards to a safe height for personnel as well as visitors to national parks and neighboring lands.

Keywords	Trees, eco	Trees, ecosystem, endangered			
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10658 Compass Session

Visitor use management: Innovative approaches that inform management solutions

What will I get out of this?

Audience members will leave this organized session with understanding the innovative approaches being used to confront complex management challenges and inform contemporary management solutions.

Abstract

Planning for, managing, and monitoring visitor use in national parks and other protected areas has long captured the attention of managers and researchers. To effectively manage visitor use in protected areas, information is needed about visitors, such as their temporal-spatial distributions of use, activities, perceptions, and their impact on park resources and experiences. The approaches to gather such information has become increasingly complex, including geo-spatial modeling, visitor simulation modeling, GPS visitor tracking (including cell phone technologies), geo-referenced interviews, web-cams, remote sensing, time-lapsed and motion-activated photography, and social media. Such approaches have provided park managers with novel information leading to innovative solutions to visitor use issues. The presenters in this organized session will highlight many of these approaches and explain how evolving methods translate into clear and measureable management actions.

Keywords

visitor use, monitoring

Lead author / Session organizer **Matthew Brownlee** Assistant Professor

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Mapping the relationships between trail conditions and experiential elements of long-distance hiking

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Exploring new methods and technologies in trail use and impact monitoring for protected areas

Re-Evaluating Carrying Capacity and Visitor Use Management at Waterfall-Based Parks in Tennessee

Monitoring multiple visitor use indicators in diverse recreation settings in the White Mountains National Forest

Implications of webcam viewing for brown bear management at Katmai National Park and Preserve

Preservation Planning and Partnerships in Gateway Communities and Managed Conservation Areas

What will I get out of this?

State, tribal, local, and federal preservationists will learn to anticipate potential impacts of park partnerships on gateway communities to make better informed resource management decisions.

Abstract

Historic preservation has proven socioeconomic and environmental benefits, such as maintaining higher property values and creating a greater sense of community. This session will increase awareness of how the National Park Service provides technical and financial assistance for capacity building, informing state, tribal, local, and federal preservationists about available planning tools to anticipate and mitigate impacts of parks and partnerships on gateway communities. Selected case studies include two UNESCO World Heritage Sites, span nine states and one international border, and represent large and small urban and rural areas to demonstrate the relationships involved in managing conservation areas. Audience members will be better able to facilitate place-based conversations about informed resource management decisions with a new understanding of partnerships, acknowledging an unknown future due to climate change. This will result in a more just and equitable management of resources during standard operations and disaster response through increased information sharing.

Keywords

community, partnerships, planning

Lead author / Session organizer

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The Public Lands Flora: Building informatics systems to manage biodiversity in protected areas

What will I get out of this?

Biodiversity informatics systems are increasingly critical to managing protected areas on a changing planet, this paper offers a vision for implementation of an NPS-wide system.

Abstract

The Public Lands Flora (http://symbiota.org/nps) is a case-study for how to develop biodiversity informatics systems across disciplines to benefit land management in protected areas. The Public Lands Flora links checklist management and occurrence data with identification and analysis tools. The system draws on the NSF-funded open source content management system Symbiota and accesses millions of plant specimens housed in natural history collections. Symbiota is a platform for documenting biodiversity occurrences with a wide range of tools to share, visualize, and synthesize biodiversity data for research and management. Symbiota is a collaborative open-source software framework bringing together biodiversity informaticians and the collection research communities. With more than 30 portals, the Symbiota system access over a hundred million records across all taxa and offers a roadmap for a multi-phyla biodiversity information management system for protected areas globally.

Keywords	Biodiversity, informatics
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10654 Challenge Session Drowning in Controversy: How managing submerged lands promises to be messy, complex, and increasingly important

What will I get out of this?

Participants will leave informed as to the outcome of recent controversies, including Supreme Court decisions, governing access and use of inter tidal and submerged lands

Abstract

The National Park Service (NPS) is one of several entities responsible for managing natural resources in coastal areas. However, the challenges faced by NPS managers are not unique. This forum outlines key topics associated with managing inter tidal and submerged lands. Antiquated legal statutes, changing water levels, and the fluid nature of park boundaries adjacent to water resources converge to make managing inter tidal and submerged resources, regardless of jurisdiction, particularly controversial. Speakers will frame the conversation using real world examples after which the moderator will host a conversation with attendees turned participants to discuss what works and what doesn't when managing public lands along the our nation's coasts, Great Lakes, and inland waters. Presenters are a combination of NPS managers with daily responsibility for managing submerged lands and inter tidal resources and professors from Norte Dame Law School who follow agency actions as they wind through our federal courts.

Keywords

Submerged lands, controversy

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NEPA Coordinator, Acadia National Park

Superintendent, Apostle Islands

Policy and Regulatory Specialist, National Park Service

Associate Professor of Law

Professor of Law

Bat Associations of Grand Teton National Park: Where Bats Fly

What will I get out of this?

Viewers will learn how bat species and their relative activity are influenced by environmental variables and the built environment in a high elevation mountainous environment.

Abstract

With recent rabies concern from bat-human contact in park housing and the march of the devastating White-nose Syndrome ever closer to Grand Teton National Park, we recently launched a research program to understand better the ecology of park bats.

Bat presence and activity may depend on many variables including habitat, weather, prey availability, proximity to roosts and water, time of day and season, reproductive status, and more generally, the geographic range of individual species. This poster will describe species occurrence and nighttime activity evaluated in the context of environmental variables and the build environment.

Nighttime activity of bats in Grand Teton was documented using acoustic detectors. Bat echolocation

Keywords

bats, echolocation, parks

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10830 Update Session

A Framework for Visitor Use Management on Federal Lands and Waters

What will I get out of this?

This session introduces the newly released IVUMC Visitor Use Management Framework, and will discuss framework application by the agencies involved in the council.

Abstract

The Visitor Use Management (VUM) Framework, Edition One provides a flexible process for managing visitor use on federally managed lands and waters that can be incorporated into agency planning and decision-making processes. Visitor use management is fundamental for maximizing benefits to visitors while achieving and maintaining desired conditions on federal lands and waters. The VUM Framework can aid managers in collaboratively developing strategies for providing access, connecting visitors to key visitor experiences, protecting resources, and managing visitor use. The framework builds on lessons learned from previous approaches (e.g., Limits of Acceptable Change and the Visitor Experience and Resource Protection Framework) and will be shared by the six council agencies. The session will provide an overview of the recently released VUM Framework as well as discuss its utility for agency managers and researchers. This session will include case studies to illustrate how the framework is already being applied.

Keywords

visitor use management

Lead author / Session organizer Kerri Cahill Branch Chief and Visitor Use Management Team Lead

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introducing the Visitor Use Management Framework from the Interagency Visitor Use Management Council

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Applying the VUM Framework at Zion NP

Applying the VUM Framework to re-envision visitor use at Glacier Bay NP&P

Application of VUM on the Pike National Forest

Applying the VUM Framework to address camping on the Bridger-Teton National Forest

10748 Update Session

Landscape Conservation Cooperatives: Supporting an Ecologically Connected Network of Parks and Protected Areas

What will I get out of this?

Demonstrate ways Landscape Conservation Cooperatives have supported parks and protected areas to implement the large landscape and longer timeline management needs identified in "Revisiting Leopold".

Abstract

As part of implementing "Revisiting Leopold" and Policy Memo 16-01 "Resource Stewardship for the 21st Century", the NPS has become a key partner within the Landscape Conservation Cooperatives (LCCs), a conservation network established to develop landscape-level strategies for understanding and responding to climate change impacts, and to help managers sustain the continent's natural and cultural resources. The "Revisiting Leopold" report said "Confronted with continuous and dynamic change and the goal of preserving ecological integrity, NPS management strategies must be expanded to encompass a geographic scope beyond park boundaries to larger landscapes and to consider longer time horizons. To meet this charge, resource managers have to innovate and develop new ways to implement conservation. This session provides an introduction to LCCs and examples of the powerful benefits to parks that have embraced LCCs. Attendees will hear examples of large landscape conservation and learn the practical steps that brought them success.

Keywords

Landscape, conservation, adaptation

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Implementing the South Atlantic Landscape Conservation Blueprint

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Envisioning and Developing a Southeast Conservation Adaptation Strategy

Partnering to Develop and Implement a Northwest Boreal Landscape Design

Landscape Conservation Design in the Pacific Northwest

Speakers discuss the emerging role of protected area managers in large landscape conservation.

CAPSTONE CAMPAIGN: Exploring the Deep Reaches of Our Pacific Ocean Marine Protected Areas

What will I get out of this?

Connecting a broad community of scientists through advanced technologies enables large-scale characterization of the ecological, environmental and archaeological aspects of the Pacific Marine National Monuments.

Abstract

CAPSTONE (Campaign to Address the Pacific monument Science, Technology, and Ocean NEeds) is a three-year NOAA-led effort to explore remote, deep ocean areas of the Pacific Marine National Monuments and National Marine Sanctuaries. Initial characterization of deep sea habitats, geological phenomena, and cultural heritage conducted by NOAA Ship Okeanos Explorer supports science and management needs for these monuments. Data is made publicly available within 60-90 days and include oceanographic and geophysical parameters, video, and images. Advanced communication and deep submergence technologies enable a collaborative science model allowing shore-based interdisciplinary science teams to join dives through video and data streamed live over the Internet. The video streams are an outreach tool that raises public awareness of these unique symbols of ocean conservation. This paper presents the successes of telepresence-enabled exploration and recent discovery of a WWII-era B-29 bomber near Tinian Island and an Imperial Japanese Navy auxiliary vessel off Wake Atoll.

Keywords

pacific, archaeology, exploration

Lead author / Session organizer

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Samantha Brooke, Manager, NOAA Marine National Monuments Program

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Preventative Conservation at NPS Museum Resource Center

What will I get out of this?

Audiences will gain perspective of preventative conservation and how staff at the National Park Service Museum Resource Center applies methods to long term care.

Abstract

Proper preventative conservation for museum collections requires effective connections in order to sufficiently protect museum collections on an environmental level. All museum collection storage locations have particular environmental conditions which need to be controlled and monitored in order to maintain optimum preventive conservation standards. At the NPS Museum Resource Center (MRCE), one key objective of preventive conservation is to identify, monitor, document and mitigate agents of deterioration to provide a safe and stable environment for museum collections. Museum staff focuses on managing temperature, relative humidity, visible and ultraviolet light, dust, air pollution, and integrated pest management. Proper oversight and necessary action has proven to prevent potential disaster such as the recent mold outbreak at Harper's Ferry which required an emergency collections move to MRCE. This poster will demonstrate how MRCE's implementation of preventative conservation reinforces connections between MRCE staff at the collections storage facility over time.

Keywords

Conservation, Storage

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Bats, White-nose Syndrome, and the Western Maryland Railroad Tunnels

What will I get out of this?

How a study of the rare bats living in the historic railroad tunnels of C&O Canal National Historic Park lead to unique habitat protection measures.

Abstract

Three abandoned railroad tunnels in Chesapeake & Ohio Canal National Historical Park host the largest number of hibernating bats in the state of Maryland. They're also home to 2 federally protected and 1 state endangered bat as well as several other bat species. But conflicts with visitor use and resource protection, as well as the spread of the fatal white nose syndrome (WNS) had park staff. A study of bat populations concluded that the three tunnels provide regionally important hibernation sites for at least five bat species, and that individuals that hibernate in the tunnels and emerge in spring have no obvious signs of white nose syndrome. To protect these bats and the tunnels (included on the National Register of Historic Places as contributing to a historic district), the park commissioned specially designed gates to allow bat passage while preventing park visitors from entering the hibernacula.

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bats, white-nose, WMRR

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The Greater Grand Canyon Landscape Assessment

What will I get out of this?

Understand the process involved, results, and lessons learned from conducting a collaborative, spatially-explicit resource condition assessment across a large, multijurisdictional landscape.

Abstract

There is a growing chasm between the vast amount of scientific information available and the capacity of resource managers to effectively mobilize it to inform decision making. The Greater Grand Canyon Landscape Assessment (GGCLA) is a value- and data-driven collaborative effort aimed at assessing the condition of natural and cultural resources across a five million-acre multijurisdictional landscape in northern Arizona. The GGCLA actively engaged stakeholders and subject matter experts through a series of workshops to identify shared resource values and associated condition indicators, stressors, and data sources. Available and derived data were used to develop spatially-explicit models that provided the foundation for participatory analysis and mapping of priority areas to guide planning and stewardship. Results indicate existing datasets can be effectively used to assess resource conditions across large landscapes and that active stakeholder engagement can engender confidence in both the process and the end products.

Keywords

landscape, assessment, stakeholders

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Brett Dickson, Conservation Science Partners

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Connections Across "Cultures:" National Park Service and Corporate Agriculture

What will I get out of this?

Audience members will come away understanding that "cultural" barriers, in this case federal land managers and corporate agriculture, do not need to prevent partnership success.

Abstract

"Cultural" barriers need not prevent partnership success. For the past decade, the NPS, State of Colorado, and EPA have been collaborating with Colorado agricultural to reduce excess atmospheric nitrogen deposition causing ecological impacts in Rocky Mountain National Park. Studies show that emissions from Colorado agricultural production are a significant contributor to the excess deposition in the park. This project has connected agencies with agriculture for an unconventional partnership to voluntarily reduce and improve management of emissions. Building the partnership required uncomfortable and repetitive exchanges as perspectives of the different "cultures" found ways to agree on a path forward that balances the cost and benefit to both industry and agencies. Obstacles have been overcome through relationships and mutual understanding achieved through regular exchanges, perseverance, and staying current with research and science communication. While greater park protection from this partnership is not certain, future success is significantly more likely than the past.

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cultures,agriculture,air quality

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"To the memory of their fellow citizens": Preserving multi-scale battlefield landscapes through government-stakeholder collaboration

What will I get out of this?

Attendees will learn how the ABPP provides technical assistance, federal grants, historical advice, and other related services to communities and stakeholders with battlefield preservation objectives.

Abstract

With the first battlefield monument erected in 1799 (Revolutionary Monument, Lexington, Massachusetts) and the first attempts at battlefield preservation initiated in the 1820s (The Bunker Hill Monument Association, 1825), American battlefield memorialization and preservation is as old as the nation itself. However, in contrast to the largely triumphalist monuments of the nation's early decades, current study, commemorative, and preservation practices center on battlefields as common ground which facilitate community heritage engagement and social healing. This poster will introduce the ABPP's place within the NPS; present ABPP battlefield preservation techniques; and demonstrate how the ABPP provides grant support, technical assistance, and historical advice for a diverse range of government organizations and NGOs seeking to better understand, preserve, and interpret our nation's battlefields. Best practice case studies will exhibit recent collaborations including projects involving indigenous sites and peoples, battlefield boundary and content studies, Section 106 compliance, and land acquisition battlefield preservation initiatives.

Keywords	Preservati	on, battiei	ielas, Culturai		
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authors / organizers					
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10656 Exhibit -- Tabletop The National Park Service's American Battlefield Protection Program and Success Stories at Indigenous Sites

What will I get out of this?

The public learns how a small federal program can provide technical assistance, grants, and other benefits for communities' battlefield preservation needs.

Abstract

Keywords

Preservation, Cultural, Battlefields

The ABPP submits a proposal for an exhibit for the 2017 George Wright Society Conference. Surrounding an image of the National Park Service arrowhead will be photos of battlefields, archeology work, and public activities related to battlefield preservation. The purpose of the exhibit will be to provide an overview of the ABPP program, an explanation of how it fits within the NPS, and how it can help communities. Examples will be displayed focusing on work at indigenous sites (Wood Lake, Honey Springs) or related to indigenous people (Pequot, Pyramid Lake). It will also explain our battlefield preservation techniques, recent best practices and success stories, and opportunities for federal grant money. We will provide handouts and other information to be placed on the table.

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Fasttrack Session

Utilizing NASA Earth Observations to Enhance Decision Making for the National Park Service

What will I get out of this?

Collaboration between NASA and park managers to foster use of Earth observations while providing unique capacity building opportunities for the future natural resource management workforce.

Abstract

Ecosystem change poses significant risk and cost to the National Park Service (NPS) mission to preserve and educate. To address environmental challenges, the NPS has partnered with the National DEVELOP National Program to leverage NASA's suite of Earth Observing satellites, characterizing the extent, timing, and determinants of natural and human stressors on our national parks. Under NASA's Earth Science Division, DEVELOP's mission is to build the capacity of both participants and project partners to apply Earth observations in their decision making. This session will showcase several projects that DEVELOP participants have completed over the past year, with a focus on partners' increased awareness of NASA Earth Observing information products and participants' exposure to NPS decision makers.

Keywords

NASA, decision-making, collaboration

Lead author / Session organizer **Amanda Clayton** Project Coordination Fellow

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Ryan Avery, Project Coordination Fellow, NASA DEVELOP Program

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presentations are given here Assessing Snow Cover Distribution and Persistence Changes in the Sky Islands of Saguaro National Park

Reconstructing Algal Productivity and Clarity of Alpine Lakes in Rocky Mountain National Park

Monitoring Invasives in Big Bend National Park, Valles Caldera National Preserve, and Bandelier National Monument

Monitoring Mangrove Health and Extent in Everglades National Park

Partnership, perception, and poaching: The impact of constituency building programs on development and conservation sentiment

What will I get out of this?

Audience members will gain a more nuanced understanding of conflict, out-reach programs, and constituency building between protected spaces and adjacent communities in South Africa.

Abstract

The Kruger to Canyons Biosphere in South Africa includes national, provincial, and private protected areas (PAs), as well as mining operations and over 1.5 million people living in relatively high-density communities. Given the history of removal and exclusion of local black populations from PAs, relationships between them are often fraught with tension. Increased rhinoceros poaching in the region further hardens management borders and is damaging to relationships across them. The primary means of accruing benefits and relationship building across management borders are employment in the ecotourism sector and any kind of out-reach program established by the parks and reserves. This paper will provide a more nuanced understanding of how relationships across management borders between PAs and communities have been affected by the "war on poaching", and also what constituency building programs are most effective at reducing conflict, addressing development goals, and fostering conservation support within communities.

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Constituency building, conflict

Lead author / Session organizer

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Creating Connections through Predictive Modeling and Cultural Resources Research

What will I get out of this?

This paper will connect prehistoric and modern populations using case studies of predictive modeling using NPS archeological site data from DEVA and Eastern coastal parks.

Abstract

Internships with the NCPTT in Natchitoches, LA and NPS CR at WASO through the YLCC program have created connections through people, space, and time: research from Death Valley National Park (DEVA) and parks on the Eastern Seaboard have benefit greatly from these intersections. The NCPTT DEVA project developed a maximum entropy niche modeling approach to understand site formation processes as well as prehistoric and historical site selection, with the purpose of informing park personnel the location of potentially significant cultural resources. The YLCC internship at NPS WASO approached site modeling by using pre-existing database information to measure the effect of modern climate change on known cultural resources. Research from both projects have benefit from the collaboration of the other--during the projects themselves, through professional dissemination of results, and informing research methodologies and strategies in subsequent projects.

Keywords

GIS, Climate, Modeling

Lead author / Session organizer

Lindsey Cochran Ph.D. Student

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Additional authors / organizers

David Gadsby- Archeologist, WASO

Tad Britt- Chief of Archeology and Collections, NCPTT

Environmental Literacy: Who will frame it?

What will I get out of this?

Provides definitions of Environmental Education/Environmental Literacy

Abstract

A movement exists to bring the importance of environmental education (EE) to the forefront of leaders worldwide. Richard Louv, who, in 2005, published his book Last Child in the Woods, spearheaded this, pointing to the growing trend of lives focused indoors as Nature Deficit Disorder (NDD). With educational systems evolving in an increasingly virtual pathway (Hooferth and Sandborn, 2001), the responsibility for educating the public about the environment now falls on the shoulders of Parks and Recreation Professionals. In addition, research shows that environmental education instills a love for the natural world while encouraging stewardship and conservation (Louv, 2005). The purpose of this poster is to develop a better understanding among parks and recreation professionals of Environmental Literacy (EL) as it relates to the future of public lands; provide resources for EE program development; and promote a call to action for the North American Association for Environmental Education (NAAEE).

Keywords

Environment, Parks, Lands

Lead author / Session organizer Virginia Coco PhD Student

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Additional authors / organizers

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Closing the STEM Gap With Diverse Youth: The Groundwork USA Approach

What will I get out of this?

Groundwork USA has been able to close the science gap for diverse youth through its corps programs using applied science to meet urban restoration challenges

Abstract

Groundwork USA was created by the National Park Service and EPA. Our goal is to work on the environmental, economic, and health impact facing cities because of the presence of brownfields. Groundwork's approach is to initiate restoration work only thru community involvement, including youth. One obstacle is that many inner-city youth of color, nationwide, often drop out of science programs after entering in college as the course work is too challenging and/or lack of community support. Research shows this is often attributed to a lack of funding for expert instruction, poorly funded laboratories, and cultural priorities. Groundwork successfully changed this trajectory by using unique approaches to close the STEM gap that motivate youth to reconsider the impact they can have on their community and changed opinions of restoration work by utilizing a variety of applied science programs that impact a youth's network leading to new-found appreciation for this work.

Keywords

youth, diversity, STEM

Lead author / Session organizer

Curt Collier National Youth Programs Director

Groundwork USA curt@groundworkusa.org

Additional authors / organizers

An attempt will be made to bring a number of students to the poster session. The youth will have either worked on the Urban Archaeology Corps or served in a similar program.

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10734 Challenge Session

Understanding the Visitor Experience and Transportation Confluence: Innovative Research and Strategies to support planning initiatives

What will I get out of this?

Presenters will challenge the traditional planning and research paradigms to meet emergent and evolving visitor use management needs in the context of the NPS mission.

Abstract

The National Park Service mission, "...to preserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations", is at the heart of all actions within the agency. As such, it is imperative that all NPS transportation plans, projects, and operations strive to support the enjoyment of visitors. Transportation has the potential to substantially influence visitors' experiences while visiting NPS units. Transportation within the National Park Service is about more than moving people and goods from an origin to a destination. Rather, transportation in the National Park Service facilitates visits to unique destinations by providing the public with both access to and mobility within the nation's natural gems and cultural treasures. Therefore, the goal of this presentation is to challenge participants to think creatively about how visitor experience contributes to transportation planning in the NPS.

Keywords

Transportation, Visitor Experience

Lead author / Session organizer **Rachel Collins** Visitor Use Management Specialist

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Additional authors / organizers

NPS Visitor Experience and Transportation initiatives

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Applying best practices in transportation planning to the NPS context

Visitor use management as a framework to address transportation and resource management challenges, Arapaho-

Simulation modeling to estimate integrated transportation and visitor experience capacities, Cadillac Mountain, Acadia

A stated choice approach to Grand Teton National Park Visitors' Transportation Preferences

10642 Collaboration Session

Next-Gen Park Interpretation: Giving Visitors More Than They Expect

What will I get out of this?

Attendees will work on the scope and content of a theme issue of The George Wright Forum on history and interpretation in national parks.

Abstract

The NPS keeps tabs on the park maintenance backlog to track the magnitude of budget shortfalls, but there is no companion assessment for interpretive maintenance. However, stories have a life cycle, and historic places take on new meaning over time. This workshop will gather potential authors for a thematic issue of The George Wright Forum that will address the chronic problem of outdated interpretation at national parks and the related issue of treating interpretation of natural and cultural resources separately. Themes under consideration include interpretation life cycles, the concept of generational significance, integrating natural and cultural interpretation, and interpreting sites of healing. This workshop will bring together authors who are committed to contributing (three to date) along with others who are interested in participating to discuss the issue's scope and content with the three guest editors.

Keywords

interpretation, history,

Lead author / Session organizer

Rebecca Conard Co-editor, George Wright Forum

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Additional authors / organizers

John Sprinkle, Bureau Historian (WASO), National Park Service (and GWF guest co-editor)

Thomas Medema, Chief of Interpretation (WASO), National Park Service (and GWF guest co-editor)

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10606
Fasttrack Session

Planning for resource protection and visitor use in Brazilian national parks

What will I get out of this?

The USFS and NPS collaboration in Brazil provides a novel approach to efficiently and strategically plan for the future protection and use of conservation areas.

Abstract

The US Forest Service (USFS) invited the US National Park Service (NPS) to assist with recent efforts for general management planning for the conservation system of Brazil, managed by the Instituto Chico Mendes de Conservacao da Biodiversidade (ICMBio). ICMBio identified the NPS planning process to develop "foundation documents" as an excellent starting point for building new management plans and adapting to the Brazilian legal framework in order to meet the needs of federal conservation units. Over the course of the past two years, NPS has assisted the USFS with several organizational and teaching workshops and two pilot projects to apply this new approach to general management planning in two very distinct Brazilian conservation units- Sao Joaquim National Park and Soure Marine Extractive Reserve. Lessons were learned that can be applied to general management planning for land management in the United States and globally.

Keywords

international, conservation, planning

Lead author / Session organizer

Sarah Conlin Project Manager

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Additional authors / organizers

Chris Church, Susan McPartland, Rose Verbos

Setting the context: Federal land management in Brazil

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Fulfilling the legal requirements of Brazilian conservation unit general management planning

Developing approaches for public use in Brazilian conservation units

Lessons learned from the Brazilian approach to the general management planning process

10782 Compass Session

Putting Culture First: Unpacking Toolkits for Large Landscape Preservation

What will I get out of this?

Participants evaluate large landscape approaches that bound culture, history and community, identify individual takeaways, and a collective charge for advancing cultural preservation at varied scales.

Abstract

What does the "whole ecosystem" approach to landscape conservation look like from the vantage of cultural values? This panel explores large landscape preservation through the lens of human ecology and examines the tools, metrics and relationships that protect and revitalize communities. Case studies feature predictive modeling for identifying indigenous cultural landscapes, story-telling to define and activate landscapes of healing, collaborative stewardship of scenic values, aligning urban organizations around the preservation and use of public spaces, and tools for defining battlefields through community engagement in technology. After lightning presentations by our five panelists, a facilitated discussion among participants will probe strategies that place communities at the center of collaborative conservation projects. Participants will identify tools that can inform their individual work environments, and share thoughts on collective actions to support "scaling up" cultural preservation.

Keywords

landscapes, heritage, engagement

Lead author /
Session organizer

Suzanne Copping Program Manager, Resource Stewardship and Partnerships

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Additional authors / organizers

Christine Arato (will not be attending, but helped organize the session).

Jonathan Doherty, Assistant Superintendent, NPS Chesapeake Bay Office

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Uniting Communities across a Landscape of Divisive History in Freedom's Frontier National Heritage Area

Engaging Partners in the Use of Visual Resources Assessment Tools to Preserve a Dynamic Landscape

Facilitating Mission Alignment around Regional Conservation among NGOs, Local Government and Conservation

Using Military Terrain Analysis to Support Community Stewardship and Protection of Battlefield Landscapes

Indigenous Consultation in the Era of Sustainable Development: The Ojibway Peoples of 10846 Canada **Paper** What will I get out of this? In the awakening of sustainable development, infrastructure and livelihood creation becomes intertwined **Abstract** as an important pillar for nation states and communities. Often times, it is these projects that are casted as opportunities for inclusive growth, income generation, and community development. But do these projects follow through with the procedures and processes with indigenous communities? Why are the efforts of indigenous consultation, in particular sensitive and inclusive approaches such significant ladders to true sustainable development. This paper will take a look at the complex issue of indigenous consultation and development in Western Quebec, Canada. Through this paper, we hope to inform the indigenous sovereignty and consultation procedures of the Ojibway Nation. With a history of being the second largest First Nations Population in Canada, we will explore the resilience in the consultation procedures of the Ojibway Nation and resilience in inclusive development in defense of their natural resources and sustainable livelihoods. **Consultation, Development Policy** Keywords Gabriela Corbera Executive Director at Global Social Innovation Forum, Researcher Lead author /

Session organizer

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Additional authors / organizers

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Stakeholder Collaboration for Transboundary Problem Solving in the Western Zion Canyon

What will I get out of this?

Attendees will learn about the benefits and challenges of establishing a collaborative stakeholder group focused on addressing regional issues around Zion National Park.

Abstract

Many of the pressing management issues facing National Parks have important consequences for the surrounding region. In the region around Zion National Park, rapidly growing park visitation, commercial development, and traffic congestion have emerged as critical problems. Stakeholders in the Zion region recognize that since the scope and source of these problems extends far beyond the boundaries of the park, so too must solutions. With the help of facilitators from the University of Utah, officials from local cities and counties, state and federal agencies, and other local stakeholders convened to discuss the issues facing the region and coordinate their problem-solving. Through a series of meetings that began in July 2016, participants gained a better understanding of the problems, actors, and conflicts in the region and were able to better leverage their time and resources for enacting solutions, demonstrating a model for collaboration across multiple geographic scales and levels of government.

Keywords

collaboration, regional planning

Lead author / Session organizer

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Additional authors / organizers

Danya Rumore, Associate Director, Environmental Dispute Resolution Program, College of Law, University of Utah

Matt Brownlee, Assistant Professor, Department of Parks, Recreation and Tourism, University of Utah

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Chaco Canyon Cross-Cutting

What will I get out of this?

We want to provide the National Park Service with a better "Suitability Map." Can you suggest data to be considered?

Abstract

Currently, the Chaco cultural landscape is under threat from horizontal drilling for oil and gas development, making the landscape vulnerable to encroaching infrastructure associated with resource extraction, such as drill pads with requisite access roads and pipelines, throughout the San Juan Basin. Documenting identified Chacoan community signature profiles and determining which areas are at risk of being affected by resource extraction and encroaching infrastructures will help the project partners with preservation and protection strategies.

Keywords

Satellite, Archaeology, EOS

Lead author / Session organizer

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Additional authors / organizers

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Sydney Neeley

Ryan Schick

11022	The Yosemite Museum			
11032 Poster	The Foseinite Museum			
/hat will I get out of this?	Visitors to the museum will learn that Native Nations are not dead restricted only to museums.			
Abstract	From the time it opened to the public in 1926, the Yosemite Museum building has experienced many changes. While it started as a true museum housing specimens of flora, fauna and cultural artifacts it is no primarily office space with a small museum. Now, a visitor to the museum can interact with a cultural demonstrator to learn about traditional and contemporary life skills and carry on a conversation about traditional and contemporary native land management practices.			
Keywords	Museum, American Indian			
Lead author / Session organizer	Ben Cunningham- Park Ranger/Indian Cultural Demonstrator Yosemite National Park ben_cunningham-summerfield@nps.gov			
Additional authors / organizers				

Does use level influence visitors' off-trail behavior in ways that are socially and ecologically important?

What will I get out of this?

This research shows that, in some places, visitor behavior may be more important than use levels when managing ecological impacts in off-trail areas.

Abstract

Conventional thought in recreation management has been that visitors will spread out or disperse when sites are experiencing high use levels, especially in or into off-trail areas. These patterns of off-trail dispersion have the potential to cause both social and ecological impact. Therefore, understanding and managing visitors' off-trail behavior is often a concern for park and protected area managers. Using GPS-based tracking techniques combined with standard visitor use level counts from seven different protected area locations (Grand Teton, Rocky Mountain, and Yosemite National Parks and Arapaho-Roosevelt National Forest), this study shows that in some settings, visitors disperse less during periods of high use and more during periods of low use—directly opposite of the longstanding assumptions. These findings indicate that, at some recreation destinations, less ecological impact may occur during periods of high visitor use. These results have implications for visitor use management and recreation use modeling.

Keywords

Visitor behavior, GPS

Lead author / Session organizer **Ashley D'Antonio** Assistant Professor in Nature-Based Recreation Management

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Additional authors / organizers

Christopher Monz, Utah State University

10631 **Compass Session**

Chanties for Change: The Combustion of Science and Art

What will I get out of this?

Find innovative ways to spread NPS messages and stay current in the global community. Creative platform development keeps our public engaged.

Abstract

Cabrillo National Monument looks to increase educational programming and understandings of natural and cultural significance for our communities (including Baja, Mexico). Pressing the challenge for new audiences to engage in our public lands, we call our rock star alter egos to get the messages across. To strengthen partnerships, CABR has several artistic programs which engage communities and raise scientific/cultural understandings and exposure to the public. We look for open dialogue and audience participation in this session, to assist in our collective strategy and bring together ideas in creative platform development for National Park Service goals. One way we can do so is through music..... and we are ready to perform! Come get creative with us and also enjoy some small tastes of San Diego.

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music, science, art

Lead author / Session organizer Tavio del Rio Park Ranger (I)

Additional authors / organizers CABR tavio_del_rio@nps.gov

Transmission of environment values: Who are the most influential sources and how effective are they?

What will I get out of this?

Data will be shared on the effectiveness of environmental values transmission from principal sources of influence and the most influential sources in the transmission process.

Abstract

The transmission of values has been well studied, however the transmission of environmental values has received relatively little attention. Given that values are a predictor of attitudes and behavior, it is important to understand from whom they come and to what degree they are transmitted. This presentation examines the consonance and dissonance of environmental values between young adults and their self-identified principal source of influence. It also considers the salience of a variety of sources. Young adults, ages 19 to 21, at Clemson University were solicited to take an online questionnaire. A similar online questionnaire was sent to their principal sources of influence. A total of 93 young adult-principal source of influence pairs provided usable data. The results of the study will be shared to help conservation decision makers understand the effectiveness of environmental values transmission from principal sources of influence and the most influential sources in the transmission process.

Keywords	values, transmission
Lead author /	Gina Depper PhD Candidate
Session organizer	Clemson University gdepper@clemson.edu
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10928 Collaboration Session	Meeting of GWS Student Chapters (Working title)
What will I get out of this?	Value proposition to come.
Abstract	Formal abstract to come. Meeting of GWS chapters.
Abstract	Formal abstract to come. Meeting of GWS chapters.
Keywords	GWS student chapters
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Lead author /	Gina Depper Graduate Student Representative to GWS Board
Session organizer	
Session organizer	Clemson University gdepper@g.clemson.edu
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10850 Compass Session

Inventories 2.0: Shaping the Next Generation of Baseline Inventories of NPS Natural Resources

What will I get out of this?

The timing and audience at GWS provide an opportunity to engage a broad array of park stakeholders on future needs for NPS Natural Resource Inventories.

Abstract

Since 1992, the National Park Service Inventory & Monitoring program has conducted an effort to complete 12 "basic" natural resource inventories, which were designed to provide park managers with information needed to effectively manage the natural resources. After 25 years, the NPS has nearly completed the planned inventories, providing a baseline that informs scientifically-sound management decisions and serves as a basis of long-term monitoring plans that help ensure the future health of the parks. The NPS I&M Program has begun identifying new natural resource inventories that will continue to inform current and emerging resource management decisions at the park level. This session will summarize interim findings from park-, I&M network-, regional-, and national-level scoping and provide an opportunity to provide additional input on inventory needs, opportunities to integrate inventory information into park operations, and potential uses of inventory data by partners and programs outside the park service.

Keywords	Inve	ntory, Mo	onitoring, Inventories
Lead author /	Joe	DeVivo	Deputy Chief For Science, Inventory & Monitoring Division
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Additional authors / organizers			
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10762
Collaboration Session

Developing Effective Communities of Practice: Using COAST as an Example

What will I get out of this?

We will brainstorm and discuss what can make communities of practice successful as a communication tool to develop knowledge and shared experience for resource management.

Abstract

Parks contend with a diversity of management challenges nation-wide. With limited staff and declining budgets it is critical that we work together to share knowledge and expertise to protect park resources. The National Park Service is piloting a Coastal and Ocean Advisory and Support Team (COAST). This interdisciplinary focus group will bring together experts and managers from across the Service to share skills, information and knowledge. NPS plans to use Communities of Practice to 1) improve communication between parks, regions and the Washington office; 2) encourage interdisciplinary approaches to issues; and 3) provide the right information at the right time, with little effort, and with efficient use of staff time. As our communities are being developed, we are looking for suggestions and ideas from the field on "What is important to make communities of practice successful?", "What can prevent them from being successful?", and "What are we missing?".

Keywords

Coastal, Ocean, Community

Lead author / Session organizer

Eva DiDonato Chief, Ocean and Coastal Resources Branch

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Additional authors / organizers

Tracy Ziegler, Marine Ecologist, National Park Service

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Connecting people, parks, and science: the Desert Research Learning Center

What will I get out of this?

We will present the Desert Research Learning Center in concert with our sister centers across the park system, and how they support the NPS mission.

Abstract

The Desert Research Learning Center supports science and public education for the 11 U.S. national parks in the Sonoran Desert. Located on Saguaro National Park, the center leads citizen science activities in natural and cultural resources, engages local youth from underserved populations in park science, and broadly supports scientific inquiry in the parks. Our approach is collaborative – we extensively partner with academic and non-profit organization, as well as other NPS programs, such as the Inventory and Monitoring Program, Urban Agenda, and Office of International Affairs. We will highlight our flagship education and citizen science programs, synthesize emerging research findings, and propose opportunities for potential collaboration with other parks and partners. Please join us and our sister NPS Research Learning Centers for a discussion of our unique roles in supporting the National Park Service mission.

Keywords

Research, learning, science

Lead author / Session organizer

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Desert Research Learning Center elise_dillingham@nps.gov

Additional authors / organizers

Andy Hubbard, Sonoran Desert Network

Acadia 2050? Partnering with Universities to Create Interactive Climate Science Exhibits

What will I get out of this?

Participants will learn how to partner with universities to create accessible, sustainable, interactive climate science exhibits conveying complex issues and filled with replicable ideas.

Abstract

Participants will digitally visit Acadia 2050?, a new climate science exhibit installed in Acadia national park's nature center in May 2016 as a part of Acadia's 100-year celebration. From digital models to lenticular lenses to oral history interviews, exhibit designers will share many interactive examples and affordable approaches to communicating complex climate science concepts. This presentation will show how Acadia's exhibits invite visitors to join the climate change conversation and to consider how human lifestyles on the earth will shape the future of our national parks, the health of our ecosystems, and the quality of our lives. This presentation will also show the collaborative design process used with university faculty and students at NAU, COA, and Highlands University working with interpreters and resource managers at Acadia. A new accessibility interface will be shared as well as many low-cost, sustainable elements used in exhibit fabrication.

Keywords

climate, change, exhibits

Lead author / Session organizer **Lynne Dominy** Chief of Interpretation & Education

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Additional authors / organizers

Mike Kelly was the lead designer for this climate science exhibit and he is adjunct faculty in the School of Earth Sciences and Environmental Sustainability at Northern Arizona University.

10706 Update Session

Breakthroughs Bring Bison Restoration a Bit Closer

What will I get out of this?

Important developments in the biological and social science of bison, are both exciting to the public and bring ecological restoration of the species closer.

Abstract

Last year, an Act of Congress made bison the national mammal, and the International Union Conservation of Nature identified only two wild herds in the United States. Important scientific strides also were made in the ecological restoration of bison. 1) A population viability analysis conducted on the of 19 federal herds suggests how the fenced herds could be grouped to increase their effective size. 2) Genetic analysis demonstrates how herds can be monitored to determine when augmentation is necessary. 3) Techniques in embryo transfer showed how the herds with disease can still contribute to the bison gene pool. 4) Human dimensions studies showed how local communities can be directly involved in bison restoration. After the results of each bison study are presented, there will be a discussion of how they can be integrated to develop a full picture of wild bison restoration on several potential sites in the United States.

Keywords

bison, restoration,

Lead author / Session organizer **Peter Dratch** Supervisory Biology, National Wildlife Refuge System

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Additional authors / organizers

Looking forward: using population viability analyses to inform science-based bison metapopulation management strategies

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

American Icons in Metropolitan Grasslands: Bison Social Science Breakthroughs on Colorado's Front Range and Beyond

Transforming Interior Bison: From Livestock to Wildlife

10713

A Ten Step Program that Links Monitoring to Managment

What will I get out of this?

In a time of rapid environmental change, a monitoring strategy that links resource monitoring to management decisions is worth considering

Abstract

Resource monitoring which is often expensive and time consuming, is usually targeted to meet the goals of each land management agency. In a time of rapid environmental change and constricting federal budgets, there is increased call for monitoring that directly informs difficult resource decisions faced by land managers. A recently published paper outlines a ten step process of getting to fundamental management issues and designing the appropriate monitoring methods to address them. This process preceding monitoring is outlined in a way that is useful to both scientists and managers.

Keywords

Monitoring, Management

Lead author / Session organizer

Peter Dratch Supervisory Biologist

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Additional authors / organizers

Melinda Knutson has worked for the U.S Fish & Wildlife Service and the U.S. Geological Survey. She is an author on guidleines for applying adaptive management and is currently Midwest regional inventory monitoring (I&M) coordinator in the National Wildlife Refuge Systems. Bill Thompson has worked to start the I&M programs of both the National Park Service in Alaska and the Fish and Wildlife Service in New England. Drs. Knutson and Thompson are authors of a recently published paper: "A road map for designing and implementing a biological monitoring."

Wilderness Character Monitoring Continues on National Wildlife Refuges

What will I get out of this?

Because change in designated wilderness takes place over time, you need a strategy to get parks and refuges to continue the necessary monitoring.

Abstract

A consistent and robust method of wilderness character monitoring called "Keeping It Wild 2" was developed collectively by the four federal agencies that manage wilderness. Wilderness Fellows have contacted the refuge managers and scientists to revise their measures of wilderness character and showed them how to put that information annually into the database specifically for the purpose. This regular outreach by young Wilderness Fellows who understand the application of the Wilderness Act and how to enter the data for measures developed at the refuge, has proved the best way to insure the monitoring continues.

Keywords

Monitoring, Wilderness

Lead author / Session organizer

Peter Dratch Supervisory Biologist

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Additional authors / organizers

Marissa Edwards is a Wilderness Fellows working on wilderness wildlife refuges through a contract with American Conservation Experience

Effective Intergenerational Approaches for Parks

What will I get out of this?

The audience (especially managers, organizations and Governments) will learn how to provide meaningful opportunities to young people, and how these opportunities will also benefit them.

Abstract

With growing recognition that young people bring valuable ideas, enthusiasm, and first-hand experiences connecting youth to parks, there has been increasing opportunities for them to be involved with the projects and processes of various park-related organizations and institutions. This session will share some of the options and challenges of providing intergenerational opportunities to Young Professionals, including the benefits of doing so. Tips will also be provided on the approaches that young people find most meaningful and engaging within these opportunities. Success stories of various organizations (such as the Canadian Committee for the International Union for the Conservation of Nature (IUCN) and the Global Youth Biodiversity Network) will be highlighted, as examples of ways that effective intergeneration decision-making processes have occurred.

Keywords

Youth, intergeneration, decision-making

Lead author / Session organizer **Shailyn Drukis** Young Professional

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Additional authors / organizers

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Changing Climate, Changing Policy: Subsistence Use and Wilderness Values in Gates of the Arctic

What will I get out of this?

At the increasingly important nexus of indigenous peoples, cultural and subsistence access to Parks and Wilderness, climate change, local knowledge, and impacts of local development.

Abstract

Traditional ecological knowledge holders and scientists agree that changing temperature and precipitation patterns in Alaska are inducing cascading ecological effects on northern ecosystems. These changes are not only a concern for plants and animals, but also for the Native Alaskans who rely on these resources for cultural and economic stability. Few studies have been conducted to address this increasing threat to traditional lifeways. Access for subsistence and wilderness values are priorities for park management, but the challenges wrought by climate change necessitate reevaluation of park policy in regards to these topics and their intersection. The primary concern is whether snowmachine access is being impeded by poor winter travel conditions and/or a shorter winter season. Potential climate change impacts on subsistence use of Gates of the Arctic were investigated by spending time and conducting interviews in the community of Anaktuvuk Pass.

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Arctic, ClimateChange, Subsistence

Lead author / Session organizer Chris Dunn PHD Student; George Melendez Wright Young Leaders in Climate Change Intern

University of Colorado - Boulder christopher.j.dunn@colorado.edu

Additional authors / organizers

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Current and Future Stewards: Strategies for Communicating Wilderness Values

What will I get out of this?

Participants will gain an understanding of the wilderness values of wilderness professionals and communication strategies used with the general public.

Abstract

The parks and wilderness profession continues to examine and represent multiple generations. These generations represent a diversity of values and numerous factors affecting individual perceptions. Do differences exist across these generations, or do parks and wilderness professionals share a common core of wilderness values? The purpose of this paper is to explore potential differences in wilderness values among wilderness professionals and to examine the appropriate strategies for communicating wilderness values with the general public. The paper will: 1) identify shared values among wilderness professionals across different generations 2) evaluate effective communication and education techniques for communication wilderness values, and 3) discuss barriers to connecting different generations to their wilderness heritage

Keywords

wilderness, values, communication,

Lead author / Session organizer

Robert Dvorak Associate Professor

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Additional authors / organizers

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Servicewide Water Resources Management

What will I get out of this?

Recent efforts to advance fishing management, wetlands restoration, water resource monitoring, and floodplain management in the face of climate change will be addressed.

Abstract

Keywords

water

The Natural Resources Stewardship and Science Directorate provides water resource disciplinary expertise to park units across the Service. The Water Resources Division continues to provide high quality service to park units across the National Park System and has developed new initiatives to support park management needs. Opportunities to support identification of servicewide needs and collection of private company funds for wetlands restoration are in development. Fish and fishing management policy and strategies are evolving to clarify expectations and cooperation with stewardship partners. Water resource monitoring is improving through training opportunities, standardizing monitoring practices, and improved water discipline/inventory and monitoring capacity. Floodplain management and development oversight is improving for parks servicewide to include new climate change standards. Water resource management provides many challenges and opportunities; and the National Park Service is working to ensure we protect our aquatic resources through thoughtful cooperation with our partners over time.

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Pathways to Parks: Fostering the Next Generation of Stewards

What will I get out of this?

Attendees will see the model that has been successful in integrating diverse youth into the federal workforce using a high investment stepwise process.

Abstract

The National Park Service (NPS) has set specific goals that chart a new direction of stewardship and engagement for youth, relevancy, and diversity. To meet these goals, Rocky Mountain National Park began a mutually benefiting partnership with Eagle Rock School to start the Pathways to Parks program. This program develops opportunities for a diverse community of students to connect with the NPS, get handson experience doing stewardship and science, increase scientific literacy, and provide a way for students to begin working for the NPS. Pathways to Parks utilizes a three-step approach to engage students: information, involvement, and internship. Steps include Eagle Rock coursework, professional development, field based citizen science projects, service learning, volunteering, and paid internships. This approach provides students with an introduction to the NPS, potential entry points to employment, and ultimately better prepares the next generation of park stewards.

Keywords

Internship, Pathway,

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Jon Anderson - Outdoor Education Specialist, Eagle Rock School and Professional Development Center

10878 Update Session

Engaging Youth in 21st Century Resource Stewardship

What will I get out of this?

The Audience will benefit from a critical examination of signature NPS resource stewardship youth programs, their challenges and opportunities, and how to measure success.

Abstract

The National Park Service has several established programs that provide rich opportunities for youth to directly engage in cultural resource stewardship. How well these initiatives function, and how successful they are in reaching youth on multiple levels are important ongoing queries to ensure such programs remain relevant and viable. The session panel, which includes student, partner, and NPS perspectives, will present an overview of such cornerstone NPS programs as Park Break, the Cultural Resources Diversity Initiative, Latino Heritage, Branching Out, and Urban Archeology Corps. Together the panelists will critically examine the impact of these programs by addressing such questions as: What are youth gaining? How is the NPS benefiting? How do the programs respond to issues facing urban teens? Do they align with career & technical trends in secondary and higher education? How well do they connect youth to conservation issues in their own communities? How do we measure success?

Keywo	rds

Additional authors / organizers

youth, urban, diversity

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Grand Canyon National Park and Neighboring Development: Stakeholder conflict and potential resolutions

What will I get out of this?

Two recent proposed tourist developments near Grand Canyon National Park have sharply divided key stakeholders. I examine these disputes while exploring broader park-wide implications.

Abstract

Grand Canyon National Park (GCNP) is one of the jewels of the National Park System. Yet it suffers from some of the same problems that affect all parks, particularly development of neighboring lands that potentially threatens park resources. Currently, two contentious tourism developments have been proposed at the edge of the GCNP: the Tusayan expansion near the South Rim entrance and the Escalade project on the Navajo Nation. This presentation examines the social and environmental conflicts raised by both projects via an analysis of the interests and interactions of key stakeholders. Focusing on identifying mutually beneficial courses of action, I explore potential resolutions to these complex land use conflicts. Although the Grand Canyon is in some respects a unique case, such conflicts are common to parks facing neighboring tourist development. The presentation will therefore offer a broader framework of conflict resolution applicable to other units of the National Park System.

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Grand Canyon, Development

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Managing for Wilderness: The potential of coordinated management across agencies rather than a balkanized approach

What will I get out of this?

Investigating what strategies are most effective for coordinating management of Wilderness across federal agencies.

Abstract

When the Wilderness Act was drafted in the 1950s and 1960s, the bill included establishing an overarching Wilderness Preservation Council to offer advice and provide information, however, the council was cut. In 2008 a committee formed to provide recommendations for monitoring wilderness character across the National Wilderness Preservation System (NWPS). However, system-wide implementation of these recommendations is still lacking and they do not address coordinated management for NWPS issues. This project examines whether a cross-agency council might be a more effective means of management across the NWPS; especially regarding non-native species, biodiversity, fire, climate change, recreation, and litigation facing the NWPS. If not, how can NWPS goals best be met within the current administrative system? Would a re-envisioned version of the Wilderness Preservation Council prove better at coordinating and steering NWPS management across all agencies in the face of these ecological, social, and political challenges?

Keywords

wilderness, management, coordination

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10772 Update Session Visitor-Use Management for Delaware Water Gap NRA's next 50 years: Next generation approaches and strategies

What will I get out of this?

This session is a case study at Delaware Water Gap NRA, updating the audience on next generation approaches and strategies for effective visitor-use management

Abstract

This session is an in-depth case study of visitor use management (VUM) planning at Delaware Water Gap National Recreation Area (DEWA), with a focus on parallel social science research efforts. Session presenters will take the audience on a tour of the planning process, from problem and issue identification, through data design and collection, as well as integration of VUM best practices and finally how all those elements were used to inform the process. Each presenter will share unique insights, providing direct value to park practitioners and academics alike. The session will offer 1) an overview of the VUM framework and its application, 2) an overview of issues, opportunities, and strategies from DEWA staff, and 3) voices from various disciplines describing design and analysis to support visitor use management planning. These topics include indicators and thresholds, monitoring impacts to park resources, and an extension of science contributions for achieving problem-based solutions.

Keywords

Visitor-Use, Park Management

Lead author / Session organizer

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Applying Visitor Use Management Planning at Delaware Water Gap National Recreation Area

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Emerging visitor-use trends at Delaware Water Gap National Recreation Area

The new social scene: Social science for effective visitor-use planning at Delaware Water Gap NRA

Recreation Ecology and Visitor Use Management: A Delaware Water Gap National Recreation Area Case Study

An extension of social science contributions: Problem-based solutions for sustainable park management

Water-Based Outdoor Recreation Users' Attitudes Towards Potential Offshore Wind Energy Development in the Great Lakes

What will I get out of this?

With domestic renewable energy production ever increasing on public lands, audience members will gain further understanding into outdoor recreationists' perceptions towards wind energy development.

Abstract

As the demand for renewable energy production in the United States continues to increase, wind energy remains one of the most viable domestic options. While numerous land-based wind installations are currently in operation, offshore wind installations have typically received stark opposition in the U.S. for various social, ecological, and political reasons. Due to recent capital investments, however, Lake Erie is now positioned to receive North America's first freshwater offshore wind energy project. Much of this proposed offshore wind energy infrastructure will either be within or adjacent to public lands, waters, and protected areas, raising concerns about the potential environmental and social impacts on recreation stakeholders in these areas. This case study examined water-based outdoor recreationists' (n=242) attitudes, impacts, coping responses, and support or opposition to potential offshore wind energy development within the Pennsylvania section of Lake Erie. Study findings and their implications for water-based natural resource management will be discussed.

Keywords

energy, water-based, recreation

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Andrew J. Mowen, Ph.D. - The Pennsylvania State University

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10865 **Fasttrack Session**

Climate Change and Natural Disasters

What will I get out of this?

Climate change is happening and increasing the frequency and severity of natural disasters. By being informed we can prepare.

Abstract

How can we best prepare for climate change? The National Park Service is planning now for the future to best protect it's resources. What is predicted for National Park Service cultural resources and what type of planning is being done in response. We have also began to experience disasters with greater frequency and intensity. Is there a connection to climate change? How can we best prepare cultural resources for disasters? NCPTT developed Resilient Heritage booklet for the Louisiana Division of Historic Preservation with funding from the Louisiana Governor's Office of Homeland Security and Emergency Preparedness. The final presenter will discuss surveying and it's revolution over the last 10 years.

Keywords

climate change, disasters

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Preparing the National Parks for Climate Change

Resilient Heritage: Protecting Your Historic Home from Natural Disasters

Bigger and Badder Disasters

Surveying to Prepare and Respond

Undergraduate Park Management Education: Missing the Mark On Indigeneity?

What will I get out of this?

This session will enhance participants' understanding of the protected area-Indigenous peoples relationship and how it is taught at the undergraduate level in the United States.

Abstract

The relationship between protected areas and Indigenous peoples is a critical facet of contemporary park management. Sacred site management, traditional/subsistence use, artifact preservation, the incorporation of traditional (Indigenous) knowledge, culturally-appropriate interpretation, and opportunities for management partnerships are some of the ways in which Indigenous peoples and land management agencies may interact. But are American undergraduate programs in park management, heritage interpretation, and related fields preparing students for such work? To what extent do these programs teach students about co-management, relevant legislation, the impact of protected areas on Indigenous peoples, or the differences between Euro-American and Native American views on (and consequently, interactions with) nature? Using the National Association for Interpretation's database of undergraduate programs in interpretation, this session will explore these questions and discuss how universities can better prepare aspiring park rangers and managers to interact with Indigenous peoples.

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indigenous peoples, education

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Protected Areas: Laboratories of Settler-Indigenous Reconciliation

What will I get out of this?

I will highlight how parks can be conduits of settler-Indigenous reconciliation in North America and the importance of this work.

Abstract

How can parks foster settler-Indigenous reconciliation in North America? John Borrows, noted Anishinaabe lawyer, has argued that we need to learn to learn from one another in North America. Interpreters have an obvious role to play in this, by ensuring Indigenous heritage and perspectives are respectfully, accurately portrayed throughout their offerings. Alan Cairns, a leading non-Indigenous voice on reconciliation, has suggested that settlers must accept Indigenous people as being 'citizens-plus', with rights beyond settler-North Americans'. Parks have a role here, too; consider that many Parks Canada units offer free entry to Indigenous peoples. This poster will attempt to respond to the challenge of reconciliation with these and other tangible examples grounded in legal and political theory. It will also highlight that we are all treaty people, for renewing the settler-Indigenous relationship requires us all to act, even if we are not in Ottawa or Washington, D.C.

Keywords

Indigenous, interpretation, management

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Dinosaurs of Alaska's National Parks and a regional perspective of their ecosystems and climate

What will I get out of this?

Given human proclivity for habitat manipulation, understanding ecology in deep time, through fossils and contextual data, is a powerful tool for managing resources on public-lands.

Abstract

The National Park Service Alaska Region park units contain some of the most important fossil-bearing rocks anywhere in North America. Linking parks with similar-aged rocks, either within the National Park System or elsewhere, provides important insights on ancient and modern ecosystem processes. For example, the lower Cantwell Formation (LCF), Denali National Park directly correlates with the Prince Creek Formation (PCF), North Slope, providing an opportunity to examine regional variability across ~ 100 of paleolatitude. A rich dinosaur footprint record is known from the LCF while the PCF is famous for arctic dinosaur bones. The LCF had a paleolatitude of 65-750 N while the PCF had a paleolatitude of 75 -850 N. Together these formations document a Late Cretaceous cool temperate arctic with diverse flora, fauna, paleo-landscapes, and paleoclimate along a North-South transect. Emerging similar data from additional Alaska NPS units contribute to this region-scale understanding of ancient arctic greenhouse Earth.

Keywords

Dinosaurs, Paleoecosystems, paleo-Arctic

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Guidance for Improved Tribal Use of Sacred Sites within the National Park Service Intermountain Region

What will I get out of this?

This inclusive process can be replicated and the product implemented by land managing agencies; it is based on national and international policies and laws.

Abstract

Recent attention to sacred sites at the national and international levels spurred the NPS-IMR to establish a team comprised of Tribal representatives and park staff to develop guidance fulfilling the intent of Executive Order 13007 Indian Sacred Sites, American Indian Religious Freedom Act, Religious Freedom Restoration Act, and Memorandum of Understanding Among the DOD, DOI, USDA, DOE, and ACHP Regarding Interagency Coordination and Collaboration for the Protection of Indian Sacred Sites, signed December 2012. The resulting document will recommend procedures and expectations for park staff implementing the guidance and the Tribal members seeking access to and use of sacred sites. Ten representatives were solicited from Tribes and NPS-IMR parks. Team members reviewed federal government agencies' and international organizations' documents to identify recurring issues. The Team collaboratively wrote the draft guidance. To date, two rounds of Tribal consultation and Federal review have taken place.

Keywords

Tribes sacred sites

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Visitor Science in Denali National Park and Preserve

What will I get out of this?

Denali park visitors were invited use the Map of Life app to record wildlife sightings. This paper examines the potential for tourists in citizen science.

Abstract

Most citizen science programs are geared toward volunteers who can attend training sessions, or commit to long-term involvement. To agree to these commitments, volunteers are often local residents or long-term/frequent visitors, who have the ability to make this type of time commitment. In National Parks, however, tourists also represent a large pool of potential volunteers. Tourists are typically eager to learn more about the park they are visiting, and if proven to collect quality data, tourists can produce successful educational and scientific outcomes for a citizen science program. This paper presents the educational and scientific outcomes of Map of Life- Denali, this tourist friendly citizen science project began in the 2016 and invites volunteers to use the Map of Life mobile application to record wildlife sightings in the park. Through examining the outcomes of Map of Life- Denali this paper illustrates the potential of tourists as citizen science volunteers.

Keywords

Additional

Citizen Science, Visitors

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Historical Ecological Considerations in the Establishment of National Parks and Monuments

What will I get out of this?

An historical analysis of national parks created over the last 100 years demonstrates that when managed unimpaired they overcome past land-use practices recovering ecologically overtime.

Abstract

National parks are to be outstanding representations of natural and cultural resources that characterize our national heritage. Not only do candidate areas need to offer opportunities for public enjoyment or scientific study but must retain a high degree of resource integrity as a true, accurate, and relatively unspoiled example of a resource. So few natural areas in the Eastern United States today have these required attributes which limits the ability of the National Park System to accurately represent the range of natural resource values. Although the requirement to retain a high degree of resource integrity is a critical attribute, how important is it for the property to possess it now? In this paper, I will present several cases of national parks including the recently established Katahdin Woods and Waterways National Monument as example of national parks that had extensive land use challenges at the time of inclusion.

Keywords

Historical Ecology

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Tim Hudson, Superintendent, Kathadin Woods and Waters National Monument

Benefit of Ecotourism Development of two National Parks in West Africa on neighboring communities.

What will I get out of this?

This paper will give the communities residents' perspective of the value added by the ecotourism activities of the National Parks used in this study.

Abstract

Study assessed perceived benefits of ecotourism in neighboring communities to two West African National Parks; Kanji Lake (KLNP) Nigeria and Mole (MNP) Ghana National parks. Stratified random sampling was used for household selection in 20 communities. Semi- structured questionnaires (582 respondents) and key informant interview were used to obtain data on the direct, indirect and service benefits. Using descriptive statistical tests, results suggest that at KLNP, provision of boreholes (45.7%) was the direct benefit rather than the provision of health services by 58.8% respondents of communities of Mole National Park. The indirect benefits at KLNP revealed that residents had the opportunity of providing transportation for tourists. Residents at MNP believed the indirect benefits they obtained was display of culture, arts and craft to tourists. Service benefits of permanent employment generated by the ecotourism development were similar at both National parks. A "needs assessment" survey of the neighboring communities is recommended.

Keywords

National parks, benefits

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RoseEmma Entsua-Mensah is the Deputy Director at the Council for Scientific and Industrial Research, Ghana. She has research interest in Ecotourism management.

10640 Challenge Session

Keeping Our Secrets: Sharing and Protecting Sensitive Resource Information in the Era of Open Data

What will I get out of this?

Speakers with diverse perspectives will explore creative solutions for sharing/restricting confidential information on natural and cultural resources.

Abstract

For decades, resource managers protected sensitive resource information by simply keeping it "under wraps." However, the current information climate favors sharing, the footprint of development activities and the information demands of associated compliance regimes are growing, and everyone's ability to find and share large quantities of information is on the dramatic increase. Challenges inherent in the "keep it all secret" strategy have become apparent. Resource stewards find themselves forced to weigh the risks of keeping secrets with those of sharing across disciplines; under-sharing may mean that resources are overlooked by planners and first responders while disclosing certain information, such as specific locations, can enable resource theft or damage. Panelists with expertise in the management of natural and cultural resources discuss how these tensions have affected resource management strategies. Participants in this session explore solutions for appropriate information sharing and resource protection, with special attention to climate change and incident response.

Keywords

data

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Archaeological Site Location and the Public Good: The DINAA Project

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Open-ish": Finding Balance between Site Data Protection and Accessibility at the State Level

Confidentiality: Who Decides?

To Share, or Not to Share? Perspectives from the field on Sharing Sensitive Information

A Tribal Historic Preservation Office Perspective on Sensitive Information

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10560 Challenge Session

Water – Where did it Come From? Where is it Going? What is it Doing?

What will I get out of this?

A landscape-level overview, with supporting details chosen from experience and research, will offer a renewed appreciation of environmental complexities including cutting-edge findings from climate-change research.

Abstract

The source, the amount, and the method of arrival of water determine impact on the environment. Given the importance of water for all forms of life it is not surprising humans have long taken an interest in water quality, water sources, variation in supply. One of the earliest water studies conducted in the United States occurred in Boston, Massachusetts and was published in the very young American Academy of Arts and Sciences. Dr. Feron's 1783 "Experiments on the Waters of Boston" was dedicated to understanding purity of water by source and the implications for medicine and industry. Currently, much of the research on water in the environment attempts to improve understanding of water's role in ecosystems and the changes anticipated due to climate change. Speakers will walk audience members from headwaters to coastlines drawing from their research and experience to highlight the role of water in sustaining and altering habitat.

Keywords

water, environment, climate-change

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Headwaters, Water in a Mountainous Park

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given here

Flowing Streams, Descriptions and Trends

Water at the Margins, Changing or Sustaining

Coastal Waters, Surging and Rising

Sea Levels Rise, Change.

10551
Collaboration Session

The Use of New Digital Technology to Convey Science Concepts through Animation

What will I get out of this?

Participants will contribute to a set of guidelines or a checklist of what-needs-to-be-done and what-needs-to-be-avoided to ensure comprehensible, science-education, animated videos are created for parks.

Abstract

Animation offers a new mechanism to share science concepts with visitors. Drawing on established NPS data collections (e.g. I&M monitoring) workshop participants will be asked to consider: how best to present topics, potential target audiences, and techniques to avoid. Participants will be presented with a) examples of short, science-education animations and b) a list of potential topics to be animated. Using an organizer-prepared template, each table of participants will identify elements that succeed in conveying information, their limitations, and preferred topics for animation. Participants will collaborate to create a checklist or a set of guidelines outlining best practices from a non-science audiences' point of view for creating science, education animations. The final product from this workshop will be a set of guidelines or a checklist to promote creation of science-education animations of value. A paper will be submitted to the George Wright Forum.

Keywords

Science Education Animation

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Megan Nortrup

NPS Strategy Development for Managing the Zika Virus

What will I get out of this?

The audience will learn the techniques and strategies for controlling/managing mosquitoes to prevent the spread of the Zika virus.

Abstract

The Zika virus has recently entered the United States and is currently affecting parts of the southeastern US, southwestern US, Hawaii, and islands of the South Pacific. It's causing small epidemics of terrible birth defects wherever it turns up. All of these areas have National Park units. The National Park Service has developed a strategy to address this threat from the Aedes species of mosquito using an integrated pest management approach. This strategy has been developed by a group consisting of One Health and the Integrated Pest Management programs to reduce or eliminate risks to human health and natural resources. The poster will describe techniques and strategies to implement for their park, neighbors and the public to prevent the spread of Zika and the mosquitoes carrying this virus. These same techniques and strategies can be used for the prevention of the Culex species transmitting dengue fever and West Nile Virus.

Keywords

Zika, virus, mosquito

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BAER Processes that Speed the Assessment of Burned Areas

What will I get out of this?

The processes utilized by the DOI Burned Area Emergency Response program have a long and proven history of protecting life, property and resources.

Abstract

Since 1994, the DOI National Interagency Burned Area Emergency Response (BAER) Teams have demonstrated their worth in dealing with the aftermath of over 100 wildfires and other natural disasters. Many of these fires have been the largest in their state. The teams have received commendations from local and state governments, many federal agencies and other countries. What methods and techniques does the BAER Team use to speed their assessment process? This poster will illustrate those techniques developed by the BAER Team, in coordination with academia to speed the assessment of burned lands for the protection of life, property, and critical cultural and natural resources regardless of the disaster. It will also highlight the use of new and existing technology such as satellite imagery, field tablets, and cloud-based geographic information systems.

Keywords

BAER; Satellite imagery

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10860 Poster	Hazard Tree Management in the Pacific West Region
What will I get out of this?	Viewers of this poster will learn what is necessary to develop and implement a park hazard tree management plan
Abstract	Hazard tree management within the National Park Service must be implemented consistently from park to park. With that in mind the Pacific West Region has developed a Regional Directive pertaining to hazard tree management. To date, only PWR has such a directive. Each park within the region that has developed such a plan has followed this directive and because of it, this management has made the operation of hazard tree management consistent between the parks in the region.
Keywords	Hazard Tree Management
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11075

Monitoring the effects of sea-level rise on groundwater quality, Jamestown Island, Colonial National Historical Park

What will I get out of this?

Audience members will develop an understanding of how sea-level rise affects groundwater quality, the threat this poses to archaeological resources, and value of long-term monitoring.

Abstract

Jamestown Island, Colonial National Historical Park (COLO), Virginia, is well-recognized for its archaeological resources. Its low altitude and location on the lower James River near the Chesapeake Bay however, makes it vulnerable to sea-level rise and associated changes in groundwater levels and chemistry. Such changes, like increased salinity, can cause irreparable damage to still-buried archaeological artifacts. A long-term groundwater monitoring program is being implemented to understand how Jamestown's geohydrologic system will be affected by sea-level rise. Preliminary results from 45 monitoring wells indicate that shallow water (depth of 5-8 feet (ft)) has a higher specific conductance (7,000 up to 15,000 microsiemens per centimeter at 25 degrees Celsius (μs/cm), than deeper water (8-29 ft), which ranges between 2,000 and 6,000 μs/cm. This long-term monitoring program will provide knowledge of Jamestown's groundwater system for planning the protection and recovery of the archaeological resources as sea-level rise increasingly affects the groundwater system.

Keywords

water, archaeology, climate

Lead author / Session organizer

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Invasive Species in Guam's National Park and Their Control

What will I get out of this?

Invasive species require quick responses for protection of park natural resources. Researching, prioritizing, innovating practical controls and partnering are shown to work at Guam.

Abstract

Species found on Guam and their ecosystems have sustainably supported subsistence of indigenous Chamorros for over 3,000 years. But during the last generation invasive species have driven significant native species to extinction. Invasives populations on Guam threaten to invade other islands and spread devastation to their unique native species. Impacts of three select invasives (and innovative controls) are presented: brown tree snakes, Boiga irregularis, (aerial dispensing of acetaminophen in mouse baits); coconut rhinoceros beetles, Oryctes rhinoceros, ("gill" netting and removal of breeding material); and little fire ant, Wasmannia auropunctata, (specialized application of complementary pesticides).

Keywords

Invasives, Guam

Lead author / Session organizer

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10828 Update Session The State of Alaska's National Parks in a Rapidly Changing Arctic

What will I get out of this?

Invited Speaker/Panelist #6: Dave Payer. Climate change and subsistence harvest of wildlife in Alaska's Arctic parks and preserves.

Abstract

The Arctic is changing more rapidly than any other place on earth. Warming, increases in storm frequency and severity, permafrost thaw, and loss of sea ice all portend dramatic changes in Arctic ecosystems and biodiversity. These changes increase opportunities for resource development, commercial shipping, and tourism. The NPS manages nearly 20% of the U.S. landmass in the Arctic encapsulating over 21 million acres of tundra and boreal forest, and nearly 1,000 miles of coastline. Faced with unprecedented changes in park ecosystems, the NPS is actively engaged in efforts to document and forecast these changes, adapt its research and stewardship, respond to new opportunities for visitation, and increase resiliency through science and networking. This session will update attendees on the issues faced by the NPS in the Arctic through a series of presentations on park challenges, research and monitoring, and emerging opportunities.

Keywords

Arctic, climate, parks

Lead author / Session organizer **Scott Gende** Senior Science Advisor

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Additional authors / organizers

Leigh Welling

Landscape, landcover, and ecosystem change in Arctic parks

Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their

presentations are given here

If this is a session of

Winners and losers in Arctic parks' changing ecosystems

Changes in Arctic shipping, and why the NPS should care

Parklands as source of resilience for Arctic ecosystems and biodiversity

Research and monitoring to address rapidly changing Arctic park resources

Avoidance of whales by large ships, with implications of varying ship speed and whale behavior.

What will I get out of this?

Operational and observational constraints affect whether large ships are involved in lethal collisions with whales. Insights have been generated in Glacier Bay

Abstract

Lethal collisions between large ships and whales continue to be a national conservation issue, affecting whale populations along both the Atlantic and Pacific coasts. While the shipping industry is motivated to avoid collisions, ship operators often spuriously assume 'healthy whales will avoid ships'. Working with marine pilots in Alaska over the past 5 years, and using data collected during a 10-year effort by whale observers aboard large cruise ships in Glacier Bay National Park, we deconstruct how observational and operational processes collectively affect active whale avoidance. We highlight how a simple mitigation effort, reducing ship speed, plays an important role in whale avoidance by differentially affecting both processes. Finally, we identify outreach materials based on collaborative work with marine pilots that, coupled with development of modules in mariner training simulators, will help institutionalize the need for, and effectiveness of, whale avoidance measures.

Keywords

shipping, whales, mitigation

Lead author / Session organizer

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Sara Williams, University of Montana

Jennifer Helm, University of Montana

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Livestock grazing and biodiversity in Huascaran National Park, Peru

What will I get out of this?

Participants will gain a better understanding of conservation challenges in protecting biodiversity and ensuring human livelihoods in a high altitude mountain ecosystem.

Abstract

The Huascaran National Park, Peru is home to a high biological and cultural diversity nested within the largest concentration of tropical glaciers in the world. Although park management is aware of the overlap between livestock grazing and wildlife, no comprehensive surveys have been performed to assess the impact of livestock grazing on the diversity and distribution of mammalian communities in this region. The proposed research will use camera traps, hair snares, and sign transects to assess the diversity and distribution of mammals within Huascaran National Park; determine the extent of cattle grazing in strict protection areas; and identify the local variables that influence site occupation by different mammal species. The results from this study will be used to inform park managers of the status mammalian biodiversity as well as identify opportunities and challenges for conservation and sustainable grazing in Huascaran National Park.

Keywords

Mammals, biodiversity, grazing

Lead author / Session organizer

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Dr. Thomas E. Lacher, Texas A&M University

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Reflections on the Past, Present, and Future of Civic Engagement in National Parks

What will I get out of this?

Audience will gain a better understanding of the historical context of recent NPS efforts to engage with the public on controversial issues.

Abstract

In December 2001, as smoke was literally still rising from the site of the World Trade Center, the NPS Northeast Region held a conference in NYC to introduce the concept of "civic engagement" to the NPS system. Over the following decade the idea became institutionalized, with Director's Order #75A in 2003, then disseminated and implemented. While the term itself has lost popularity since 2009, its legacy within NPS remains in the form of workshops that train interpreters in "facilitated dialogue" with visitors; twitter accounts and other social media; increased efforts to reach out to towns neighboring NPS sites about land use management issues; and recent additions to the NPS system of historic sites that commemorate controversial events. The paper will briefly analyze the origins, promise, and pitfalls of the civc engagement initiative while encouraging audience discussion about its future.

Keywords

engagement, community, dialogue

Lead author / Session organizer **David Glassberg** Professor of History

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The Future of Transportation Safety at the National Park Service

What will I get out of this?

This presentation will help to introduce ideas regarding the future of transportation safety for the NPS including current and future planned efforts.

Abstract

In 2014, national parks received nearly 293 million recreational visitors, an increase of 10 million visitors over the 2012 visitation rate (Source: NPS Park Usage and Travel Modes). Automobile crashes associated with these visits continue to be one of the leading causes of fatalities in Parks. In concert with the NPS Mission statement, to preserve "unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations", it is imperative for the NPS to ensure that visitors are safely able to access and experience all the parks have to offer. The NPS is currently working on several initiatives to continue to improve transportation safety. This presentation will outline those initiatives within the context of developing a comprehensive transportation safety strategy and program while protecting natural and cultural resources.

Keywords

NPS, Transportation, Safety

Lead author / Session organizer

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Dave Keough, National Park Service WASO

Norah Ocel, Eastern Federal Lands Highway Division

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Effects of landscape attributes on visitor spatial behaviors in protected area settings

What will I get out of this?

This study connects visitor behavior and management in a way that can promote resource protection and visitor management planning.

Abstract

Protected natural areas provide desired settings for many outdoor recreation activities, but less is known about how the physical setting itself can shape recreationists' behavior. Visitor behavior is often more influential than amount of use in determining recreation use-impact relationships. This presents a need to identify key landscape attributes and quantify their influences on spatial and temporal aspects of visitor behavior. Influences of physical features were analyzed to characterize visitor behavior measured from GPS tracks of hikers in Rocky Mountain and Grand Teton National Parks. A preliminary analysis from Muir Woods National Monument suggested that hiking speeds decrease in proximity to tall tree groves. Characteristics of visitor behavior related to the landscape itself could help predict potential bottlenecks, guide trail and interpretation planning, and focus resource impact rehabilitation efforts.

Keywords	Visitor behavior		
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Additional			
authors / organizers			
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Charting a Path: A Critical History and Analysis of Social Science in America's National Parks

What will I get out of this?

Audience members will learn a brief history of social science in U.S. national parks and recommendations for future research directions.

Abstract

Using archival sources and my eight years' experience as the National Park Service's visiting chief social scientist, I examine the history and potential future of social science in America's national parks. Beginning in 1893 with Hiram Chittenden's Yellowstone visitor survey, social scientists have sought to understand connections between people and parks. Traditionally, the focus has been on connections between parks and their visitors; however, this emphasis needs to expand. Every day the regions around national parks become less and less like the desired conditions inside them. Unfortunately, competing interests make collaboration to address transboundary problems difficult. When this mosaic of interests fails to coordinate, it reduces the resilience of social-ecological systems including parks to respond to disturbances transcending park boundaries. As a topic melding social and natural sciences, studies of collaboration and the functioning of social-ecological systems should be near the top of the science agenda for America's national parks.

Keywords

None

sociology, history, policy

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10616
Update Session

Planning for the Future of Resource Stewardship in the NPS

What will I get out of this?

The NPS planning framework and System Plan are guiding the future of resource management at every park unit and within the entire national park system.

Abstract

Three initiatives have set forth a framework to guide how the National Park Service (NPS) protects and manages the natural, cultural and recreational resources we have today and in the future. In 2012, the NPS introduced a more efficient framework for planning and resource management for parks. As the basis of this framework, a foundation document has been completed for every park unit to integrate all kinds and levels of planning from a single, shared understanding of what is most important at each park. The speakers will discuss lessons learned and how it's shaping NPS planning today. In 2016, the NPS unveiled the NPS system plan: its vision for how it will continue to protect resources into the next century. The speakers will explain the complexity of the NPS, the various pathways for potential unit designation, and opportunities for greater and more effective preservation and conservation beyond the system.

Keywords

System, Plan, Foundation

Lead author / Session organizer

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Chief of Planning / The New Planning Framework for the National Park System

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Foundation Coordinator and Technical Branch Chief / Foundations for Planning and Management

Project Manager and Landscape Architect, Planning Division, NPS Denver Service Center /

Cultural Resource Specialist / session moderator

The State of Unconfined Recreation in the National Wilderness Preservation System

What will I get out of this?

Learn how unconfined recreation is managed across the NWPS and critically explore whether all of the rules are necessary to preserve wilderness character.

Abstract

Wilderness provides the opportunity for unconfined recreation, however, users' activities are frequently restricted as managers seek to balance the competing demands of the Wilderness Act. Over 350 different managerial restrictions for over 600 wilderness areas in the U.S. were placed into 19 broad categories of rules (i.e., camping, campfire, group size, stock). The most frequent rule – limits on group size – existed for 46% of the wilderness areas. Campfire, camping, and length of stay limits were present for 25% of the wilderness areas. This presentation will also focus on differences in the variables based on wilderness size, manager, and length of time it has been a designated wilderness.

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wilderness

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10796
Fasttrack Session

Decolonizing Landscapes: Documenting culturally important areas collaboratively with tribes

What will I get out of this?

TCL can increase appreciation for past and present indigenous interests in the national landscape, and give original stewards a stronger voice in shaping its future.

Abstract

The Characterizing Tribal Cultural Landscapes project outlines a proactive approach to working with indigenous communities to identify tribally significant places, in advance of proposed undertakings. A collaborative effort among BOEM, NOAA, tribal facilitators, and the THPOs of the Confederated Tribes of Grand Ronde in Oregon, Yurok Tribe in California, and Makah Tribe in Washington, we use a holistic cultural landscape approach to model methods and best practices for agencies and tribes to work together more effectively and appropriately. Case studies from each tribe demonstrate these transferable and transparent methods. The approach is adaptable by other tribes to record information on important places, and can help agencies and stakeholders engage with tribes prior to the proposal of activities that may impact tribal resources and areas. We will outline the project framework, selected case studies, and progress in changing the federal landscape.

Keywords

Cultural landscapes, consultation

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Characterizing Tribal Cultural Landscapes: Framework

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given here

Confederated Tribes of Grand Ronde Case Study: Understanding Place Through Indigenous Voice and Practice

Confederated Tribes of Grand Ronde Case Study: Indigenous Voice in Policy and Spatial Planning

Changing the Federal Landscape

Cultural Resources Toolkit for Marine Protected Area Managers

What will I get out of this?

Online toolkit can help MPA managers and staff to better accomplish mandates and goals, and embrace new heritage-based opportunities for achieving and maintaining successful MPAs.

Abstract

In marine protected area (MPA) planning and management, cultural resources are often undervalued, misinterpreted, or overlooked. However, cultural resources and the cultural heritage they embody offer dynamic opportunities for improving outcomes in nearly every MPA. Whether preserving fish stocks, saving habitat, or protecting archaeological sites, MPAs themselves are a new facet in the cultural heritage of a nation committed to maintaining and improving its human connections with the marine environment. This toolkit is designed to help change MPA manager perceptions of cultural heritage and resources. These tools will help managers and staff to better understand and meet their legal obligations and embrace new heritage-based opportunities for achieving and maintaining successful MPAs. Topics include Cultural Landscape Approach; Integrating Cultural Resources into MPA Management; Engagement, Outreach & Interpretation; Tribal and Indigenous Communities; Research, Monitoring & Evaluation; Intellectual Property & Sensitive Information; Climate Change Adaptation; Disaster Preparedness; Underwater Archaeology. http://marineprotectedareas.noaa.gov/toolkit/

Keywords	Cultural, MPA, heritage				
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Additional					

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Does the Timing of Educational Messaging Influence Compliance with Low-impact Hiking Recommendations?

What will I get out of this?

Audience will learn strategies to develop effective off-site visitor education programs as complement to on-site programs to educate visitors about low-impact recreation before they arrive.

Abstract

We tested the potential of online pre-trip educational messaging in promoting low-impact hiking recommendations (i.e., hiking on muddy trail sections and walking on trail steps) using a lab-based experiment. The educational message used in the experiment consisted of video and short summary statements about low-impact hiking recommendations. Forty-seven participants were randomly assigned to one of three groups: 1) viewing an educational message at least 24 hours before the experiment; 2) immediately before the experiment; or 3) not viewing the message at all (control). Participants' hiking intentions were assessed by asking them to draw their intended hiking routes on a large LCD display depicting short sections of the Appalachian Trail. We found the educational message significantly improved participants' compliance intentions, knowledge levels, and attitudes. The timing of the educational message, however, did not show influences. These findings suggest low-impact hiking behaviors can be positively influenced through environmental education prior to trips.

Keywords

visitor education

Lead author / Session organizer

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Courtney L. Schultz, Doctoral student, Department of Parks, Recreation and Tourism Management, North Carolina State University

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Using Social Network Analysis to Inform Management: A Review of Research and an Illustrative Example

What will I get out of this?

Audience will learn about how to apply a relational approach to resource management challenges.

Abstract

Parks, protected areas, and cultural sites management is at a point of transition, facing challenges from unpredictable natural environments and social environments charged with conflicting interests and polarized views towards resource management. These challenges call for research methods capable of capturing the interconnectedness between and within stakeholder groups and resource management agencies. The purpose of this poster is to show how managers and researchers have used, and can, use Social Network Analysis to examine resource management issues and build collaborative capacity for problem solving. Two case studies focused on community resilience to climate change and the role of stakeholder network structure in sustainable energy transitions will demonstrate the utility of social network analysis. Additionally, we will present Katahdin National Water and Monument as an illustrative example to show how social network analysis can be used to decode resource management controversies and explore strategies to build partnerships among communities and agencies.

Keywords

social network analysis

Lead author / Session organizer

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Battlefield Perspectives: The Charge of the 7th Maine Regiment at Antietam using Archeology and GIS

What will I get out of this?

Viewers will learn about how combining an analysis of the historic record, archeological assemblage, and GIS can assist the historian in interpreting the battlefield landscape.

Abstract

Union and Confederate forces fought at Antietam Creek near Sharpsburg, Maryland, on September 17, 1862. It was the bloodiest single-day battle in American history with nearly 23,000 dead, wounded, and missing. Late in the day, an attack was ordered on a superior Confederate force — now known as the Charge of the 7th Maine Regiment. Historical accounts differ on the charge's route across the landscape and retreat through the Piper Orchard. This study uses archeological research and GIS analysis to inform the historical record and gain a better understanding of the charge. It demonstrates a framework for a deeper understanding of the events of the day at Piper Farm and potential applications to other battlefield landscapes.

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Battlefields, GIS, Archeology

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McDowell Sonoran Preserve Cultural Resources Master Plan

What will I get out of this?

The goals of preservation, education, and recreation within the Preserve are integrated with landuse of stakeholders, the public, Native American communities, and professional archaeologists.

Abstract

Logan Simpson prepared a cultural resources master plan for the City of Scottsdale's McDowell Sonoran Preserve, a 33,000 acre expanse encompassing mountains and alluvial fans north of the Salt River in the Phoenix Basin of south-central Arizona. The master plan summarizes the city ordinances that established the Preserve, identifies stakeholders, lists public participation during development of the plan, and provides a compendium of known archaeological and historical resources in the Preserve. The master plan provides recommendations for the preservation and interpretation of cultural resources in the Preserve using sustainable methods that contribute to education, passive recreation, and enjoyment of the open space.

Keywords

Archaeology, master plan

Lead author / Session organizer

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Helena Ruter, North Wind

Paula Scott, Logan Simpson

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10643 Challenge Session

Is wilderness being forgotten as we plan for climate change adaptation?

What will I get out of this?

We want to explore three potential top-down solutions to challenges that agency decision makers face when considering wilderness stewardship responses to climate change.

Abstract

David Cole, Beth Hahn, or Peter Landres will briefly review challenges that agency decision makers face when considering wilderness stewardship responses to climate change, and potential solutions. In particular, three top-down solutions have been proposed: (1) develop criteria that would determine whether a particular intervention was appropriate for implementation in wilderness; (2) develop an interor intra-wilderness zoning system that would allow some wilderness areas (or areas within a wilderness unit) to be actively manipulated to preserve or improve the natural quality of wilderness character, while other wilderness areas (or areas within a wilderness unit) would remain unmanipulated in perpetuity regardless of the consequences to the natural quality; and (3) develop policy changes that articulate guidance on appropriate response. This presentation would last for 15 minutes, followed by 10-minute responses from each of the seven panelists (70 minutes), and ending with 35 minutes of response from the audience.

Keywords

wilderness, climate, intervention

Lead author / Session organizer

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Additional authors / organizers

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Monitoring Impacts of Dog Walking Activities: A Case Study from Golden Gate National Recreation Area

What will I get out of this?

This protocol, which monitors impacts from dog use in large, urban-proximate protected areas, can inform use monitoring of other use types in similar settings.

Abstract

Golden Gate National Recreation Area (GOGA) is the second most visited US National Park Service (NPS) unit. GOGA is unique in that dog walking is allowable within certain areas outside of parking lots and sidewalks; on-trail as well as off-leash dog walking is permitted, as is commercial dog walking. However, management of dog walking activities and impacts (e.g., visitor conflict, wildlife disturbance, and damage to vegetation) has been a contentious issue. In 2016, a proposed rule for dog management was released by GOGA, which requires a dog management monitoring protocol with indicators and thresholds for impacts of concern. This presentation outlines the monitoring protocol and describes a public engagement plan to inform and educate stakeholders on indicators and thresholds-based monitoring. Concepts presented can be applied to other parks and protected areas when developing monitoring protocols around high-profile management challenges besides dog walking.

Keywords

dogs, conflict, management

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Chad Kooistra, Oregon State University

Mike Savidge, National Park Service

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10618 Exhibit	NPS Scaling Up
EXHIBIT -	
nat will I get out of this?	Audience members will learn about the National Park Service Scaling Up Initiative by viewing this exhibit.
Abstract	Audience members will learn about the National Park Service Scaling Up Initiative by viewing this exhibit. They will have the opportunity to speak with Scaling Up community members and learn more about the NPS landscape initiatives and principles pertaining to landscape scale work. Multiple publications will be available for viewing and some as a take home, including: The 2016 George Wright Forum, Conservation in North America (IUCN World Conservation Report), and Scaling Up: Collaboration Across Boundaries.
Keywords	Scaling Up, NPS
Lead author /	Kassandra Hardy Large Landscape Initiatives
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and titles of their presentations are given here 10792 Update Session **New NPS Guidance: Planning for a Changing Climate**

What will I get out of this?

Session attendees will learn about recently-developed NPS planning guidance that integrates climate change adaptation into interdisciplinary planning processes and considers multiple plausible climate futures.

Abstract

Climate change affects all aspects of national park management, from natural and cultural resources to facilities, operations, and the visitor experiences. Impacts from rising temperatures, altered precipitation and storm patterns, sea level rise, and other climatic changes are widespread, complex, and accelerating. The NPS recognizes the need to respond to, and prepare for climate change in virtually all management activities. This session provides an overview of Planning for a Changing Climate, recently developed guidance that integrates climate change into NPS planning processes and products. Panelists will discuss the approach used in the guidance, as well as the paradigm shift needed in all NPS park planning to support management decisions in an era of "continuous change that is not yet fully understood."

Keywords

Climate, planning, adaptation

Lead author / Session organizer Cat Hawkins Hoffman Acting Chief

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The NPS National Perspective on Addressing Climate Change Adaptation in Park Planning Portfolios

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Preparing for and Managing Change: Applying the Principles of Climate Adaptation to NPS Planning

How "Planning for a Changing Climate" Differs from Traditional Planning Approaches

Planning for Cultural Resources in a Changing Climate

The NPS Planner's Hands-on Perspective and Experience with Integrating Climate Change Adaptation into Planning

National Colonial Farm in Piscataway Park: Green History, Farming, and the Quest for Relevance

What will I get out of this?

Learn how contemporary environmental issues can be examined through lens of history and how race connects to agriculture and connection to the land.

Abstract

In 2014, the Accokeek Foundation began implementing a new strategic plan for its work in Piscataway Park, a national park and indigenous cultural landscape on the Potomac River directly across from George Washington's Mount Vernon. The plan prioritized uniting all of the Foundation's work under the interpretive message of sustainability and creating programs that are thought-provoking, participatory, and inclusive of different perspectives. New programs and projects include Green History (examining contemporary environmental issues through the lens of history), the Agriculture Conservation Corps (paid summer internship program for high school students), and an effort to "de-colonize" the colonial farm (examining how race is represented on the colonial farm). This case study explores how these efforts are transforming not only how the visitor experiences the park, but also how staff and board understand their roles as stewards of this landscape.

Keywords

N/A

agriculture, race, relevance

Lead author / Session organizer

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10684
Collaboration Session

Expanded Collaboration Between Cultural Resources and Interpretation/Education: Challenges and Opportunities

What will I get out of this?

Participants of the workshop will work together to identify and discuss the challenges and opportunities of collaboration between Cultural Resources and Interpretation/Education.

Abstract

Too often in the NPS, Cultural Resource staff do not understand the experiences, needs, and pressures of Interpretation/Education staff, and the latter do not realize the wealth of useful information generated by the former. Being "siloed" in two different divisions does not help. This workshop seeks collaborative-minded folks from both Cultural Resources and Interpretation/Education to discuss the challenges and opportunities of expanded collaboration. What type of cultural resource information, and in what format, is most useful for front-line interpreters and educators? What and who defines history and interpretation in the NPS? Are cultural resources projects and documents created with the public in mind? This will be a forward-looking workshop based on the assumption that we all want visitors to NPS sites (and websites, exhibits, publications, etc.) to have the best experience and receive the best information possible. Increased collaboration is the way forward. How do we do that?

Keywords

cultural-resources, interpretation, history

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Joy Beasley, Deputy Associate Director, Park Programs and National Heritage Areas, NPS

Lu Ann Jones, Acting Chief Historian, NPS

Linda Lutz-Ryan, Chief of Interpretation, National Capital Region, NPS

Paul Ollig, Chief, Interpretation and Education, National Mall and Memorial Parks, Washington, DC

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10676
Fasttrack Session

Go Tell it on the Mountain: Civil Rights History and the NPS in Washington, DC

What will I get out of this?

This session will explore why the history of civil rights is important and provide examples of how to research that history.

Abstract

The National Park Service is committed to telling a broader story of American history, one that is more inclusive of the experiences of underrepresented groups. Historians from the National Capital Region of the National Park Service will present four case studies of civil rights history in Washington, DC, and discuss how the NPS is researching and interpreting these stories. In brief powerful presentations, the topics will include the creation of schools for African American children in the Reconstruction Era, outdoor recreation and segregation of NPS golf courses, the relation of the NPS Summer in the Parks program and the Washington, DC riots of 1968, and the recognition of a historic site related to a pioneer in LGBTQ history. The presentations will be concise overviews, with pointers on how to research these types of topics, and sources and links for more information on the projects.

Keywords

civil-rights, African-American, LGBTQ

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"Education...means emancipation": Freedpeople's Schools after the Civil War

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Breaking Jim Crow: Segregation and National Park Service Golf Courses in Washington, DC

Riots and Recreation: The 1968 DC Riots and the NPS Summer in the Parks Programs

Outing LGBTQ History: The Kameny House in Washington, DC

Managing Living Collections

What will I get out of this?

Learn about living collections, related cross-discipline management challenges, and NPS initiative to develop living collections guidance. Share expertise and help identify critical issues.

Abstract

Living collections consist of biological material that is permanently retained ex situ for the purpose of generating and providing living or otherwise biologically active material for research, restoration, education or other purposes. Zoos, botanical gardens, arboreta, seed repositories, and microbial culture collections manage living collections outside of their original natural environment (ex situ). Museums may manage both living and non-living collections. The National Park Service has recently recognized the need to develop standardized procedures for documenting and tracking the plants, animals, and microbes that it manages on an ongoing basis outside their natural habitat. Developing a policy and standardized procedures that meet the needs of multiple disciplines and collection types—from microbial and seed collections to fish hatcheries to horticultural specimens from cultural landscapes—is challenging. NPS will share its strategy, to date, and seek input from the audience.

ad	author /	

Keywords

living, collections, biological

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A Systematic Review of the Associated Benefits of Wildland Recreation

What will I get out of this?

Participants will learn about the benefits associated with outdoor/wildland recreation, their presence within the literature, general trends, and implications for managers and future research.

Abstract

Many advocate that participation in wildland recreational activities can lead to individual benefits including environmental stewardship, personal development, sense of place, etc. However, what is the empirical evidence to support these claims? We conducted a systematic review of peer-reviewed research studies published between 2000 and 2016 that empirically evaluated the outcomes of participation in wildland recreational activities. The three primary objectives of this study are to provide a complete and exhaustive summary of peer-reviewed scientific literature to 1) identify the breadth of benefits associated with outdoor/wildland recreation; 2) examine whether in fact, these benefits are documented through scientific inquiry, and 3) identify gaps in the peer reviewed literature regarding the benefits associated with wildland recreation participation. General trends and implications of the results for managers and future research will be discussed.

Keywords

Wildland Recreation, Benefits

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Honoring Tribal Legacies: An Epic Journey of Healing

What will I get out of this?

Audience members will learn techniques for curriculum design that balance mainstream history with a place-based Native American perspective for K-12 classrooms in all academic disciplines.

Abstract

In this presentation, participants will be introduced to the Honoring Tribal Legacies: An Epic Journey of Healing project and learn about the collaborative efforts of the National Park Service with Tribal people along the Lewis and Clark National Historic trail to produce educational resources. This curriculum design project balances the portrayal of different perspectives in history and asks us to acquire critical inquiry/analysis skills in order to answer questions such as, "Why are Tribal Voices important? How do we promote systemic change and broaden stakeholder ownership of a more inclusive and diverse approach to history?" Highlighting one of the Honoring Tribal Legacies demonstration curriculum - Discovering Our Relationship with Water, this presentation will stimulate participants to think about the current narratives offered in classrooms, and engage participants in a conversation about how to ensure that multiple perspectives and diverse forms of literacy are valued in K-12 classrooms across the country.

Keywords

Culture, Indigenous, Curriculum

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Growing Hope: Urban Youth, Historic Landscapes, and "Citizen Gardening"

What will I get out of this?

Growing Hope can be adapted for other parks and protected areas, engaging "at risk" youth to become stewards and "citizen gardeners" in their communities.

Abstract

In summer 2016, Independence National Historical Park initiated a pilot program to teach urban "at risk" (socio-economically challenged) youth the stewardship of historic gardens and landscapes. The six-week program focused on three key elements: 1) planting and care for a "teaching garden" at INDE comprised of heirloom and medicinal plants and the adjacent "18th century" garden; 2) field experiences at Park Partners such as Bartram's Garden, Pennsylvania Horticultural Society's Meadowbrook Farm, the Morris Arboretum, and Valley Forge NHP; and 3) site visits to regional horticultural landmarks. Program participants travelled nearly 800 miles, collectively working over 1800 hours in diverse settings. Students learned about heirloom varieties, seedsaving, invasive removal, garden restoration, greenhouse production, and the daily care of "special places." The program aimed at students becoming "citizen gardeners" in their neighborhoods wherever they saw the potential to "grow hope" – whether for aesthetic reasons or to provide food for the community.

Keywords

Urban, youth, engagement

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Measuring the whole night sky, and why it matters.

What will I get out of this?

Light pollution appears first and is most intrusive near the horizon, so the NPS approach for measuring night sky quality encompasses the entire celestial hemisphere.

Abstract

Keywords

and titles of their presentations are given here light pollution

The dark night sky is a characteristic of wilderness and is important to many parks as a natural, cultural, educational, and economic resources. Sky glow degrades the character of the night sky and especially the scenic quality of the horizon. Bright light domes can significantly alter nocturnal luminous environments even when they do not extend high into the sky. Accordingly, NPS created an all-sky measurement system to address these concerns. We developed a camera system to create image mosaics of the entire night sky. These data are processed to remove natural sources of light in the night sky; the residual light is pollution. To enhance accuracy, the imaging system, calibration process, and model of natural sky brightness have be shaped to produce results across the diverse nightscapes of the National Park System.

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10680 Compass Session

Leveraging GPS tracking for improved decision-making: Innovative analyses and expanded visitor and resource management applications

What will I get out of this?

The session will explore new applications for integrating GPS data into visitor use management, encouraging thought and discussion on continued advancements in GPS-based tracking.

Abstract

Increasingly, global positioning system (GPS) technology is used to collect objective spatial and temporal data to characterize visitor use patterns in parks and protected areas. Advances in technology and software have increased the accessibility of collecting and analyzing these data. As such, the possibilities for utilizing GPS data to inform complex visitor use questions have expanded rapidly in recent years. This session will highlight novel expansions in applying GPS-based tracking data to understanding spatial patterns of visitor use in a range of protected areas across agencies. Five, twenty-minute presentations will feature advances such as leveraging crowd-harvested data, repurposing previously collected data for new applications, and monitoring overnight use. Outcomes of new analyses will be framed to demonstrate the increased utility of GPS-based tracking data to inform management decisions. To conclude, audience members will be encouraged to discuss and propose additional GPS tracking applications through participation in a 20-minute Q&A session.

Keywords

GPS-tracking, management, spatial

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Improving predictability in visitor use and natural resource management using agent-based models of hiker movement

A spatial classification of vehicular behavior patterns of visitors in Grand Teton National Park

Spatial analysis of visitor use to inform interagency fee revenue sharing at Sequoia-Kings National Park

Monitoring use without direct observation: Classifying pack stock behaviors and distributions with GPS tracking

Utilizing crowd-harvested GPS data to manage special events and general use of public lands

Protected Areas Database of the U.S. (PAD-US) - Land Management and Protection Status

What will I get out of this?

Learn how to download or explore maps, reports and data from America's official inventory of public parks and protected areas.

Abstract

Keywords

Protected Areas

America's tremendous asset base of protected areas is critical for conservation planning, natural resource management, outdoor recreation, public health and more. These include national parks and forests, wildlife sanctuaries, state beaches and parks, county open space, city parks, land trust preserves, conservation easements, marine protected areas and more. Altogether, over 3 billion acres are managed by thousands of public agencies and non-profit organizations that serve current and future generations. A complete and current database of these places is a critical tool to achieve organizational missions across jurisdictions. The recent USGS PAD-US update (1.4) includes the best available representation of federal, state and other protected areas with descriptors like owner / manager name, designation type, unit name and other information useful for various applications. Join us to learn about America's official inventory of public parks and protected areas, our strategy to complete the inventory in three years and opportunities to help.

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	The Takes Protected Asses Detakes of the United States (DAD US) Coordinates
Lead author /	Lisa Johnson Protected Areas Database of the United States (PAD-US) Coordinator
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10724 Compass Session

Looking ahead: The future of visual resource management in the NPS

What will I get out of this?

Scenery is central to experiencing parks and protected places. This session will consider how the NPS manages scenery now and in the future.

Abstract

Scenic views inspire future generations, are windows to the natural world, and foster connections with history and culture. As landscapes change with increasing speed, agencies need to actively engage in management of views within and beyond boundaries. The value of scenic views can be measured in terms of aesthetic beauty, economics, health benefits, psychology, and educational potential. Views can also be inventoried and weighed against other resource considerations. Understanding our role in preserving and protecting visual resources will be critical to the continued viability of protected areas as places of refuge and learning into the future. Join panelists in this session for a series of brief presentations on the value of scenic views, the evolving NPS approach to managing them, and case studies; followed by an open discussion.

Keywords

Scenery, Management, Visual-resource

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Visual Resource Specialist, NPS Air Resources Division

Cartographer, Appalachian Mountain Club

Air & Water Quality Program Manager, Shenandoah National Park

Superintendent, Potomac Heritage National Scenic Trail

Constructing Urban Youth Outreach Strategies in Urban-Proximate Parks

What will I get out of this?

Attendees will learn about 1) creating an urban youth outreach strategy and 2) how such work attends to the NPS goal to attain relevancy.

Abstract

Increasingly, urban-proximate park units turn to urban engagement as a way to achieve relevancy. Timpanogos Cave National Monument (TICA), located at the doorstep of the greater Salt Lake City metropolitan area, represents the NPS mission to two million Utah residents in the Wasatch Front population core. Using a SWOT Analysis framework, we developed an outreach strategy to help TICA interface with an urban youth population in Salt Lake City. This session outlines the process used at TICA for constructing an urban youth outreach strategy, a process that can serve as a model for creating outreach strategies in other urban-proximate parks. This session also explores how effective urban engagement planning achieves the agency-wide goal of making the NPS relevant to all Americans. Further work will analyze urban engagement best practices currently used by parks and investigate how best practices may be measured and applied to other parks.

Keywords

urban, outreach, relevancy

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The Wasatch Front Urban Ranger Program: Partnership, Stewardship, and Volunteerism

What will I get out of this?

Attendees will learn about a university partnership program that fosters youth participation in urban recreation area stewardship and education.

Abstract

The Wasatch Front Urban Ranger Program is a volunteer trail ambassador program coordinated by University of Utah Parks, Recreation, and Tourism in cooperation with local, state, and federal partners including the National Park Service and the US Forest Service. College student volunteers patrol two urban recreation areas in Salt Lake City providing information and education to recreationalists, logging trail conditions via GPS, and recording data about matters of interest to land managers. This poster details program procedures including recruitment, training, equipment management, trail condition data logging, and managing substantial public encounters. The poster illustrates the value of programs like Wasatch Front Urban Rangers that provide a gateway for youth to discover urban recreation areas and provide an opportunity to communicate with the public about stewardship and responsible recreation.

Keywords

youth, urban, trails

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10785
Fasttrack Session

Perspectives from the field: Monitoring ocean acidification in the National Park Service

What will I get out of this?

OA is a growing threat to coastal resources in the NPS. Here, we describe tested methodologies for monitoring ocean acidification and interpreting climate change science.

Abstract

A major effect of climate change in the marine environment is ocean acidification (OA), the reduction of seawater pH due to the burning of fossil fuels. OA negatively impacts many marine organisms, especially those that form body parts from calcium carbonate (e.g. mussels and barnacles). Olympic National Park and San Juan Island National Historical Park within the North Coast and Cascades Network, along with Cabrillo National Monument and Channel Islands National Park within the Mediterranean Coast Network contain exceptionally diverse and sensitive intertidal assemblages, including the federally listed black abalone, that are susceptible to OA. In this session, we will discuss state-of-the-art methodologies for how these parks and networks are monitoring ocean acidification in their intertidal zones and how the NCCN and MEDN approach can work in other Park Service marine units.

Keywords

Intertidal, acidification, climate

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Monitoring ocean acidification in the NCCN network

Monitoring ocean acidification at Cabrillo National Monument

Monitoring ocean acidification in the Channel Islands rocky intertidal

The nuts and bolts of interpreting ocean acidifcation at the park level

Characterizing intertidal organism sensitivity to ocean acidification in Olympic National Park

What will I get out of this?

Our contribution exhibits the risk that ocean acidification poses to intertidal resources and how the NPS is contributing to ocean acidification research.

Abstract

Ocean acidification (OA) will have a predominately negative impact on marine organisms sensitive to a sustained decrease in ocean pH. Resource managers are concerned about the loss of biodiversity likely to accompany OA, but as of yet, there is little pH sensitivity data for the vast majority of taxa found on the Olympic coast of Washington. The intertidal zone of Olympic National Park is particularly understudied due to its remote wilderness setting, habitat complexity, and exceptional biodiversity. Methodologies have been developed which rely primarily on intensive literature searches and expert opinion analyses to assess organismal sensitivity to pH at varying taxonomic levels. Here, we use a recently developed database of pH sensitivities for marine biota in the California Current to assess the sensitivity of over 750 marine invertebrate and algal species found on the Olympic coast to average pH conditions predicted for the year 2100.

Keywords

acidification, climate, intertidal

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Establishment of a transboundary MPA network between Grenada and St. Vincent and the Grenadines

What will I get out of this?

A transboundary case of MPA networking as an example for addressing challenges in MPA management capacity involving more partners to protect more ecologically connected areas

Abstract

In 2011, SusGren jump-started the Grenadines Network of MPAs (GNMPA) to strengthen MPA management on the Grenada Bank. Government support was instrumental in the initial establishment of the network and encouraged its growth. Public support is growing over time, and broader stakeholder engagement is being achieved with each community-focused activity. Joint participation in enforcement training is helping the MPAs to more consistently enforce rules and regulations across the Grenadines. Training for MPA staff and stakeholders alike has focused on management objectives and monitoring, and helped to increase biological and socio-economic monitoring by member MPAs. A programme of annual meetings, joint training and inter-MPA exchange visits for both managers and field staff, plus a supporting small grants programme, is serving to increase communications and to share best practices amongst Grenadines MPAs for effective management across international boundaries.

Keywords

Transboundary

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Adopting molecular techniques in wilderness management and restoration in Yosemite National Park

What will I get out of this?

We demonstrated that the presence of live organisms could be detecting using eDNA techniques. Our findings help expand eDNA to be used in restoration projects.

Abstract

Analysis of aquatic environmental DNA (eDNA) obtained from filtered water samples is a promising tool for monitoring invasive species, but application of this method is hindered by the inability to distinguish whether sources are alive or dead. We analyzed how the detection of eDNA from dead and live model organisms (goldfish) differs depending on collection method. We then applied the resulting method in a field setting where non-native fish are being removed to create habitat for endangered species. Our results highlight that collection methods for eDNA can be tailored to maximize the utility of eDNA techniques in aquatic habitat conservation. Yosemite National Park has successfully incorporated eDNA techniques in their aquatic wildlife program. Projects that have adopted these methodologies include bullfrog eradication, non-native trout removal, and red-legged and yellow-legged frog management. eDNA can be used as a complement to traditional methods to increase the efficiency of efforts in wilderness restoration.

Keywords

Restoration, environmental DNA

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Rob Grasso is the aquatic ecologist for Yosemite National Park

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Norms and human nature relationships determine boater behaviors that affect the spread of invasive species

What will I get out of this?

This poster will help researchers and practitioners understand the complex interactions between natural landscapes and people who contribute to the spread of aquatic invasive species.

Abstract

Recreational water users such as boaters and anglers are a primary vector of the unintentional spread of aquatic invasive species. Despite its importance, the role of human behavior in preventing the spread of invasive species is not well understood, and is often neglected within the biological sciences. We quantified the factors that shaped individual decisions that affected the spread of invasive species at Chain O' Lakes State Park and North Point Marina, IL. Specifically, drawing on on-site observations and survey data collected from a representative sample of stakeholders, we measured the effects of norms and human-nature relationships on behavioral engagement in activities to reduce the spread of invasive species. Results showed respondents performed an array of pro-environmental behaviors, and the distribution of behavioral engagement varied. We found social and personal norms were positively correlated with activities that influenced the spread of aquatic invasive species across two resource management contexts.

Keywords

Invasive, Human, Dimensions

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10811

Initiating climate change scenario planning for whitebark pine and American pika across **NPS I&M Networks**

What will I get out of this?

We demonstrate initiating scenario planning on a small budget across a vast region and explore drivers of change and related uncertainty for two priority species

Abstract

Management of montane ecosystems necessitates strategic plans that acknowledge uncertainty associated with climate change. Scenario planning integrates current knowledge with uncertainty but requires substantial preparation. We are initiating a climate change scenario planning project across three National Park Service Inventory & Monitoring Networks (Klamath, Sierra Nevada, and Upper Columbia Basin) focused on whitebark pine (Pinus albicaulus) and American pika (Ochotona princeps). Key climate uncertainties include precipitation and snow pack trends and impacts on hydrology, phenology, diseases, and species interactions. Interacting factors that affect metapopulation connectivity, dynamics, and persistence are critical. Challenges include scientific uncertainty over competing species-level models of future change and better understanding of genetic and functional connectivity, adaptive capacity, and replaceability among populations. Adaptive genetic rust-resistance markers and monitoring vital signs and survival of pika, assisted migration, and funding long-term management are techno-social challenges. Outreach to the public and resource managers and near-term, low-risk management actions are needed.

Keywords

I&M, pika, whitebark

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Snowmelt timing, vegetation phenology, and growing season length in the Oregon Cascades

What will I get out of this?

Phenology, an important climate change indicator, is poorly studied in conifer-dominant ecosystems. We assess snowmelt timing impacts on phenology in Oregon's Cascades with remote sensing

Abstract

Climate change is disproportionately impacting montane ecosystems, particularly snow dynamics. Vegetation phenology is a sensitive ecological indicator of climate change but research in coniferdominated systems is lacking. We used MOD10A2 and MCD12Q2 data products to assess annual snowmelt date and five phenology metrics respectively across nine forest types within Crater Lake National Park, OR from 2001-2012. Snowmelt dates were positively associated with onset of vegetation green-up in most forest types, peak phenology in alpine and subalpine forest, and longer growing seasons in lodgepole and supalpine forests. Ground-based snowfall records show April snow depth from 1931-2015 has declined. Opposite trends during the 12-year period of available MODIS data may be due to changing snowfall patterns of alternating per accumulation-melt cycles and late season snows. Finer spatiotemporal resolution of remote sensing data and ground-based observations that can link physiological processes to satellite data will benefit future efforts.

Keywords

NDVI, phenology, snowmelt

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Payment for Environmental Services and Local Protected Areas in Calakmul, Mexico

What will I get out of this?

Biosphere reserves and Payment for Environmental Services programs are criticized for favoring top-down decisions. This study explores how both tools are influencing local conservation.

Abstract

The Calakmul Biosphere Reserve of Mexico was conceived to protect an extensive tropical moist forest. Since the 1980s, over fifty village settlements (ejidos) have been established within the forest margins. The Reserve's existence has had little impact on the land use decisions of most settlers, while NGO and government conservation and development efforts have often worked at cross-purposes. In 2016, the author interviewed leaders of 15 villages, to learn about their own concepts of parks and protected areas. Contrary to expectations, only a few villages set aside land for conservation as a part of local, "organic" process. Instead, a new program of Payments for Environmental Services (PES) implemented by the Mexican federal government is having a direct impact on local conservation, in a way the Biosphere Reserve never achieved. However, most PES-registered set-aside lands were already considered by villagers to be unsuitable for cultivation.

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PES, biosphere, Mexico

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Law Enforcement and Crime in the National Park Service's Pacific West Region

What will I get out of this?

Will provide insights on what factors may lead to more or less recorded crimes in US National Parks.

Abstract

To ensure effective management of National Parks it is essential not only to understand the ecologies of these places, but also the enforcement of the rules and regulations within them. Preventing and detecting crimes within US National Parks helps ensure environmental sustainability, as well as political and economic sustainability. Safe and well managed parks foster strong connections between people and place. This paper focuses on law enforcement within the Pacific West Region of the United States where differing geography, human and agency relationships, technologies, and visitor needs all play a role in determining how and in what ways national parks detect and record crime. Using these data, our study seeks to explain why certain parks record more crime than others. The findings from this study help us to provide insight as to what infrastructural, staffing, and programmatic changes parks could make to best detect crimes in the future.

Keywords

Crime; Law Enforcement

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The National Park Service Ranger as a Historically Contradictory Figure

What will I get out of this?

Learn about the history of law enforcement in the National Park Service and how enforcement strategies have changed over time.

Abstract

Keywords

Ranger; Law Enforcement

The paper traces the complex history of the US Park ranger through time to show how the Ranger as an outward embodiment of state power has been contradicted by administrative and practical logics directing rangers to educate, welcome, and guide park visitors. Rangers' work as territorial enforcers, and as strongarms of the state has been tempered and defined by multiple disciplining forces over time. Using a political ecology approach, this paper examines how shifting political economic contexts, shifts in park use and park visitors, and a changing national law enforcement milieu influenced how and in what ways National Park Rangers have performed law enforcement in US parks over the last 100 years. The paper argues that the mutable history of National Park Rangers' law enforcement practices offers empirical evidence that the militaristic models of conservation around the world can also change.

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10722 Challenge Session

Lessons on Truth, Reconciliation, and Healing for Parks and Cultural Sites

What will I get out of this?

Understanding the interests and frustrations—the truths—held by the communities with whom we work. What is truth, and whose truth are we talking about?

Abstract

Planning professionals and educators must cultivate an understanding of the interests, concerns, and frustrations-the truths-held by the communities with whom they work. But what is truth, and whose truth are we talking about? The Truth and Reconciliation Commission that emerged during the dismantling of South Africa's apartheid system in 1998 developed four notions of truth as part of a societal healing process: factual truth, personal truth, social truth, and healing truth. These truths should form the fiber of our efforts as professionals. Accounting for these multiple truths has intrinsically valuable outcomes (dialogue and healing) and also instrumentally valuable outcomes such as plans, curriculum, site experiences). We'll discuss three types of engagement within the context of these four truths: interpretive planning & design for historic sites, commemorative event planning, and curriculum development. Presenters will share how their work with African American and Native American communities is seeking to weave these truths into practices that heal historical traumas, into equitable collaborations, and into inclusive storytelling and interpretation.

Keywords

Equity, healing, truth

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Wildlife-human interactions on park roadways: What do we know and where should we go?

What will I get out of this?

This study describes visitor and animal behaviors and visitor management during wildlife jam events in an effort to better inform management of these events.

Abstract

As recreation and tourism in parks and protected areas increases, managers face rising concerns of natural resource and visitor experience degradation. An experience frequently sought in these areas is viewing wildlife. Visitor behavior in prime wildlife-viewing areas often involves visitors parking along roadways and exiting their cars to view wildlife. This creates a phenomenon known as a "wildlife jam". To date, no studies have comprehensively investigated this phenomenon. This study characterizes the nature of wildlife jams along the Moose-Wilson Road in Grand Teton National Park. Global Positioning System and behavioral data were collected for jams that occurred with and without park staff present. Preliminary results suggest that presense of park staff at a jam impacts the duration, extent, and visitor behaviors that occur. Understanding the nature of these jams will enable managers to develop management strategies that minimize the potential negative effects of jams on wildlife and the visitor experience.

Keywords

Visitor-behavior, wildlife-jam, visitor-management

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Deer impacts to vegetation recovering from Superstorm Sandy in overwashes of Fire Island National Seashore

What will I get out of this?

A hyper-abundant herbivore population likely alters the successional trajectory of post-disturbance coastal vegetation and may indirectly affect barrier island resiliency.

Abstract

In 2012, Superstorm Sandy caused unprecedented storm surges and inundation of Fire Island. Many primary dune systems were eroded or overwashed in the Otis Pike High Dune Wilderness Area, leaving inland ecosystems subject to erosion and salt water inundation. We hypothesize that the combination of a high magnitude disturbance in the presence of a hyper-abundant, large herbivore population reduces the rate of vegetation recovery through selective grazing and browsing. Since the storm, we identified an increase in both vegetation cover and primary productivity of overwashes. We used trail cameras to index overwashes in terms of deer use, and documented a gradient in use from the built environment to wilderness. Selective browsing by deer influences vegetation cover and primary productivity, which we will quantify in the near future. Impacts to vegetation of a dense deer population could impact the stability of primary dunes and resiliency of the barrier island system.

Keywords

coastal, resilience, deer

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Using digital point-intercept and sub-meter navigation to assess vegetation recovery in Fire Island's wilderness

What will I get out of this?

Digital point-intercept alleviates the need for permanent vegetation plot placement and reduces time in the field, without sacrificing accuracy or utility of vegetation data.

Abstract

Traditional point intercept (TPI) techniques are sensitive to wind bias, which is exacerbated in coastal environments. We used digital point intercept (DPI) and sub-meter GPS navigation to assess vegetation recovery since Superstorm Sandy in the Otis Pike High Dune Wilderness Area of Fire Island National Seashore. Digital point intercept uses a mounted camera to take high-resolution, nadir photographs of vegetation plots, which are later analyzed digitally. DPI ameliorates wind bias and provides archival images as a permanent record of vegetation cover for future analyses. Sub-meter navigation reduces plot establishment time and eliminates the need for permanent plot markers. We compared results from DPI and TPI for permanent plots established in overwash fans created by Superstorm Sandy. DPI required significantly less field and processing time and exhibited higher accuracy than TPI, as determined using classified vegetation plot images. We determined this combined technique is highly valuable for coastal vegetation assessment.

Keywords

point-intercept, coastal, vegetation

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Remote Sensing of Vegetation Diversity Change in Acadia National Park

What will I get out of this?

Remote sensing technology as a monitoring tool for identifying recreation resource impacts at a large spatial scale

Abstract

Keywords

The purpose of this study was to monitor plant diversity changes resulting from recreational uses at Cadillac Mountain Trail Network, Acadia National Park, Maine. In this study, we propose the use of remote sensing technology as a monitoring tool for identifying plant response characteristics. We hypothesized two scenarios that maintain different numbers of plant species (25 and 50 classes) at the target study area by classifying the multiple Normalized Different Vegetation Index (NDVI) layers extracted from 2000, 2005, and 2010 Landsat TMs. Then, the Shannon-Weiner (SW) indices were calculated to compare the vegetation diversity in each class. In addition, T-test was used to compare the SW indices between trail group and non-trail group based on the systematic sampling design. The study will report preliminary results associated with developing a monitoring technique designed to cover a large spatial scale.

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Assessing Park-Based Urban Sustainability within East Africa Community

What will I get out of this?

Participants will gain understanding of urban sustainability transitions in East Africa.

Abstract

Parks and greenspaces can play a big role in contributing to sustainability and human wellbeing in terms of economic productivity, social inclusion and preservation of the natural environmental. An expanding body of literature confirms the connection between exposure to nature and human wellbeing. Popular among these is the work of scholars who explore the concepts of biophilia and other the soft fascinations of nature. Parks also provide places for rest and recharge, spiritual renewal, and promotion of social integration and cultural diversity. This study was conceived to assess the how sustainable East African Community cities are. Media reports paint a picture of some of the fastest growing cities in the world in terms of population growth and economic expansion. However, the biggest question is whether the cities are positioned to harmonize such growth with provision of parks and greenspaces for recreation-based wellbeing of citizens, and for sustained provision ecosystem services.

Keywords

greenspaces, sustainability, wellbeing

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0

10839

Integration of Scientific, Cultural, and Recreational Values in Invasive Species Management on Maunakea

What will I get out of this?

Overview of an integrated invasive species plan-incorporating diverse cultural practices, land uses, and visitor patterns-in managing public lands and especially scientific research.

Abstract

invasive, plannina, science

The invasive species management plan for the high-elevation Mauna Kea Science Reserve on the Island of Hawaii was approved by the community-based Maunakea Management Board in 2015. The 11,288 acre Mauna Kea Science Reserve is used as a scientific complex in support of astronomical observatories, is a culturally significant site, and is a popular visitor destination. Managed by the Office of Maunakea Management under the University of Hawaii at Hilo, the plan's invasive species prevention measures implement both pathway and species-specific risk management approaches with a suite of risk mitigation procedures, adapted from biosecurity protocols. Pathway analyses led to development of pre-planned responses aligned with traditional cultural priorities. Communication tools highlight the prevention, early detection, and response rationale that guide decision-making processes. Continued adaptation and updates ensure relevancy, address lessons learned, and promotes use such as informing other scientific and recreational invasive species planning efforts in the region.

Keywords	invasive, planning, science							
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The Impact of Informal Interpretation

What will I get out of this?

Participants will learn the impact of informal interpretation. They will learn what knowledge is retained as well as the visitors' attitude toward informal interpretative experiences.

Abstract

For the past three years researchers at Indiana University have been assessing the impacts of informal interpretation on visitors of National Park sites. A total of six National Parks were involved with this research. A mixed method approach was conducted that included qualitative, in-depth interviews, on site observations, and in three of the six sites quantitative assessments. Interviews were conducted with visitors immediately following the informal interpretive experiences as well as post site interviews up to six months following the informal experience. Data from over two hundred visitors were collected and analyzed to assess the short term and long term impacts of these informal contacts. This presentation is the first overview of all six National Park site assessments. Following a summary of the results, a discussion will be facilitated to highlight particular consistencies in the findings – both in-park findings along with inter-park comparisons.

Keywords

informal interpretation, assessment,

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Assessing the Cultural Context for Predator Conservation in/around Protected Areas: A Social Suitability Index

What will I get out of this?

Participants will learn about a new cultural index that can be used to inform park and protected area management around the world.

Abstract

Populations of predators are in decline worldwide as human growth and development alters their habitats. Large predators are a tourist attraction in many regions of the world, bringing essential income to governments and local communities. These complex interactions create conflict between humans and predators that greatly impact local communities. Our study focuses on development and implementation of a Social Suitability Index (SSI) that measures the cultural context for predator conservation in a region. We use the SSI to measure social suitability in villages surrounding Maasai Mara National Reserve, Kenya and Dong Van Karst Geopark, Vietnam, and identified factors that influence this cultural context for conservation, including the potential effects of ecotourism-based livelihood strategies. Our analysis, one of the first to directly integrate social and cultural metrics into conservation planning, provides critical information that should influence the protection of both human livelihoods and the lives of predators in/around protected areas.

Keywords

conservation, predators, human_wildlife_interactions

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Recreational Suitability Mapping to address Recreational Conflict

What will I get out of this?

Attendees will learn how Recreational Suitability Mapping can assists with recreational conflict reduction and resource protection by quantifying terrain and infrastructure preferences of specific recreationists'.

Abstract

As the participation in outdoor recreation grows, land managers are challenged with protecting resources, while providing recreational opportunities. The Lake Mountains is an area of public land managed by the BLM that is south of Salt Lake City, Utah and adjacent to the town of Saratoga Springs and Eagle Mountain City. The area has experienced immense visitor use, 20,000 to 50,000 visitors per year, public safety concerns, trash, and archaeological site damage. Subsequently, researchers administered onsite questionnaires at the Lake Mountains (n = 405) to help managers identify terrain and infrastructure preferences of target shooters, OHV riders, campers, and hikers. Mapping these preferences using GIS techniques in ArcMaps helped land managers properly zone the area for the four types of recreation to reduce recreational conflict and increase resource protection. The presentation will outline management issues, methods, and describe how recreation suitability mapping can assist with resource protection and conflict reduction.

Keywords

Recreation Suitability Mapping

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Keywords

Recreation Suitability Mapping

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10944 Poster

National Park Teacher Corps

What will I get out of this?

Exchanging ideas about structuring effective educational partnerships will inspire attendees to participate in a national conversation on engaging teachers and students in place-based education.

Abstract

The National Park Service (NPS), the National Park Foundation (NPF), and the National Park Learning Alliance (NPLA)--a nationwide, professional alliance of educational program providers allied with parks-have come together to ensure that more students and teachers experience national parks as places for learning. Representatives from each entity will be on hand to hear your ideas about how we can build upon the educator resources and programs that are already at work in our parks to establish a scalable, sustainable National Park Teacher Corps. How can we provide professional development for more teachers and leverage their ability to reach additional students throughout their teaching careers? How can we strengthen partnerships between schools and parks and provide more students with in-park learning experiences? We want to hear your ideas!

Keywords

Parks, teachers, education

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10843 Poster Values of front and backcountry users at Denali National Park change across space and scale

What will I get out of this?

Audience members will learn about a new way to approach park management to improve visitor experiences.

Abstract

Activities preferred by visitors to national parks may be partially attributed to the values perceived in a landscape. Understanding the reasons why people believe protected areas are important to stakeholders is crucial to improving park management decisions. This study drew on survey data collected from visitors to Denali National Park and Preserve that involved a mapping exercise. Respondents were asked to allocate 100 points to 13 values ranging from tangible (e.g. economic value) to intangible (e.g. aesthetic) qualities of place. Results showed a stark difference in the point density and distribution of values assigned by front and backcountry users. Generally, backcountry users allocated a smaller number of points to a broader range of values, whereas frontcountry users assigned larger numbers to fewer values. This information can be used to facilitate better management practices and improve visitor experiences by focusing management on activities that appeal to an array of stakeholder groups.

Keywords

values, behaviors, management

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'Ikena a ka Hawai'i: Lessons from the World Conservation Congress

What will I get out of this?

This session will connect participants to outcomes of the largest global conservation event ever convened in the United States.

Abstract

The largest conservation event on the planet exceeded all expectations during the meeting of the International Union for the Conservation of Nature (IUCN) in Honolulu, Hawai'i, USA. The number of participants also exceeded earlier Congresses, held every four years: over 10,225 people from 193 countries. As host country the United States set a high bar with arguably the best organized global IUCN conference to date. Many of the challenges that were covered are present in the microcosm in the Hawai'ian Islands, including biosecurity, indigenous issues, endangered species, and marine and ocean stewardship challenges. The session will explore continuing opportunities for biocultural connectivity that the conference brought forward.

Keywords

World Conservation Congress

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The WCC, the Ever-evolving Global Conservation Agenda, and Protected Area Governance

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Hawai'i Holds Many Lessons for the World

The Promise of Sydney After Honolulu

The Promise of Sydney After Honolulu

10908 Challenge Session

The Rabbit in the Mouth of the Coyote: Indigenous Employees in the Service of Government

What will I get out of this?

Indigenous audience members will have the chance to explore the delicate topic of divided loyalties; non-Indigenous participants will hopefully come away sensitized to this situation.

Abstract

Indigenous employees occupy various levels of government from junior ranks to some of the more senior levels. Joining a parks service, be it federal, state or provincial, is both a way of bringing a person's culture and history to their work while at the same time creating a dual dynamic for many Indigenous employees: seen as an outsider with priority interest for Indigenous peoples by their colleagues as well as seen as a sell out by their community. This session will explore this dynamic and allow Indigenous peoples to share their experiences of wearing the 'colonizers' uniform.' It will tackle the racism both from within and without the parks services and hopefully offer a brighter more inclusive future for Indigenous employees in the years to come.

Keywords

Indigenous employees; racism

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Linking nature-based recreation and pro-environmental behavior: empirical support for the Conservation-Recreation Model

What will I get out of this?

This presentation explores links between nature-based recreation and conservation behavior and discusses the implications of connecting people and places to enhance protected area management.

Abstract

Efforts to conserve the health and viability of parks and protected areas may ultimately depend on functional and emotional connections between people and their environment. Nature-based recreation fosters many of these connections, potentially leading to engagement in multiple forms of proenvironmental behavior (PEB). This study used a structural equation modeling approach to empirically investigate hypothesized associations among nature-based recreation, sense of place, and PEB. Data were collected in spring 2013 via surveys of landowners (n=387), licensed hunters (n=227), and avid birders (n=646) across several counties in upstate New York. Results showed that participation in birding and hunting was a significant positive predictor of PEB. This relationship was partially mediated by the effect of recreation participation on place attachment and community involvement. The study highlights the potential value of the Conservation-Recreation Model as a mechanism for illuminating the direct and indirect contributions of nature-based recreation to park and protected area management.

Keywords

Behavior, Conservation, Recreation

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What will I get out of this?

Attendees will learn spontaneous, audience-centered, experiential, interpretive techniques that specifically address how to adapt interpretive programs to changing budgets, emerging issues, and evolving audiences.

Abstract

A new paradigm in interpretation is necessary. Parks face numerous changes. Budgetary, societal, political, and demographic changes challenge interpreters to rethink our approach. In response to less staff, new audiences, an increasingly individualistic culture, evolving technology, and expanding shared authority Pinnacles National Park has changed how, where, when, and why they deliver interpretive programs. The approach is to create spontaneous, audience-centered experiences. The program is spontaneous; it does not require them to be at a specific location and time. It is audience-centered. Regardless of topic, techniques maximize emotional, creative, and experiential input from the visitor. The program moves beyond interpretation to provide the visitor a formative experience. Examples include journaling chairs in the backcountry, "ask it forward cards" (un-facilitated facilitated dialogue), and a tournament of challenges. This approach is effective at reaching all audiences, building relevancy, and creating connections. The methods are replicable, and results are quantifiable at any unit.

Keywords

relevance, connections, inclusion

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In Pursuit of Happiness: Three Centuries of American Park Design by Washington, Olmsted and Disney

What will I get out of this?

What is the future of the American public park? We can theorize its future by exploring three key figures: Washington, Olmsted, and Disney.

Abstract

Keywords

presentations are given here

Parks, landscape, design

"The Pursuit of Happiness"—words immortalized in the Declaration of Independence—is a driving force behind a signature American landscape form: the public park. In each century since our founding, an important American has shaped that conversation through their personal and public designs. In the 18th century, it was the "father of our country," George Washington (1732-1799); in the 19th century it was the "father of landscape architecture," Frederick Law Olmsted (1822-1903) and in the 20th, it was the "father of modern entertainment," Walt Disney (1901-1966). Understanding their philosophies and impacts on this evolution is to understand the current questions and dilemmas faced in preserving our historic park landscapes as well as designing parks for future generations.

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10872 Poster

National parks as protected areas for U.S. freshwater fish diversity

What will I get out of this?

The concept of this work is to view National Parks through a unique lens—as the nucleus for a United States freshwater protected area network.

Abstract

Freshwater environments contain one-third of all vertebrate species and 40% of global fish diversity, but these habitats are critically threatened by myriad anthropogenic stressors. We assessed the representation of freshwater fish diversity provided by the National Park Service (NPS) and the potential for parks to serve as freshwater protected areas (FPAs) in the United States. Although most parks were not designed with freshwater conservation in mind, nearly two-thirds (62%) of native U.S. fishes reside in national parks. The ability of parks to serve as protected areas depends on activities upstream from their boundaries and we found that a substantial part of these watersheds have some form of conservation status. Using a conservation planning approach that integrates fish diversity representation provided by parks and their current and future ecological threats and management challenges, we identify 50 parks that could serve as core members of a nationally comprehensive FPA system.

Keywords

freshwater protected areas

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Second Century Thinking: Research to Support Interpretation, Education, and Engagement

What will I get out of this?

The session will explore state-of-practice research designed to support desired outcomes and enhanced effectiveness of interpretation, education, and engagement programs.

Abstract

Key elements of the Second Century Commission's recommendations to "advance the 21st-century National Park idea" include: affirming that the National Park Service has a fundamental role to play in American education; strengthening connections between the national parks and educational institutions; helping the public to build personal connections to the national parks; and engaging diverse audiences. This session will explore the ways in which research is being applied to help inform and support interpretation, education, and engagement objectives within the National Park Service and beyond. A primary goal of the session is to provide a venue for scientists and practitioners to discuss challenges and opportunities for building within society strong connections and sense of engagement with National Park Service programs and places.

Keywords

Interpretation, Education, Engagement

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The Inspiring a New Generation Summit: Findings from Census-building Workshops on Engaging Children with Parks

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Influencing Youth Behavior and Nature Engagement Through Leave No Trace Education

Education and Interpretation in the Lab: Simulated Soundscapes' Role on Memory, Attention, and Personal Reflection

What Makes an Environmental Education Program Successful? Defining Success and Studying What Leads to It

Evaluating the Effects of Crowding on Interpretive Experiences at Castillo de San Marcos National Monument

Connectivity from space: NASA programs in support of parks and protected areas

What will I get out of this?

The use of remote sensing for conservation is flourishing. Learn how NASA enables park and protected area management, especially related to landscape and seascape connectivity.

Abstract

Satellite observations of Earth can provide a valuable perspective to inform park and protected area management. For over a decade, the NASA Ecological Forecasting program has enabled the use of space-based observations, in combination with in situ observation and models, to understand how and why ecosystems are changing, and predict how they could look in the future. This work is conducted in partnership with federal and state agencies, non-governmental organizations, universities, and the private sector. Here, we provide an overview of several recently funded projects that seek to enhance landscape or seascape connectivity to address conservation challenges, such as habitat loss, habitat fragmentation, and climate change. We also provide an overview of the Ecological Forecasting and other relevant NASA programs, highlighting projects in and around U.S. parks.

Keywords

connectivity, remote sensing

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Keith Gaddis - AAAS Science & Technology Policy Fellow, NASA Earth Science Division

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10833 Challenge Session

The Important Intersection of Natural and Cultural Resources in Conservation and Preservation

What will I get out of this?

A look at the intersection of natural resources in the restoration and preservation of our cultural history and landscapes.

Abstract

A look at the intersection and role of natural resources in the restoration and preservation of our cultural history and landscapes, and in the context of our cultural heritage associated with our natural landscapes. The capacity of cultural resources to adapt to changing environments is very limited. Impacts to cultural resources from stressors such as climate change range from coastal erosion and storm damage to effects of wildfires, floods, rising sea level, extreme weather events and more rapid deterioration due to changing rain and temperature patterns. Tools are needed, scholarly input, and action is required to protect these threatened resources or to at least recover and retain as much information as possible.

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cultural natural resources

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Looking back and Creating A Vision -Natural Resource Science, Stewardship, and Leadership Beyond the Centennial

What will I get out of this?

What does it mean to our focus for science and stewardship and DO# 100 implementation?

Abstract

This session and dialogue will take a brief look back at the last few decades of natural resource stewardship within the National Park Service, lessons learned, and discussion of a path forward. What does it mean to our focus for science and stewardship and DO# 100 implementation? How will we embrace new technologies and approaches to stewardship? We will highlight how science and scholarship have shaped the past of national park natural resource management, and provide a forward look at the next century of collaborative science and scholarship in America's national parks. Session will feature current and past Associate Directors and Chief Scientists of Natural Resource Stewardship and Science, and forward-thinking Superintendents and park managers and collaborators.

Keywords

Directors Order Natural

Lead author / Session organizer **Elaine** Leslie Taking a Look Back While Creating A Vision Forward-Natural Resource Science,

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Associate Director Natural Resource Stewardship and Science

Retired NPS National Capital Region Natural Resource Manager

NPS

Moving from the Thinking Phase to an Implementation Plan for a Landscape Approach to Conservation

What will I get out of this?

How do the NPS, other agencies, and private land managers, partners, and neighbors contribute to a National Conservation Strategy - we connect resources at scale.

Abstract

How do the National Park Service (NPS) and other federal, state and private land managers, partners, and neighbors contribute to a larger National Conservation Strategy? This would be a strategy that uses best available science, and builds from the core of already protected areas to ensure that we act upon the conservation of our national natural heritage today and well into the future. What is needed now, is not just a cohesive and comprehensive approach for a cornerstone strategy, but proof of concept projects implemented on the ground that embrace and exhibit concepts of connectivity and landscape level principles. For the NPS, it requires expanding beyond our constructed boundaries within the states as well as reaching out to our trinational partners-using new technologies and strategies in a more unified approach to continental conservation.

Keywords

large landscape conservation

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The Greater Yellowstone Ecosystem and the Critical Core Migration of Deer and Elk

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Y2Y Executive Director/ International and Tribal Partnerships-Bison Restoration across many nations

NPS Wildlife Biologist/ International and Tribal Partnerships-Bison Restoration across Many Nations

Marine Wildlife Connectivity- Shorebirds to Sea Turtles and Marine Mammals and Migration Corridors

Redwoods NP, Superintendent/ Connecting our Skies and our Heritage Through California Condor Restoration

Native Wildlife and Ecosystem Health-What are the Facts About Impacts from Feral Cats?

What will I get out of this?

Without many precedents and with a volatile topic among stakeholders and employees, the NPS is attempting to deal with feral domesticated cat-wildlife interface issues.

Abstract

Feral and free-ranging domestic cats are exotic and invasive species to North America and are responsible for the extinction of numerous mammals, reptiles, and as of 2013 at least 33 bird species. Effects of cat predation and disease spread are most pronounced in island settings, where populations of wildlife are already low or stressed by other factors. Effects are also significant in natural and urban areas where cat colonies become established. Although there is clear policy to inform NPS management of its responsibilities toward exotic and invasive species, many parks have been unable to navigate this issue due to volatile and contentious debate surrounding free-ranging domestic cat management caused by concerns associated with wildlife conservation, cat welfare, and public health. As a result, many parks have reached out to the Biological Resources Division (BRD) and regional offices seeking guidance. This contemporary conservation issue has few precedents to draw from.

Keywords

feral cats, domesticated

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Science Team Panel Chair

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Epidemiology Branch and One Health Coordinator, NPS

HSUS

NPS/Island Cat Issues

NPS Strategic Invasive Animal Science Workshop

What will I get out of this?

Invasive species are the second most significant threat to biodiversity, after habitat loss. Help the NPS determine a strategic servicewide approach to this pervasive issue.

Abstract

Invasive species are the second most significant threat to biodiversity, after habitat loss. In their new ecosystems, invasive species become predators, competitors, parasites, hybridizers, and diseases of our native species. It makes sense then, that invasive animals are a mission-critical issue for the National Park Service (NPS) due to their wide-ranging, detrimental impacts on NPS resources. Despite the fact that almost every NPS unit with land and water to manage is being affected by invasive animals, the NPS has yet to develop a servicewide strategic approach to invasive animals. This piecemeal approach is utilizing increasingly larger levels of funding and personnel, yet is not an effective strategy. This session will evaluate the extent of the problem, assess NPS' management needs for invasive terrestrial vertebrates, review existing case studies and identify the potential for new studies, and review organizational models that could serve as a servicewide organizational framework for NPS.

Keywords

Invasive animals, NPS

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Additional authors / organizers

Kent Redford-Session Facilitator

Independent Science Team

Invited Speakers or a Panel Discussion, additional speakers/panelists

and titles of their

presentations are given here

If this is a session of

Channel Islands National Seashore, Superintendent

Invasive Species Coordinator, Department of Interior

Pacific Island Network Inventory and Monitoring Program, NPS

Chief of Biological Resources, NPS

NPS Strategic Invasive Animal Science Workshop (INVITE ONLY 1.5DAY Workshop)

What will I get out of this?

Invasive species are the second most significant threat to biodiversity, after habitat loss. Help the NPS determine a strategic servicewide approach to this pervasive issue.

Abstract

Invasive species are the second most significant threat to biodiversity, after habitat loss. In their new ecosystems, invasive species become predators, competitors, parasites, hybridizers, and diseases of our native species. It makes sense then, that invasive animals are a mission-critical issue for the National Park Service (NPS) due to their wide-ranging, detrimental impacts on NPS resources. Despite the fact that almost every NPS unit with land and water to manage is being affected by invasive animals, the NPS has yet to develop a servicewide strategic approach to invasive animals. This piecemeal approach is utilizing increasingly larger levels of funding and personnel, yet is not an effective strategy. This session will evaluate the extent of the problem, assess NPS' management needs for invasive terrestrial vertebrates, review existing case studies and identify the potential for new studies, and review organizational models that could serve as a servicewide organizational framework for NPS.

Keywords

Invasive animals, NPS

Lead author / Session organizer **Elaine F.** Leslie Chief Biological Resources

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Independent Science Team

Invited Speakers

Channel Islands National Park, Superintendent

Invasive Species Coordinator, DOI

Pacific Island Network Inventory and Monitoring Program, NPS

Chief of Biological Resources, NPS

Novel Approaches for Monitoring Solitude in Urban-Proximate Wilderness Areas

What will I get out of this?

Attendees will learn the ways in in which GPS technologies and GIS analyses can better inform management decisions concerning solitude monitoring in designated wilderness areas.

Abstract

The 1964 Wilderness Act states that wilderness "...has outstanding opportunities for solitude...". However, designated wilderness areas in close proximity to urban areas pose challenges for finding and evaluating opportunities for solitude due to increased visual and auditory encounters with other visitors. This study advanced the minimum protocols for evaluating opportunities for solitude in three urban-proximate wilderness areas in Utah (Uinta-Wasatch-Cache NF) by employing and aggregating information from GPS technologies, infrared trail counters, visual assessments, and sound scape assessments in addition to traditional encounter data. Findings were analyzed and substantiated using GIS technologies. This spatially explicit and integrated process provides new contributions to understanding visitors' senses of solitude in urban-proximate wilderness areas. We conclude with recommendations for applying these approaches to other wilderness areas and in other visitor use management situations.

Keywords

Soundscapes, GIS, Viewsheds

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Additional authors / organizers

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Prof. Jeff Rose, Ph.D., University of Utah

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10947

Pensacola Bay Ferry: Resilient Transportation and Tourism at Gulf Islands National Seashore

What will I get out of this?

Learn about the planning for Gulf Island National Seashore's new ferry service and the critical role it will play for local transportation and tourism.

Abstract

A passenger ferry in Pensacola Bay has been a long time in the making. As part of the restoration actions after the Deepwater Horizon oil spill, funds were appropriated for the purchase of two ferry vessels for the Pensacola Bay. Since then, Gulf Island National Seashore has been working closely with local partners to establish the ferry service. Access to the Fort Pickens area of Gulf Island National Seashore is currently via a road that is extremely susceptible to closure due to flooding and/or storm damage. Further, the primary route from Pensacola to Santa Rosa Island, the barrier island on which Pensacola Beach and Fort Pickens are located, is via a bridge that is often congested. As such, implementing a ferry service for this area provides a new way to travel between and experience key locations in the Pensacola Bay area and, in doing so, improves resiliency of the community.

Keywords

resiliency, ferry, feasibility

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/

10948 Poster NPS NEPA Reviews: Concise, Focused, and Timely?

What will I get out of this?

Learn about the 2015 NPS NEPA Handbook. This poster reflects on elements successfully and easily adopted for more concise, focused, and timely NEPA documents.

Abstract

In this poster, VHB's NPS NEPA team reflects on the documents being prepared under the new NPS NEPA Handbook. This policy was released in September 2015 with guidance for more concise, focused, and timely NEPA reviews. To that end, the revised guidance for writing NEPA documents includes the opportunity to streamline or even eliminate components from the document. VHB's team has found that there are some document elements that have been readily and successfully streamlined in light of these updates, while additional opportunities sometimes remain. The challenge facing each planning team is creating very concise documents with only the information that is needed to convey the proposed action and assess the potential impacts. This poster presents a synthesis, from VHB's perspective, of how project teams have embraced the new changes since the new guidance was issued, and where old habits die hard.

Keywords

NEPA, planning, streamlining

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Reverberations in Soundscapes at the Interface Between Indigenous Peoples and National Parks in Southwest USA

What will I get out of this?

This is original research being conducted with the Hualapai on Native American soundscape perspectives. It is key to understanding future park management decisions.

Abstract

The National Park Service recognizes the inherent value of preserving or sustaining its natural and cultural soundscapes as a priority for the continuation of the overall park experience. These aural collections are rich and diverse spanning numerous ecotones. In the late 1980s, the Hualapai Nation decided to grant controlled access to its lands. It was here that visitors could enjoy the Grand Canyon experience without the continuous flow of large crowds often seen at the North and South Rims. This research focuses on Native American perspectives with respect to 'natural quiet' and 'natural soundscapes' at cultural or sacred sites in the Grand Canyon. Literature is limited, gaining knowledge on the significance of 'Place,' beliefs systems, and the role that soundscapes play in traditional and religious practices is key to understanding current and future management decisions; while maintaining mutual respect for long standing tribal presence, cultural histories, traditions, and knowledge systems.

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Soundscapes, Cultural Sites

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10977 **Poster**

Applying Varied Coding Techniques to Ethnographic Analysis

What will I get out of this?

This poster will outline how NCR Cultural Anthropology applies different coding techniques to interviews/oral histories and how coded data is used in regional projects.

Abstract

Keywords

authors

ethnography, qualitative data

Interviewing stakeholders is one of the primary ways that data is collected by NPS cultural anthropologists. However, data from transcribed interviews often remain in a narrative structure and only find use in a narrow qualitative domain. The Cultural Anthropology program in the National Capital Region has found some success in taking a multi-method approach to research design and data analysis. Interviews are coded to provide data for formal inductive statistical analysis using descriptive, bivariate and multivariate techniques. In addition, this coding technique allows for the integration of GIS generated data sets into the overall analysis by providing not only mapping products but also graphic connections between spatial anchors, individuals, and social and behavioral attributes.

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thors / organizers			

10969 Poster Watershed Restoration, Archaeological Preservation and Cultural Continuity at Canyon de Chelly National Monument, Arizona USA

What will I get out of this?

This project demonstrates the value of applying an integrated resource management approach and working cooperatively with indigenous communities to achieve mutual and positive goals.

Abstract

An Integrated Approach: Watershed Restoration, Archaeological Preservation and Cultural Continuity at Canyon de Chelly National Monument, Arizona USA. In 2003, this unique national monument in northeastern Arizona and canyon home to a living Navajo community embarked on an important and bold long-term initiative. The Canyon Farm Preservation and Watershed Restoration Project aims to revive natural ecological processes, improve canyon viewsheds, strengthen cultural connections and preserve a vast concentration of archaeological resources. This project occurs within a vibrant canyon landscape, comprised of sheer sandstone cliffs, alluvial terraces, and a dynamic riparian corridor overlain with evidence of 5000 years of nearly continuous human occupation. The resident Navajo community continues to utilize the landscape for agricultural, ceremonial, social and economic purposes. This National Park Service led project occurs on tribal trust lands within the Navajo Nation and involves cooperation and participation by many tribal, federal and academic partners and has produced intriguing results.

Keywords	Archaeology, watershed, Navajo
Lead author / Session organizer	Keith Lyons Integrated Resource Manager National Park Service - Canyon de Chelly National Monument keithlyons@frontiernet.net
Additional authors / organizers	
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FOREST VEGETATION FOLLOWING NATURAL DISTURBANCE EVENTS ON PRESERVED LANDS

What will I get out of this?

Human disturbance of forests is associated with the spread of invasive organisms. What threat might natural disturbance events pose to our forests?

Abstract

Land preservation, a key element of conservation biology, consists of the effort to protect habitat from human-caused threats such as fragmentation, development, species loss, and the encroachment of alien invasive plants (AIP). The establishment and expansion of AIP are closely associated with human disturbances such as logging, mining, road construction, agriculture, horticulture, and development. Not only are humans often responsible for the disturbances that facilitate AIP invasion, we often are directly responsible for the dispersal of AIP into these areas through propagule transport. Does the removal of human disturbances through land preservation limit the establishment and expansion of AIP? We examined the impacts that two severe storm systems had on long-term vegetation monitoring plots to study if AIP move into these naturally disturbed areas.

Keywords

Invasive, Plants, Disturbance

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Dave Mortensen, Penn State

Matt Marshall, National Park Service

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10459 Update Session

Enhancing the Sustainability of Visitor Use Management through the Application of Recreation Ecology Research

What will I get out of this?

Participants will learn the latest recreation ecology research findings and their implications for the sustainable management of park visitation.

Abstract

This session presents recent recreation ecology research findings that describe common visitor impact management problems caused by trail use, camping, and rock climbing. Insights into the effective management of these problems will be communicated by describing recent research findings about the measurement of visitor resource impacts and the relative influence of use-related, environmental, and managerial factors. The focus of the research and presentations will be on sharing scientific findings and management implications that inform park managers about effective and sustainable visitor use and impact management strategies and practices.

Keywords

recration, impacts, VUM

Lead author / Session organizer

Jeffrey Marion Recreation Ecologist

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Recreation Ecology Research and Geospatial Applications to Enhance the Sustainability of Trails

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Recreation Ecology Research to Enhance the Sustainability of Primitive Camping

Recreation Ecology Research to Enhance the Sustainability of Rock Climbing

Successful Applications of Recreation Ecology Science in Enhancing the Sustainability of Park Visitation

10971

Biodiversity Information Serving Our Nation (BISON): Providing species occurrence data for the U.S.

What will I get out of this?

Users will learn about the BISON web-based resource they can use for finding species occurrence data for their protected areas in the United States.

Abstract

Biodiversity Information Serving Our Nation (BISON) https://bison.usgs.gov">is a data repository with free and open access that allows users to find, explore, and download occurrences of species found in the United States via the BISON web portal and web services. BISON currently contains more than 261 million species occurrence records from diverse sources, which can be accessed by searching for a species at the national, state or county level, or by defining a polygon for an area of interest. Search results can be viewed online as point locations in a map and as checklists and downloaded to the user's desktop. BISON enables the discovery and use of data otherwise not known to those working on protected areas, since checklists of species found within national park boundaries have a greater number of distinctive species when data from BISON is included than when it is not for example.

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species, occurrences, data

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10701

Evaluating Diverse Trail Projects Using Standardized Assessment Tools: Conservation Corps Example

What will I get out of this?

Describes standardized assessment protocols to evaluate trail work conducted by conservation corps across diverse habitats, supporting environmental evaluation and outcome communication for public land resources.

Abstract

The effects of conservation corps programs on participants are well documented, with service-learning involvement leading to increased community engagement, positive attitudes toward public lands, and broad social, health, and economic benefits. However, evaluation of environmental outcomes is less documented due to the diversity of projects and habitats in which crews work. Evaluation contributes to national-level assessment of improved ecosystem health, increased accessibility and public lands usage, enhanced visitor experiences, and promotion of human health outcomes. As part of a collaboration with 14 conservation corps working across the U.S., this project developed standard assessment protocols for trail maintenance and construction projects on public lands. This paper provides an overview of a multi-corps and research institution collaboration, description of the protocols development and associated training materials, and results highlighting the environmental changes associated with corps work. Tangible outputs also include how these protocols could fit other programs or nature conservation goals.

Keywords

Conservation, Corps, Evaluation

Lead author / Session organizer

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E. Oliphant (NC State), C. Walden-Schreiner (NC State), M. Edwards (NC State), Y.-F. Leung (NC State), G. Blank (NC State); E. Seekamp (NC State), M. Duerden (Brigham Young University)

10703 Poster

Teaming Up: Nonprofit Partnerships in North Carolina's Coastal State Parks

What will I get out of this?

Insight into park-nonprofit partnerships is examined, providing perspective about the benefits and drawbacks of these relationships, including dynamics in light of decreased resource management funding.

Abstract

This study will investigate the nature of relationships between nonprofit organizations and coastal government-managed lands in North Carolina. The role of nonprofit organizations has long been important in natural resource management. As federal agencies face smaller budgets, yet higher costs and more lands to manage, determining the abilities of these agencies to partner with nonprofits will be of significant benefit. A sample of nonprofit organizations in the Raleigh, NC area have been contacted due to their involvement in coastal work. A managerial staff person with each organization will be interviewed using a set of guide questions. Transcripts will then be uploaded into NVIVO (Version 11) for thematic analysis. Snowball sampling will be used to contact two coastal parks/public lands managers for a corresponding interview. The outcomes of this study will be meaningful illustrations of specific nonprofit-government partnerships in North Carolina's coastal areas, as well as comparative values across nonprofits.

Keywords Parks, Nonprofit, Partnerships			
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Using social media data to identify valued recreation resources and inform climate change adaptation planning

What will I get out of this?

An innovative, rapid, low-investment assessment of recreation resources using hashtagged images reveals key components of visitor experiences and may inform climate change adaption planning.

Abstract

Climate change will impact the natural resources within parks and protected areas, which will potentially alter the recreation opportunities and beneficial outcomes obtained by visitors. Given the uncertainties of climate change and its associated impacts, managers need to better understand visitor perceptions of key recreational resources and experiences. Researchers typically employ survey research as the primary tool to collect visitor insights. Less understood is the role social media data can play in enhancing managers' understanding of key recreation resources for visitor experiences. Social media posts provide a free, readily available, up-to-date and site-specific account of recreationists' preferred resources and settings. This paper will present the methodology, results, limitations, and implications of using social media data to inform park and protected area planning. Managers should be able to apply this inventive method of assessing key resources to their recreation sites.

Keywords

recreation, adaptation, social-media

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10795 Update Session

Managing Human Uses and Impacts in Ocean Parks: The Byzantine Marine Scene

What will I get out of this?

Participants will explore how monitoring, application of policy and planning, and diligent outreach and communication can address user impacts in this new discipline.

Abstract

In 2010, over 123 million people or 39 percent of the nation's population, lived in counties directly on the shoreline, with ten million more expected by 2020. Many parks are located squarely in the middle of our crowded coasts and face demands on their resources for marine recreation, seafood, infrastructure, and other needs. The land-based organizational culture of the National Park Service is playing "catch-up" on marine issues. Parks and programs are developing scientific information, garnering public support, and choosing actions to address overuse and degradation of marine resources. These stories can be shared and their value multiplied across parks and other protected areas with aquatic resources to build a community of practice. This session explores how to understand and manage certain priority uses of ocean and coastal parks and brings several valuable case studies and approaches to light.

Keywords

coastal, planning, visitors

Lead author / Session organizer **Cliff McCreedy** Marine Resource Management Specialist

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Relative Roles of State and Federal Jurisdiction in Managing Coastal Parks

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Creating a Marine Reserve in Dry Tortugas National Park: Science, People, and Process

Implementing a Partnership Strategy to Increase Marine Resource Protection, Enjoyment and Adaptive Management in

Dispersed Fishing Use Monitoring Using GPS: Proof of Concept at Fire Island National Seashore

Aquaculture in Coastal Parks: Growing Out of Control?

Aquaculture in Coastal Parks: Growing out of Control?

What will I get out of this?

Participants will understand the implications of aquaculture for park resources and explore technical and policy approaches to address it.

Abstract

Keywords

coastal, fish, planning

Several coastal parks confront a legacy of shellfish aquaculture, while other parks are viewed as potential areas for development. As state agencies and NOAA continue to aggressively promote shellfish aquaculture, more parks will face pressure to allow it on their submerged lands and waters. Is shellfish aquaculture environmentally sustainable, as proponents claim, or is it a source of conflicts with recreation, pollution, habitat damage, disease and invasive species that must be avoided? How do parks confront the problem of unauthorized aquaculture already established within their boundaries, or deal with proposals to create new leases and operations? Are there ways to manage aquaculture to harmonize this commercial use with park purposes when part of a cultural landscape? This presentation will explore case studies where these questions arose, and invite discussion of this emerging issue.

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10726

Facility Management Coastal Hazards and Climate Change Adaptation Toolkit (FMCCC Toolkit)

What will I get out of this?

This web based toolkit will provide an information and planning roadmap for park managers to use when managing for climate change and coastal hazard risks.

Abstract

The NPS is developing tools to assist Parks in implementing guidance on the impacts of climate change on Park assets. NPS has developed an online Facility Management Coastal Hazards and Climate Change Adaptation Toolkit (FMCCC) for this purpose. The toolkit components are organized to assist parks with integrating the results of vulnerability assessments into their park planning processes and funding requests for all of its assets. The toolkit builds upon and integrates ongoing work by the NPS and includes four major strategic approaches: adaptive management, regional coordination, integrative systems and portfolio asset management.

Keywords

Facilities Climate Adaptation

Lead author / Session organizer

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Dr. Rebecca Beavers, USNPS;

Dr. Sarah Slaughter, President, Built Environment Coalition;

Beth A. Binns, independent consultant to Western Carolina University;

Dr. Robert Young, Director, Program for the Study of Developed Shorelines, Western Carolina University

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10744 ration Session	National Park System Planning: A Canadian and American Perspective
get out of this?	Investigating and identifying potential actions that the National Park Service and Parks Canada could take update or revise their respective national park system plans.
Abstract	As Parks Canada and the National Park Service just initiated discussion on the possibility of this topic per discussions with Dave Harmon, a more formal and complete proposal for a combination Compassession PLUS Collaboration Session will follow.
Keywords	park system plan
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ession organizer	Parks Canada Agency Revin, McNamee (wpc.gc.ca

10741 Compass Session

National Park System Planning: Canadian and American Perspectives for the Future

What will I get out of this?

Explore potential collaborative between NPS and Parks Canada to update or revise their respective national park system plans.

Abstract

The idea for this collaborative effort was first discussed by Parks Canada and the U.S. National Park Service on September 28th. I contacted Dave Harmon to discuss the potential for this initiative. We will submitted a more formal and thoughtful proposal before the end of October 2016. Please consider this as a place holder.

Keywords

park system plans

Lead author / Session organizer

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Additional authors / organizers

Stephen Morris, Chief, Intergovernmental Affairs, U.S. National Park Service

Establishing New National Parks and Protected Areas: A Perspective from Canada

What will I get out of this?

There are lessons to be learned from Parks Canada's ability to significantly expand its national park and marine conservation area systems.

Abstract

The creation of new national parks and protected areas is a political decision. Since 2003, the Canadian government has authorized the establishment of seven new national parks totaling 82,437 km2 and two new marine conservation areas totaling 14,380 km2, as well as significantly expanding several existing parks by almost 32,000 km2. This has been accomplished as a result of several factors including the involvement of Indigenous Peoples and provincial and territorial governments, federal budgets that fund system expansion, strong support from environmental groups, support by specific commercial interests, and continuing traditional land uses by non-Indigenous populations under certain conditions. This presentation will summarize these accomplishments, the techniques used to secure this legacy, and the lessons learned from this work. It will also identify future protected areas that will be added shortly to the system.

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Canada, establishment, Indigenous

Lead author / Session organizer **Kevin McNamee** Director, Protected Area Establishment

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10802 Fasttrack Session

Social Science and Planning: Applications in the National Park Service

What will I get out of this?

To provide context for how and why the National Park Service incorporates social science research into Visitor Use Management planning.

Abstract

Planning for and managing visitor use is at the heart of the National Park Service mission. Proactively planning for visitor use supports responsive management that increases the ability of the NPS to encourage access and maximize visitor opportunities. This planning process is greatly informed by a variety of social science information that is often collected within the context of specific planning efforts. During this session a brief overview of NPS visitor use management planning will be provided followed by individual presentations on four topic areas where social science information is highly applicable to visitor use management planning: decision space, civic engagement, data types, and data integration. Each presentation will explore critical questions relating to the role of social science information within each topic. As a collective they tell the story of how data is used in planning from project initiation to preparing a final document.

Keywords

Planning, Social Science

Lead author / Session organizer Susan McPartland Visitor Use Management Specialist

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Establishing a decision space: identifying planning issues, project scope, and research questions

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Civic engagement: beyond involvement and into social science information

Sliding scale of data types: identifying what is needed and in what format

Putting it all together: integrating data into the planning process

10751 Update Session

Socio-Economic Monitoring Developments in the National Park Service

What will I get out of this?

The NPS is challenged now more than ever with issues of relevancy and visitor management. Socio-Economic monitoring describes existing conditions and evidence for decision making.

Abstract

The National Park Service (NPS) recorded over 307 million recreation visits to park units in 2015. This record level of use demonstrates the public's interest in national parks and coincides with the NPS centennial year efforts. Despite the apparent success of increasing overall use of park lands, it is difficult to measure the broader benefits and implications. Socio-Economic Monitoring (SEM) data can provide evidence to inform a wide range of visitor experience and service issues. This session will highlight a wide range of developments and refinements that are collecting park visitor and public information for the NPS. Reaching new and more diverse audiences, accurately counting park visitation, and understanding the economic benefits to local communities and the nation as a whole from visitation and tourism as stated in A Call to Action start with understanding existing socio-economic conditions and tracking trends of NPS visitors and non-visitors alike.

Keywords

Socio-Economic Monitoring

Lead author /
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The Need for Comprehensive Socio-Economic Monitoring for the National Park Service

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

The National Park Service Comprehensive Survey of the American Public: Past, Present and Future.

Development and Pilot Implementation of an In-park Socioeconomic Monitoring Program

Socio-Economic Monitoring Data for Visitor Spending Effects Modeling

Counting on visitors: Monitoring National Park Service Visitation through the Public Use Statistics Program

Outside Science (inside parks): Students Engaged in Science in National Parks

What will I get out of this?

Viewers will be inspired to think about ways to involve students and young professionals in scientific activities and to communicate science through digital storytelling.

Abstract

Keywords

Invited Speakers or a Panel Discussion,

additional speakers/panelists and titles of their presentations are given here social media, science

Sara Melena Education Specialist

Outside Science (inside parks) is a webisode series highlighting science in parks. Traveling from the mountains of Denali, to the saltwater marshes of Cape Cod, to the caves of Buffalo National River, and the beaches of Padre Island, this series follows students of all ages, from grade school up through Ph.D programs. Outside Science (inside parks) aims to inspire the next generation of conservationists by reaching them where they are—on social media—and showing them that nature is awe-inspiring, fun, and worth protecting. This program also proves how parks are ideally situated as classrooms and laboratories to study significant ecological challenges, like climate change, biodiversity, invasive species, and habitat fragmentation.

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	Colorado State University
	Brittni Connell
	Assistant Web Manager
If this is a session of	

10648
Collaboration Session

The Goldilocks Syndrome and Park-based Science—Brokering outreach opportunities that are just right

What will I get out of this?

Guidelines: setting expectations so that park-based researchers' work builds staff resource knowledge and increases the visibility of the park as a research setting.

Abstract

This session brings to light the practices parks use to insure that staff and visitors benefit from the park-based research scientists propose and conduct. Like Goldilocks, we tend to encounter expectations of scientists or parks that are too big and too small, at times too ambitious and at times unnecessarily limited. What are the questions we ask of ourselves and researchers to get it just right? Presenters share how they have shaped opportunities for scientists to reach an audience of park staff, neighbors, and visitors. The goal is to make outreach a routine, standard part of scientists' experience in parks with options that fit the park's needs as well as scientists' varied skills and interest. Participants will use presenters' vignettes of more and less successful efforts as a springboard for articulating guidance for park staff interested in making agreements and arrangements on collaborative efforts with scientists.

engager	engagement, science, outreach					
Martha	Merson	Project Director				
iSWOOI	e at TERC	martha_merson@terc.edu				

iSWOOP, Interpreters and Scientists Working on Our Parks

What will I get out of this?

Park leaders can play a gate-opening role in facilitating communication about park-based science between interpreters, scientists, and the public. Presenters will highlight promising strategies.

Abstract

Research in parks is vital. Though scientific research often uses cutting-edge methods, requires acts of courage, involves determination and persistence to arrive at startling results, these stories are not always visible or obvious to the public. iSWOOP offers promising strategies for increasing the prominence of park-based research. Presenters will speak to preliminary findings about the usefulness of research briefs, field work conducted by interpreters led by scientists, and the role for data visualizations. iSWOOP is aligned with the 21st century interpretive competencies.

Keywords

science, communication, relevance

Lead author / Session organizer

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Additional authors / organizers

One or more of the following will join me:

Tracey Wright, TERC, Research Associate

Nickolay Hristov, Winston-Salem State University, co Project Director

Louise Allen, Winston-Salem State University, coProject Director

Abe Miller-Rushing, Acadia National Park, Science Coordinator

Marc Albert, Boston Harbor Islands National Park Area, Stewardship Program Director

10686 Update Session

Multi-Scalar Approaches to Addressing Climate Change Impacts on Cultural Heritage

What will I get out of this?

This session will bring together NPS programs and partner institutions to discuss ongoing scaled-approaches to assess climate change impacts on cultural heritage.

Abstract

Recent NPS work clearly recognizes multiple connections between cultural heritage and climate change. These can be summarized as "impacts on cultural heritage from climate change and capacity to learn from cultural heritage about human history with variable climates and environments." While both connections are essential to climate change response, it's difficult to learn from heritage that has been damaged or destroyed. Therefore, this session takes a dive into understanding impacts of climate on cultural heritage. The session will set out a multi-scalar view of current practice – How are heritage materials being affected by climatic changes? How are we assessing impacts at the field/resource level? at the regional level? at the national level? The session will then ask the audience: What next? How do we continue to grow and interrelate these efforts to ensure that stewardship of cultural heritage is strong enough to meet challenges projected by climate change?

Keywords

Climate Change; Heritage

Lead author / Session organizer Lauren Meyer Vanishing Treasures Program Manager

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Additional authors / organizers

Marcy Rockman, Climate Change Adaptation Coordinator for Cultural Resources, National Park Service

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here Landscape-Scale Vulnerability Assessments

Planning for Impacts at the Regional Scale

Thresholds Research, Case Study at FOUN

Thresholds Research in the NPS (NCPTT)

Landscape-Scale Vulnerability Assessments

10700 Challenge Session

Brainstorm solutions to challenges facing a new park unit here in Hampton Roads, Virginia

What will I get out of this?

Discuss creative ways that Fort Monroe National Monument, partners, and community members can outline an inclusive and sustainable future for this new national park unit.

Abstract

Fort Monroe National Monument in Hampton Roads, Virginia, joined the national park system in 2011, with lands and property acquired from the US Army in 2015. Today the park faces challenges common among new NPS units and illustrative of the complexity of partnerships. Old Point Comfort, the peninsula upon which Fort Monroe National Monument sits, is managed cooperatively by the National Park Service, the Commonwealth of Virginia through Fort Monroe Authority, and the City of Hampton. The park superintendent invites conference attendees to participate in a creative brainstorming session to generate possible solutions to challenges involving different perspectives among partners, engaging new audiences through inclusive outreach, and connecting people to the significant and relevant American stories of the place and the natural and cultural resources of Fort Monroe. Conference attendees are invited to attend an orientation tour of Fort Monroe the evening prior. For more information, please visit nps.gov/fomr.

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Partnership, relevancy, fort

Lead author / Session organizer Carrie Miller Cultural Resource Specialist

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Additional authors / organizers

	Superintendent of Fort Monroe National Monument / A Brief Overview of Fort Monroe National Monument
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Virtual Visitors: Social Media in Yellowstone National Park.

What will I get out of this?

Understanding of why people are using social media to interact with national parks and how millennials differ in their preferences and interactions.

Abstract

Social media is ubiquitous in society today and shows no signs of slowing down. Many organizations have been trying to benefit from the large number of people using this communication tool. The National Park Service (NPS) is no exception to this. For the NPS, social media is a tool that can be used to engage, interpret, and communicate with people. However, we know next to nothing about the people who "like" national park Facebook page, which are called "virtual visitors". This research begins to uncover the characteristics, motivations, and preferences of these virtual visitors. Additionally, comparisons are made between younger "millennial" and non-millennial virtual visitors to evaluate how social media may be impacting different audiences. A survey conducted on Yellowstone National Park's Facebook virtual visitors is used as a case study in this research.

Keywords

socialscience, social media, education

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Additional authors / organizers

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Social Science Perspectives on Human-Bison Interactions: A Comparison of North American and International Visitors

What will I get out of this?

Insight into differences among international and north american visitors to help improve communications about wildlife safety.

Abstract

Viewing wildlife is one of the main reasons people visit national parks. However, in places like Yellowstone, the large, free-roaming wildlife does not only draw people to visit, but also presents a safety hazard. As visitation in Yellowstone is growing, it is also changing. In particular, international visitors appear to consist of a larger proportion of visitors. However, very little research has been conducted on international visitors preferences and experiences in the national parks of the U.S. This research uses simulated photographs to provide some preliminary perspectives about the differences in perceptions about safety around bison between international and North American visitors. Results are interpreted to help improve communications in Yellowstone about bison safety.

Keywords

humandimensions, social science, bison

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Wayne Freimund, Ph.D. Professor. University of Montana.

10623

Do we need 'actual' park visitation for Park Rx? Studying nature-based virtual reality for stress-reduction

What will I get out of this?

Audience members will experience cutting-edge 360-degree nature video demonstrations and learn preliminary results on how these videos reduce stress compared to actual park visits.

Abstract

Nature parks can promote human health and well-being. However, park access in unsafe neighborhoods or for people with physical limitations can be difficult or even impossible. Preliminary research suggests park visits in virtual reality (VR) can provide some health benefits for minimal cost to those who cannot otherwise access safe, nature parks. But this begs an important question: Which health benefits of parks can be reproduced in VR, and which cannot? We are starting to answer this question. Our pilot study tests stress-recovery after a mock job interview and mental arithmetic task in park settings experienced through a VR headset or by sitting outdoors in the park. Subsequent analyses will determine the extent to which people can quickly and efficiently recover from low-level, everyday stressors by visiting their favorite neighborhood (or far-away) park, from the convenience of their home or office.

Keywords

Park Rx, stress

Lead author / Session organizer

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10791 Compass Session

Reaching Out on Scaling Up: Lessons from Landscape Scale Conservation

What will I get out of this?

This session will focus on the difficult realities of landscape-scale conservation. Participants will share lessons learned and yet-to-be learned about networked governance.

Abstract

Climate change, habitat fragmentation and globalization require that conservation work at ever-larger scales. As we "scale up" to system-level planning and connectivity conservation, we must complement site-level management to accommodate and embrace a multiplicity of ownerships and interests across landscapes of diverse and competing land uses. But while the rationale for collaborating in this way is clear, the mechanisms are not. Institutional, economic and cultural barriers abound. This session will follow on the recent George Wright Forum theme issue on Scaling Up: Landscape-Scale Conservation. It will begin with short presentations but encourage audience sharing of experience. As part of this discussion, participants will explore issues in what is coming to be known as networked governance: shared decision-making over different types of protected areas and other conserved areas by a diverse network of organizations and individuals with interdependent interests in affected land and resources.

Keywords

landscape scale governance

Lead author / Session organizer

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National Parks and the Scaling Up Imperative

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Christina Marts, Assistant Superintendent, National Park Service

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Overview: Opportunities and Challenges for Scaling Up from a Networked Governance Perspect	ve

Chesapeake: A Network of Conservationists Across 64,000 Square Miles

TBD

10858 Challenge Session

Strengthening connections: Learning from on-the-ground experience with nature-culture linkages for more effective conservation

What will I get out of this?

Lessons from recent conservation experience with nature-culture linkages challenge the assumption that managing nature and culture separately is the most effective approach for protected areas.

Abstract

Nature and culture are deeply entangled in landscapes/seascapes around the world. Even so, there exist strong dichotomous conservation traditions in North America and other regions that addresses nature and culture separately. Recent on-the-ground experience has demonstrated that in many landscapes natural and cultural heritage are inextricably bound together and that conservation approaches benefit from more integration. Drawing from a Nature-Culture Journey at the 2016 IUCN World Conservation Congress, five short panel presentations will examine experience with integrated nature-culture approaches in World Heritage Sites and other protected areas in the US, Canada, Meso-America, and Europe. These case studies will serve as the basis for a facilitated dialogue among panelists and participants to identify strategies for making connections across this nature-culture divide. Discussion will also examine how this integrated approach challenges commonly held definitions and perceptions of nature and culture and ways to advance a more integrated approach to conservation.

Keywords

nature-culture, dichotomy, conservation

Lead author / Session organizer

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Additional authors / organizers

Jonathan Putnam and Jessica Brown

Interlinkages of nature and culture in landscape/seascape: Experience from the Pacific Islands

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Linking nature-culture in World Heritage: Belize Barrier Reef Reserve System and Sian Ka'an Biosphere Reserve

The role of nature-culture connections in conserving and sustaining a traditional landscape

Nature-Culture connections in conservation of Hortobagy National Park and World Heritage Site, Hungary

10855 Compass Session

Advancing Nature-Culture Connections

What will I get out of this?

Emerging initiatives recognize that natural and cultural heritage are bound together in many landscapes and seek to identify next steps to advance integration in conservation.

Abstract

There is growing evidence that natural and cultural heritage are closely interconnected in many landscapes/seascapes and effective conservation of such places depends on better integration for planning and management. Natural and cultural heritage experts face similar conservation challenges in places with complex interrelated ecological and cultural networks and each brings a body of complementary knowledge and capacities. In response, ICOMOS and IUCN co-sponsored a Nature-Culture Journey at the September 2016 IUCN World Conservation Congress in Hawai'i, a series of over 50 related sessions that explored examples and produced a statement of commitments for advancing good practice. It was agreed that additional dialogue was critical to more fully explore and advance this approach to conservation. 10-minute panel presentations will reflect on this Journey and describe collaborative initiatives in key areas of conservation practice. Discussion will highlight examples of integrated conservation strategies and identify next steps to advance this work.

Keywords

nature-culture interlinkages, conservation

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Additional authors / organizers

Tim Badman and Andrew Potts

IUCN's perspective on the importance of interlinkages of nature and culture for conservation

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

ICOMOS's perspective on the importance of interlinkages of nature and culture for conservation

IUCN CEESP perspective on the importance of interlinkages of nature and culture for conservation

Protected Landscape/Seascape perspective on the importance of interlinkages of nature and culture for conservation

Utility of using submerged aquatic vegetation as an indicator to focus monitoring and build partnerships

What will I get out of this?

Multiple partners have built a lake monitoring program to understand why aquatic grasses have disappeared from Lake Mattamuskeet, Mattamuskeet National Wildlife Refuge.

Abstract

The purpose of Mattamuskeet National Wildlife Refuge is to protect and conserve migratory birds and other wildlife resources through the protection of wetlands. In 2012, USFWS, USGS, NC Wildlife Resources Commission and NC Division of Water Resources partnered to build a lake monitoring program for the purpose of improving understanding why submerged aquatic vegetation (SAV) was disappearing from the 40,000 acre Lake Mattamuskeet, the centerpiece of the 50,180 acre Refuge. Lake Mattamuskeet is a shallow lake that has recently experienced a reduction in water clarity and submerged aquatic vegetation, and an increase in nutrients, phytoplankton, harmful algal blooms, and cyanotoxin production. Moving forward, SAV will serve as our indicator species for lake health at Lake Mattamuskeet and monitoring, research, and management efforts will focus on the restoration of SAV at Lake Mattamuskeet.

Keywords

Partnerships, water quality

Lead author / Session organizer

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John Stanton, USFWS

Adam Smith, USFWS

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10770 Compass Session

Conserving Climate Change Refugia as a Climate Adaptation Strategy

What will I get out of this?

We will showcase the latest science on climate change refugia and how NPS managers are focusing on them to improve resource management and conservation

Abstract

The novelty, uncertainty, and complexity of climate science make it difficult to translate into action on-the-ground. Speakers will present a framework for identifying and conserving climate change refugia, areas buffered from climate change that enable persistence of physical, ecological, and cultural resources, as a potential climate adaptation option, with NPS examples of how they are being managed. Toni Lyn Morelli will chair, with an overview presentation of 15 minutes followed by a 5-minute Q&A session. That format of 15+5 minutes for Q&A will continue with four other speakers: Glacier NP Superintendent Jeff Mow, USGS Biologist Jennifer Cartwright, Devils Postpile NM Superintendent Deanne Dulen, and Alec Nelson (all confirmed, presentation titles above). For the final 20 minutes, Morelli, Mow, Dulen, John Gross, and Gregor Schuurman would act as panelists to dialogue with the audience. While the presentations are ongoing, questionnaires will record audience interests and questions they have for the panel.

Keywords

climate change adaptation

Lead author / Session organizer

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Additional authors / organizers

Managing Climate Change Refugia for Biodiversity Conservation

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Climate change refugia for cold water fisheries

Remote sensing approaches to identify drought refugia

Soda Springs Meadow as a Climate Change Refugium

Confirmed

One Hundred Parks and Counting: Biodiversity Findings and Outreach Impacts from a Nationwide BioBlitz

What will I get out of this?

Audience members will learn about how citizen science is helping national parks, national monuments, and other NPS lands better understand their species diversity.

Abstract

The National Park Service hosted a national BioBlitz, in partnership with National Geographic Society, to celebrate its 2016 Centennial. Participants entered species observations including photos into iNaturalist, making observations instantly viewable and organized into a single, georeferenced database. This provided an unprecedented nationwide look at the intersection of biodiversity and people. We examined what percent of known biodiversity was recorded, how these percentages varied across species groups and nearly 100 parks and monuments, and if any climate migrants were identified. We also looked at how public engagement contributed to science and conservation: how did visitor numbers on BioBlitz weekends compare to other weekends? How many people made observations via iNaturalist? Did numbers and diversity of species recorded depend on participant numbers or outreach effort or the weather? Our analyses enable development of park-specific, regional, and national hypotheses about biodiversity, and improvement of methods to engage and benefit diverse human communities.

Keywords

biodiversity, Centennial, citizen-science

Lead author / Session organizer

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Additional authors / organizers

Bogulima Backiel - University of Massachusetts

Jennifer Briggs - U.S. Geological Survey

Erin Boydston - U.S. Geological Survey

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10598 Challenge Session

Is Citizen Science a Sustainable Resource Management Tool?

What will I get out of this?

Session challenges obstacle that citizen science is irresponsible or not in the best interest of resources to have amateurs doing science.

Abstract

The jury seems to still be out regarding the role of citizen science in cultural and natural resource management. Some managers wonder about the "science" aspect and if their discipline counts. Others worry that public involvement may irreparably harm the resources, or draw attention to sensitive data. In an age when the press is full of stories about vandalism, climate change and changing demographic populations, citizen science may offer solutions that broaden public engagement and build public land managers' capacity. Is citizen science a sustainable practice? How does a responsible project come together to reflect the best in public lands stewardship? What are the traditions impeding citizen science? If you're on the fence about citizen science, or feel strongly one way or the other about it, this is the session for you.

Keywords

citizen science, resources

Lead author / Session organizer Teresa Moyer Archeologist

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Science Access & Engagement Coordinator, National Park Service

Chief of Natural Resources, National Park Service

VISTA, National Park Service

Education Specialist, National Park Service

10688 Compass Session

Cooperative Ecosystem Studies Units: Accomplishments and Future Directions

What will I get out of this?

NPS annually allocates ~\$40 million through CESUs for technical assistance, research, and education projects. This session will help NPS clarify and improve services.

Abstract

Founded in 1999, CESUs deliver expertise to NPS for technical assistance, research, and education projects. A NPS Research Coordinator (RC; who holds a PhD in a natural or cultural resource field) at each unit is available as a science advisor to parks, regions, and WASO programs. Serving both natural and cultural resources, CESUs annually facilitate approximately \$40 million of NPS funding. While NPS budgets have been flat to effectively declining, use of CESUs grows as their value becomes better known, as the number of repeat users grows, and as access to disciplines is broadened. Still, many are unfamiliar with CESUs and the RC role. This session will (1) demonstrate program value, (2) describe services offered by RCs, and (3) solicit input to refine RC services and function. We welcome those familiar with CESUs and especially want to attract attendees who are unfamiliar with the program or have ideas for improvements.

Keywords

CESU, research, cooperative

Lead author / Session organizer **Brendan Moynahan** Research Coordinator

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The Big Picture: Introduction, Issues, and Workshop Structure

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

If not for the CESU Program

Research Coordinators and the PWR Science Strategy

The Science Advisor Role: Practice and Potential

Where do CESUs go from here?

A Preservation Paradox: Reconciling the Wilderness Act and Cultural Resource Protection Mandates in Wilderness Management

What will I get out of this?

Learn about new guidance from the NPS addressing cultural resources in wilderness that builds on interagency guidance and court decisions, with focus on wilderness character.

Abstract

Wilderness managers are faced with particularly acute dilemmas when managing cultural resources in wilderness – how to manage cultural resources appropriately while following the Wilderness Act? This presentation considers implications of past court cases, and offers a thoughtful way forward, to build appropriate management practices. It focuses on a framework and guidance for considering cultural resources within a wilderness context, developed by the NPS Wilderness Leadership Council. The presenters also offer interpretations of the Secretary's standards for cultural resources located in wilderness. Consultation and interdisciplinary working groups have potential to create environments in which everyone has a stake in conserving important resources.

Keywords

wilderness, cultural resources,

Lead author / Session organizer

Karen Mudar Archeologist

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Laura Kirn is Chief of Resources at Channel Islands National Park. She has much experience managing cultural resources in Yosemite Wilderness and other wilderness areas in the National Park System.

Cultural Resource Conservation Practices: Assessing Trends in Prosecuting Archeological Site Destruction on Federal Lands

What will I get out of this?

This study presents rare data about archeological looting and vandalism. Analytic results assist in developing ways to better protect archeological resources on Federal lands.

Abstract

One component of place-based conservation is resource protection. How do we build agency-wide conservation practices that protect cultural resources? Mudar and Burgin examine current Federal agency conservation practices for protection of archeological resources. Using data on all Federal prosecutions of violations of the Archaeological Resources Protection Act (ARPA) from 1986-2012, and a sample of agency-reported infractions, the authors demonstrate that ARPA prosecutions decline over time, but that the prosecution success rate increases. A significant number of looting incidents are handled informally by the land manager through other means, and through other types of prosecutions. Comparison with reported incidents of site damage demonstrates that looters and vandals are apprehended less than 1% of the time. Recommendations include a need for more accurate reporting in order to assess success of conservation practices.

Keywords

ARPA, looting, prosecutions

Lead author / Session organizer

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Leah Burgin, Brown University

Citizen Science Acoustical Monitoring

What will I get out of this?

This project highlights the use of citizen science, cross divisional collaboration, and the use of technology to draw visitors into deeper understanding.

Abstract

Acoustic monitoring of bats to determine baseline species diversity at elevation gradients (5000 – 8000 ft elev) along the Highway 120 corridor of Yosemite National Park. This project was a cross divisional effort: involving Yosemite's Resource Management and Science as the guidance and support, and interpretive rangers and wildlife interns working hand in hand with the public to conduct an educational program while beta testing Sonabat4 to collect data. This project proved to be an effective mode of inviting visitors into science in the park, interacting with a species that visitors don't normally see, and integrate new technology into a direct experience with the parks through audience centered interpretation and hands on science. The next step Summer 2017 "The Yosemite Bat Channel" – a live feed on the Yosemite website of the bat activity in Yosemite Valley. This will be supported by curriculum to engage students in inquiry based science.

Keywords

Bats, Citizen-science, interpretation

Lead author / Session organizer **Lisa Murphy** Mather District Interpretive supervisor, Yosemite

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A Good Beginning – Working With Indigenous Peoples for New National Parks in Northern Canada

What will I get out of this?

The presentation will share examples and experiences of fruitful cooperation between a park agency and Indigenous governments and organizations during the park establishment process.

Abstract

In the past 25 years, Canada's national park system has grown in area by 85% through the creation of over a dozen new national parks. Most of the area added to the National Park system has come as a result of agreements negotiated with Indigenous communities and organizations. The relationships established during the work to create the new park are fundamental to the success of the project and ultimately to the successful cooperative management of the park in the future. The presentation provides examples of park establishment projects, with lessons learned and key results.

Keywords

negotiation, indigenous, collaboration

Lead author / Session organizer **David Murray** Senior Planner, New Northern Parks

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10911Day-Capper (UPD)

Kontiwennenhá:wi: Women Carrying Words

What will I get out of this?

You'll be introduced to social songs and dances of the Kanienkeha:ka (Mohawk) Nation, their role in the community, and how they support the Mohawk language.

Abstract

Kontiwennenhá:wi, which translates to Women Carrying Words, is a women's singing group that originated from the Kanienkeha:ka (Mohawk) Nation in 1998. Kontiwennenhá:wi is comprised of young women, mothers, aunties and grandmothers who all work full time as teachers, social workers, students, and homemakers. The women of Kontiwennenhá:wi, have embraced the duty to help our language survive; this is why we have created songs that incorporate our language. We use song and dance to lift spirits and develop friendships. We will share what we call social song and dances. We will explain what the dance is and demonstrate the dance, but at the same time, we invite everyone to dance, if they'd like to. In between dances, and to give people an opportunity to rest, Bear Fox will share some songs that she created.

Keywords

Indigenous song, dance

Lead author / Session organizer

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Additional authors / organizers

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Using motion-activated photography to evaluate physical activity in parks

What will I get out of this?

Attendees will learn how motion-activated cameras aid in tracking visitor activity type to connect parks and health.

Abstract

Park professionals and researchers often identify visitor activity type (e.g., runners, bikers, walkers) to evaluate the physical health benefits of parks. However, identifying and monitoring visitor activity types at multiple locations within a park unit is time consuming, resource intensive, and subject to observer error. Therefore, managers and researchers have begun using motion-activated cameras to document visitor activity to assess the health benefits of parks. Past studies have suggested time-lapsed and motion-activated cameras to be affordable, efficient, and provide digitally formatted data that clearly differentiates between activity types. The motion-activated camera method helps provide managers with valuable information for National Park Service (NPS) initiatives, such as Healthy Parks, Healthy People, to document the connections between parks and health. This poster will outline the motion-activated camera method, its past applications in parks and protected areas, rationale for use, and recommendations for use in diverse environments, including NPS units.

Keywords

camera, health, parks

Lead author / Session organizer

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Dr. Matthew Brownlee, University of Utah

Ecological Restoration of Yosemite Valley: Implementation of the Merced Wild and Scenic River Plan

What will I get out of this?

This talk will demonstrate the implementation of important restoration techniques and methods and show how these can be applied in other parks.

Abstract

Keywords

Ecological Restoration

In response to a century of change, Yosemite National Park developed ecolgical restoration objectives as part of the Merced River Plan. Now in its second year of implementation, we are working to re-establish wetlands, restore connectivity of meadows threatened by conifer encroachment and restoring critical riverbank habitat. This paper provides an overview of the park's efforts to restore meadows and riverbanks from many years of encroaching infrastructure and heavy visitor use. Objectives for the next five years include removal of historic recreation infrastructure, introduction of large wood to build floodplains, removal of rip-rap and bio-engineering of riverbanks, and the restoration of 80 acres of former meadow habitat through conifer removal and prescribed fire. The talk will share lessons learned from large scale restoration projects and discuss the challenges in restoring ecological function to systems with a long history of intervention.

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10781 Update Session

The effects of transportation related noise on experiential and ecological conditions in Parks

What will I get out of this?

Transportation contributes to anthropogenic noise in parks that presents unique challenges to protect and improve park soundscapes. This session provides an update on current knowledge.

Abstract

As use in national parks continues to rise and types of activities continue to diversify, managers are challenged to protect natural and cultural soundscapes from increasing amounts of anthropogenic noise related to park visitation. Transportation noise is a major contributor to anthropogenic noise in parks that presents unique challenges and opportunities to protect and improve park soundscapes. Using nation-wide case studies and current research approaches, this session will focus on protecting natural and cultural soundscapes and the complexities of improving the acoustic environment. The session is comprised of presentations focused on issues related to over-flights, transportation noise modeling, coupled-human ecosystems modeling, and the effects of noise on people and wildlife. The session will include five, 20-minute presentations and a Q&A session. Attendees will emerge from the session with a clear understanding of the 'state-of' acoustic management and research in parks.

Keywords

Transportation, soundscapes, management

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Overflights and Parks: An Update

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are

given here

The effects of natural and anthropogenic noise on climber experiences in Grand Teton National Park

Effects of anthropogenic noise on wildlife: Synthesis and case studies

The significance of soundscapes in coupling biodiversity, psychological ecosystem services and conservation in National

New tool to measure and minimize transportation noise

Perceived Health Benefits Associated with Engagement with Klondike Gold Rush National Historical Park

What will I get out of this?

Parks are more than the location where physical activity takes place; we must advance our understanding of the many ways park engagement influences health.

Abstract

Goal three of the National Park Service's 2011 call to action is: EXPAND the use of parks as places for healthy outdoor recreation that contributes to people's physical, mental, and social well-being. While seemingly a comprehensive view of health, this definition places health within discrete domains. This leads to simplistic conceptions of how people experience health in parks, often with the emphasis of physical health and casual mention of mental health. The goal of this case study of Klondike Gold Rush National Historical Park is to explore how diverse visitor populations (cruise ship passengers, multi-day backpackers and independent visitors) conceive of their own health through park engagement as well as how park employees perceive how visitors experience health. How we view nature colors how we see people in nature, which then affects what is healthy in nature. Through this exploration, I hope to expand the definition of health in parks.

Keywords

Health, Engagement, Social

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The Application of Drones to Applied Science and Management in U.S. National Parks

What will I get out of this?

The audience will learn how drones can be applied responsibly and realize the enormous benefits of drones, including decreased data collection costs and reduced risk.

Abstract

The irresponsible operation of drones by hobbyists initiated severe limitations on their use in U.S. National Parks. Following thorough review by federal officials, commercial drones are slowly being re-introduced (under specific permits) for science and support services in national parks. We describe the current state of small unmanned aircraft systems and their application to habitat health assessments, coastal erosion surveys, water quality measurements, endangered species monitoring, invasive species tracking, marine debris identification, and infrastructure inspection. We focus on three specific case studies from the Cape Lookout National Seashore: monitoring submerged aquatic vegetation, assessing at-sea distributions of sea turtles, and inspection of the iconic lighthouse. We also highlight safe operations and legal requirements for drone use, and illustrate how they can decrease costs and reduce human risk. This information will motivate the audience to develop further applications of drones to support conservation efforts in our National Parks and other protected areas.

Keywords

drones, robotics, sensors

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Mr Pat Kenney, Superintendent, Cape Lookout National Seashore

Dr David Johnston, Director, Duke Marine Robotics and Remote Sensing Facility

Spatial Temporal Dynamics of Visitor Stopping Behavior Along a Rustic Park Road

What will I get out of this?

Audience will learn how ArcGIS's "space time cube", when applied to visitor behavior data, can improve understanding, planning, and adaptive management of park transportation systems.

Abstract

Visitor use of parks and protected areas is dynamic. The flow of visitors changes from hour to hour, day to day, and season to season. Previous studies have used geospatial models to better understand visitor flow. Geospatial data give a more accurate and precise insight to visitor movements, however few studies utilize integrated spatial and temporal data. This presentation focuses on the application of the ArcGIS toolbox, which combines space and time into one analysis to identify space-time hot and cold spots, representing various levels of use through time in the Moose Wilson Corridor (MWC) of Grand Teton National Park. Based on "vehicle stop" data within the MWC, spatial-temporal hot and cold spots were classified and then described by paired demographic data. Such information is valuable to park managers to better understand and adaptively manage visitor flow and the impact on the quality of the visitor experience.

Keywords

visitor use, GPS

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Ashley D'Antonio, Oregon State University

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Utilizing GIS and Citizen Science for Climate Change Adaptation at North Cascades National Park Complex

What will I get out of this?

Audience members will learn about new cloud-based GIS technologies that enable land managers to integrate research with public engagement through citizen science.

Abstract

Climate models predict substantial increases in annual temperature in the Pacific Northwest, projecting a warming of about 2°C by the 2040s and over 3°C by the 2080s. Culverts are generally designed to withstand current climatic conditions, but stream flow changes resulting from climate change will heighten the risk of culvert failure. Culvert failure deteriorates water quality, impacts stream function, acts as a barrier to aquatic organism passage, and threatens transportation infrastructure used by park staff and visitors. The existing infrastructure database utilized by North Cascades National Park is not spatially referenced, preventing employees and researchers from using GIS to perform critical analyses on culverts. Hydrologic models have projected future peak flows by location, which, coupled with geospatial culvert data, would allow park staff to pinpoint undersized or at-risk culverts. Using volunteers and cloud-based Esri mobile tools, park staff at NOCA now have the capacity to collect georeferenced information on infrastructure.

Keywords

GIS, Citizen Science

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Regina Rochefort, National Park Service

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Building a NPS Workforce of Young Leaders in the Second Century

What will I get out of this?

Facilitators will challenge participants to question assumptions about diversity and develop creative ideas to recruit, mentor, and hire young scientists into the NPS workforce.

Abstract

Three national programs use novel internship models to integrate diversity and science-based decision making into the workforce of the National Park Service. As we enter a second century of new challenges, seasoned employees seek creative ways to cultivate the next generation of NPS leaders and benefit from the creativity and innovation of talented young scientists. Facilitators invite employees, young scientists, and others to share ideas on ways to retain institutional knowledge, build the leadership capabilities of the next generation, and opportunities for direct hire. Participants will explore best practices to integrate science into decision-making, and the benefits of and effective methods to recruit and retain diverse young scientists. Participants will depart with tangible plans to transfer institutional knowledge through mentorship, access the next generation of scientists through the Direct Hire Authority, increase the diversity of the NPS workforce, and integrate science into decision-making to prepare national parks for the future.

Keywords

Youth, Diversity, Workforce

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Online Visualization Tools for Bird, Water, and Forest Data in Capital Region Parks

What will I get out of this?

Learn how to use interactive online maps and graph tools showing data on vegetation, water quality, and birds in National Capital Region parks.

Abstract

A new type of online tool allows users to dig deep into data on park natural resources like water quality, forest trees and plants, and birds. At first glance, the National Capital Region Inventory & Monitoring Network's (NCRN I&M) forest vegetation visualizer might just look like a map. But zoom in closer and you will see the locations of their 400+ monitoring sites across Maryland, DC, Virginia, and West Virginia. Individual plots reveal the list of the species found there, ranging from trees and shrubs, to vines and herbs. A search for a particular species will cause the plots containing it to light up. Or if you're more interested in park-wide trends or trends over time, those are available in graph format. These visualizers make it easier to answer questions on the fly and with the most up-to-date information, in a way that published reports can't.

Keywords

forest, water, birds

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Adapting Storage Solutions in a Changing Climate

What will I get out of this?

The audience will learn about innovative storage solutions to maximize storage capacity and better care for the collections we manage.

Abstract

In an ever changing world, we must continually adapt and develop new strategies to ensure the best care and management for the collections we are tasked to protect and preserve. By reflecting on the past mismanagement of collection storage spaces throughout the country, we are better able to develop innovative storage designs. With the aid of advanced storage systems, designed with flexibility and growth of collections in mind, we as stewards of the past can plan for unknown additions and developments to collections in the years to come. This allows for the ability to progress towards centralized storage collection centers, such as the Museum Resource Center, the curatorial storage facility for the National Capital Region of the National Park Service. By utilizing such a facility, collections can be stored in a facility with proper environmental controls and physical security systems, safeguarding an ever-increasing number of collections.

Keywords

Storage, innovative, growth

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Social media as a communication tool for promoting conservation and park visitation in the NPS.

What will I get out of this?

This poster will shed light on the discussions of users of parks and public spaces, the conversation on conservation and park visitations.

Abstract

Social media has emerged as a viable mode of communication and promotion of tourism, and is increasingly being used by agencies managing parks and protected areas to promote their destinations. A growing number of Destination Management Organizations are also using various forms of social media platforms to effectively promote their products and services, and to directly engage with the end users about their experiences. Social media also provides an interface for which users and visitors interface with the park management agencies in real time and can provide feedback on their experiences. This paper will examine the impact of the National Park Service centennial social media promotions on users, and in particular look at the Facebook and Twitter presence and use.

Keywords

Social media, parks

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Investigating the early snowmelt of 2015 in the Cascade Mountains using new snowmelt timing maps

What will I get out of this?

Using MODIS imagery, we create snowmelt timing maps for North America, and identify spatial patterns of snowmelt anomalies for ROMO, CRLA, and LAVO NPs.

Abstract

The spring of 2015 brought an alarmingly early snowmelt to the Cascade Mountains, impacting flora, fauna, watersheds, and wildfires. It is important that we understand these events because model-based projections suggest that snowmelt may arrive an average of 10-40 days earlier across the continental US by the year 2100. Available snow measurement methods including SNOTEL stations and stream gauges offer insights into point locations and individual watersheds, but lack the detail needed to assess snowmelt anomalies across the landscape. In this study we describe our new MODIS-based snowmelt timing maps (STMs), validate them with SNOTEL measurements, then use them to explore the spatial patterns of the 2015 snowmelt in the Cascades. We found that the Cascade Mountains experienced snowmelt 41 days earlier than the 2001-2015 average, with many areas melting >70 days early. Of concern to land managers, these events may be the 'new normal' in the decades to come.

Keywords

GIS, watershed, climate

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Dr. Aquila Flower - Western Washington University

Keep Your Chinn Up: Lessons Learned in Managing for Change During WWII

What will I get out of this?

The fall of Chinn House from 1936-1950 serves as a case study of success and failure in managing change toward "the heritage of the future."

Abstract

Hazel Plain, later known as the Chinn House, was likely built around 1769 on land that is now part of Manassas National Battlefield Park. It was an example of the Georgian architectural style for plantation houses and served as a field hospital during the battles of First and Second Manassas. The U.S. Government acquired the property in 1936, when the house was 176 years old. The National Park Service planned to restore it, but World War II got in the way. By 1950, NPS razed the house down to the foundation because it had become such a safety hazard. It is now unusual among ruins because recent cultural landscape inventory compiled photographic documentation of its fall from a standing structure to foundations. This case study of devolution is an example of how resource management through triage and documentation in a time of major change affects "the heritage of the future."

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Chinn, House, Preservation

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Find your park online: An analysis of social media and the National Park Service Centennial

What will I get out of this?

Attendees will learn about the public conversation around social media campaigns related to national parks, including various details of users and online behavior.

Abstract

Social media is a key communication method for agencies and organizations to distribute information to the general public. This communication, and the resulting conversation, has been a part of the National Park Service (NPS) Centennial through the use of specific tags used across various social media platforms. This paper will look at social media use surrounding the NPS Centennial through the specific hashtags #FindYourPark and #NPS100. We will present an analysis of how these tags, promoted by the NPS and its partners, are used and what insights can be gleaned from conversations related to them. Particular aspects will be examined such as sentiment, frequency, and location of social media posts. Radian6, a social media tracking software, and R, a software environment for statistical computing and graphics will be used to analyze the content that was shared online by users.

Keywords

social media, engagement

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Perceptions of Vulnerability and Resilience in Missouri State Parks & Historic Sites

What will I get out of this?

My audience will learn new approach to evaluating perceptions of vulnerability and resilience to extreme weather events in parks and other protected areas.

Abstract

This study describes employee perceptions of vulnerability and resilience in Missouri State Parks & Historic Sites due to extreme weather events that occur across the state, but grouped according to physiographic provinces. Using a 4-point rating scale, perceptions of vulnerability and resilience were divided into high and low sub-groups, thus allowing researchers to construct a 2X2 typology of employee responses. Subsequently, this data was used to develop a 3-point continuum (1=high vulnerability / low resilience to 3=low vulnerability / high resilience) of environmental concern (higher scores meant more concern). Employee scores were then compared against a statewide assessment which combined social, economic, infrastructural and environmental indicators of vulnerability and resilience. State park employees thought the system was less vulnerable and more resilient to climate change than data found in statewide assessment (2.02 vs. 1.85). This result was also consistent in three out of five physiographic regions across Missouri.

Keywords

Parks, Vulnerability, Resilience

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10716

Evaluating Conservation Corps Habitat Projects: Forest Fuels and Invasive Species Management

What will I get out of this?

We share newly created standardized assessment protocols for evaluating conservation corps' efforts in promoting natural habitats through forest fuels reduction and invasive species management activities.

Abstract

Large-scale evaluation of environmental work completed by conservation corps on public lands across the U.S. is challenging due to the diversity of project and habitat types, as well as measurement tools. The purpose of this study is to create standardized protocols to collect data on habitat improvement projects on public lands. In collaboration with 14 corps working in 11 states, protocols were developed for two habitat project objectives common across the corps: invasive species removal and forest fuels reduction. Standardized measures assist corps in evaluating their work and communicating their efforts to state and federal land agencies, supporting funding proposals and additional opportunities. Conference attendees will come away with an understanding of the sampling, instruments and indicators being tested by the corps and how the protocols could be applied to additional work by other organizations.

Keywords

Habitats, Conservation, Corps

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10863

Experiences from the field: Linking community and conservation through ecotourism in Nepalese National Park

What will I get out of this?

Audience members can apply the lessons learned from this project to promote inclusive ecotourism planning and development in their own contexts.

Abstract

Bardia National Park (BNP) of Nepal is an emerging ecotourism destination with global significance in part due to its role in conserving endangered wildlife such as Bengal Tigers. However, there have been very limited efforts to promote ecotourism in the area despite its cultural attractions and rich biodiversity. This poster will include our experiences of working with the park managers, tourism entrepreneurs and local communities to promote local participation in tourism in Bardia National Park. Using holistic approach of stakeholder collaboration, community capacity building, and research, the project has strengthened community based conservation institutions to take lead on ecotourism planning and development process within their communities. This project has laid foundation for locally driven, planned and inclusive ecotourism development in the park.

Keywords

ecotourism, community, Nepal

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Dr. Brijesh Thapa is a professor in the Department of Tourism, Recreation and Sport management at University of Florida with more than 15 years of experience on building capacity for ecotourism development in developing countries especially in and around protected areas. Over the years, he has been extensively engaged in numerous projects in various capacities(e.g. research, training, university partnership, graduate student research mentorship, etc.) in 32 countries including Nepal.

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Impacts of community based ecotourism on Tharu indigenous community in Nepal

What will I get out of this?

Audience members will have better understanding of possible impacts of community based ecotourism on indigenous communities

Abstract

Community based ecotourism (CBE) is increasingly promoted in and around protected areas as a way to directly provide conservation benefits to communities who are adversely affected by protected area establishment. However, there is need of additional cases that illustrates what the theoretical promise of CBE has to offer to the indigenous communities. In this paper, we present the case of Khata bio-corridor homestay (KBH) located in buffer zone area of Bardia National Park as a successful indigenous community led CBE project in Nepal. Using data from participant observation, interviews, community workshop and household surveys, we analyzed the impacts of KBH on various domains of wellbeing and empowerment of indigenous Tharu people involved in KBH. Findings suggest that CBE has enhanced quality of life of Tharu people mainly by increasing family income, diversifying household economy, empowering women, strengthening community pride and belongingness, increased connectedness to outsiders, recognition and preservation of culture.

Keywords

ecotourism community Nepal

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Climate Change Marine Vulnerability Assessment of Cumberland Island National Seashore

What will I get out of this?

Learn about a methodology for assessing and calculating the climate change vulnerability of marine habitats within a geographic area.

Abstract

The goal of this project was to develop a framework for assessing the vulnerability of marine habitats within the NPS, beginning with a pilot project at Cumberland Island National Seashore (CUIS). This framework employs a vulnerability assessment approach in which vulnerability is the sum of exposure (the magnitude of the stressor), sensitivity (how strongly a system is affected by the stressor), and adaptive capacity (the potential to adjust in response to the stressor). Four climate-change-related stressors were analyzed: SLR, temperature change, salinity change, and ocean acidification. The marine habitats of interest include subtidal and intertidal environments at CUIS. For each habitat-stressor combination, the exposure, sensitivity, and adaptive capacity were rated on a qualitative scale of low-medium-high. Results show the most vulnerable marine habitat at CUIS to be high-fringing salt marsh, a narrow and sporadic zone between the expansive low salt marsh and the uplands.

Keywords

climate, marine, vulnerability

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10612 Fasttrack Session

Evaluating a Blended Approach to Climate Change Literacy

What will I get out of this?

In this session, we will examine three different models of climate change workforce training, with an exploration of relative benefits and success.

Abstract

The Department of the Interior has recently prioritized climate change literacy a focal effort of workforce development across all bureaus for FY17 and beyond. As such, the National Park Service (NPS) recently completed a Workforce Climate Change Training Needs Assessment and Strategy that identifies necessary workforce capabilities to meet the bureau mission, and prescribes a blended approach to the delivery of necessary training. In this session, we examine three distinct models of climate change communication training currently offered to NPS employees. Presentations will explore the costs, benefits, and outcomes of each model, detail recent successes, and identify potential opportunities for improvement over time.

Keywords

Climate, Training, Workforce

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Climate Change Training Needs Assessment and Strategy

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The Earth to Sky Partnership

Interpreting Climate Change Virtual Course

Self-Paced Climate Change Training

10613

Fostering Audience Engagement on Climate Change Through Novel Wayside Exhibit Design

What will I get out of this?

Audience members will become familiar with novel wayside elements and strategies that can be replicated across most protected areas and adapted to various park topics.

Abstract

In 2012, the National Park Service Climate Change Response Program partnered with multiple parks and programs to initiate a service-wide project to develop an interconnected network of waysides to engage visitors on changes to sea level and phenology occurring as a result of climate change. The multi-year project resulted in innovative solutions that modernized wayside design and incorporated novel elements to foster engagement, encourage interaction, and facilitate citizen science. The outcomes of the project can serve as a model for future iterations of similarly-themed climate change wayside exhibits in other protected areas. This poster will explore project history, deliverables, and measures of success.

Keywords

Climate, Exhibits, Communication

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10615 Exhibit --

National Park Service Climate Change Response

What will I get out of this?

Audiences will be oriented to resources on four aspects of climate change response in the National Park Service: science, adaptation, mitigation, and communication.

Abstract

This will be a shared exhibit space between the National Park Service Climate Change Response and Sustainable Operations and Climate Change Programs. Collectively these programs contribute to the four service-wide facets of climate change response. The exhibit space will showcase a breadth of resources developed by both programs over the past year, potentially to include printed materials, sample exhibits, and videos. It is anticipated that sufficient personnel from both programs will be on hand to staff the exhibit continuously if necessary.

Keywords

climate, sustainability

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Factors Affecting Public Awareness of and Visitation to National Parks

What will I get out of this?

Findings of study advance theories of underrepresentation of racial/ethnic groups in outdoor recreation areas, and provide empirical suggestions for NPS to engage with diverse audiences.

Abstract

National parks represent America's democratic idea and attract more than 300 million visits annually. However, racial/ethnic minority groups are underrepresented in the visitation numbers and tend to have lower awareness about national parks than Whites. To investigate what may influence awareness level and visitation patterns to national parks, study conducted a general population survey of New York City. The multivariate relationships among social-economic characteristics, childhood visit history, awareness of national parks, and visitation rate by racial/ethnic groups were analyzed using Path Analysis. Study findings suggest that Hispanics and Blacks tend to have lower levels of awareness about national parks than Whites. Awareness levels and childhood visit history significantly impact visitation to national parks. Study findings partially support marginality and subculture hypotheses, illustrate the differences in awareness levels and visitation patterns by racial/ethnic groups, and suggest potential approaches to encouraging diverse racial/ethnic groups to learn about and engage with national parks.

Keywords

Awareness, Race/Ethnicity, Visitation

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Urban Opportunity: A Multi-method Evaluation of the National Park Service Urban Agenda's Multi-dimensional Resilience

What will I get out of this?

This presentation will demonstrate ways of effectively combining multiple data types, investigating large issues in complex settings, and harnessing collaborative opportunity present in urban areas.

Abstract

The National Park Service (NPS) has recognized and acted upon the need to connect its parks and programs to urban communities with its centennial Urban Agenda. Understanding current NPScommunity relationships is vital to implementing relevant efforts and having a baseline for comparison. Such an understanding requires investigating conditions both deeply and broadly, especially when considering long-term contributions and resilience. We undertook a program of multi- method research in three (Boston, Tucson, and Detroit) of the 10 NPS pilot Model Areas to assess this depth and breadth of conditions: in-depth qualitative interviews with 21 NPS staff and community partners per site (63 total) and quantitative social network analysis (39 in Boston, 80 in Tucson, and 79 in Detroit). Both methods, separately and together, yielded information pertinent to urban park managers and resilience theory on the role of collaborations in facilitating robust and relevant park connections with local urban audiences.

Keywords

collaboration, urban, relevancy

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Clare Ginger - University of Vermont

Rebecca Stanfield McCown - National Park Service Stewardship Institute

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10829

Creative Edges and Innovative Brokers: Social Network Structure, Resilience, and the National Park Service

What will I get out of this?

This poster will relate the value-added opportunities that partnership networks harbor. Viewers will learn about structures that may increase institution, location, and systems resilience.

Abstract

The Urban Agenda of the National Park Service (NPS) provides opportunity for critically examining partnerships to promote connections to proximate populations. Although one-on-one partnerships are often probed, the critical broader scale of overall NPS relevance and cityscape resilience in networked partnerships is less examined. Examining different relationship networks may help identify structures that promote the building and maintenance of partnerships for NPS (and other institutions') relevancy. To this end, we conducted an ego-centric social network analysis in three cities with differential NPS physical presence: Boston (urban-embedded parks), Tucson (urban-adjacent park), and Detroit (programmatic-only). Relationship networks identified by NPS staff tasked with being urban conveners (N = 39/Boston, 80/Tucson, and 79/Detroit) were surveyed as to the strength and directionality of relationships, as well as the potential for new future relationships. This research yielded findings of interest to managers working in concert with other organizations and to theories of collaboration and resilience.

Keywords

quantitative, urban, collaboration

Lead author / Session organizer

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Robert Manning - University of Vermont

10735 Update Session

Science and the BIG Picture for National Park Resources

What will I get out of this?

Ever wonder how the natural resource conditions in your area fit into the bigger picture? Come learn what NPS knows about resources across the US.

Abstract

As resource professionals we spend a lot of time studying the minute details of research questions. This session will provide an opportunity for stepping back and looking at what science in parks is telling us about our natural resources at a national level. We will also hear from subject matter experts about major trends and our evolving approach to understanding resources. Resources covered will include air quality and scenic views, geology, climate change, natural sounds and night skies, and invasive plants.

Keywords

Resource, Condition, Science,

Lead author / Session organizer Melanie Peters Natural Resource Specialist

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Additional authors / organizers

Clean Air and Clear Views... Are we there yet?

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

This place rocks! Digging into the geologic foundation of national parks

Climate Change and Our National Parks

Advances in Managing for Natural Soundscapes and Lightscapes

Getting a Grip on Invasive Plants

Put it on a map! With inventory data scenic views are more than pretty pictures

What will I get out of this?

Come see the power of mapping for gaining new insights about scenic views.

Abstract

Maps have the power to help us visualize and communicate the value of scenic views in a new way. The NPS visual resources inventory allows parks to document and spatially define what they care about and why. Data include the location of the view on the landscape and its visual extent combined with ratings for scenic quality and view importance. Spatial analysis can quickly show where views overlap, which portions of the landscape are truly visible from a given view point, and what the composite value of all intersecting views is. This information allows managers to integrate visual resource considerations into park planning and management. This is especially important when working with partners beyond our boundaries to affect project proposals and target critical areas for visual resource protection. Join me to learn more about the NPS visual resource tools and see some examples of in-park application.

Keywords

Views, Mapping, Scenery

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10651

GPS Visitor Tracking to identify ideal locations for park staff-visitor interactions at Cumberland Island

What will I get out of this?

This presentation will outline the management issues, methods, and describe how GVT can help identify the locations and times for efficient park staff-visitor interactions.

Abstract

Park volunteers, rangers, and staff are often placed along key visitor travel routes and destinations. However, determining the locations and personnel resources to effectively intercept visitors is complex and often varies by season. GPS Visitor Tracking (GVT), which consists of distributing small GPS units to visitors, helps identify visitors' temporal and spatial travel patterns and the variation of those patterns across seasons. Consequently, GVT can help identify key locations and resources needed for ideal park staff-visitor interactions across and within seasons. This study gathered seasonal GPS tracks of day-use visitors at Cumberland Island National Seashore (CUIS) and analyzed the tracks using GIS. Resulting data illuminated visitor travel routes, and the ideal locations for park staff-visitor interactions at the seashore. The presenters will display a series of maps and emphasize the management implications at CUIS and beyond

Keywords

GPS Visitor Tracking

Lead author / Session organizer **Brian Peterson** Phd student

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Additional authors / organizers

Dr. Matt Brownlee is an Assistant Professor of Natural Resources Recreation Planning and Management at the University of Utah. His inter-disciplinary research links outdoor recreation and resource management, and provides information to help park and protected area managers plan for, monitor, and evaluate visitor experiences. Dr. Brownlee also examines how nature-based recreation into interest the provides are a second of the house of the park and provides information to help park and protected area managers plan for, monitor, and evaluate visitor experiences. Dr. Brownlee also examines how nature-based protected area managers plan for monitor, and evaluate visitor experiences.

recreationists' interactions and attachments to climate-sensitive and impacted environments influence their a) attitudes towards sustainability initiatives, b) visitation and recreation behavior, and c) opinions about global climate change. His research generally incorporates student learning and addresses a pertinent management need in addition to unanswered academic questions.

Dr. Ryan Sharp is an Assitiant Professor in the Park Management and Conservation program at Kansas State University where he teaches and conducts research related to visitor use management in parks and protected areas.

A Genetically-Mediated Trophic Cascade

What will I get out of this?

Audience members will receive a timely update on the longest-running study of predator-prey dynamics every conducted, with implications for understanding the importance of apex carnivores.

Abstract

A single wolf arriving in Isle Royale National Park in 1997 reinvigorated a genetically moribund population, leading to resurgence in wolf density and predation rate by 2004. Moose and beaver declined to historic low densities in 2004-2010, resulting in a terrestrial & aquatic trophic cascade. Growth resumed in balsam fir <1m tall that had been stunted by moose herbivory for many decades and in watershield, a native aquatic plant. A wolf decline after 2012 caused by renewed severe inbreeding (from lack of ice connections to the mainland in winter) is associated with reversal in plant recovery.

Keywords

wolf, moose, predation

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Letting the Landscape Speak: Values and Challenges of "Primitive Area" Design at Fort Bowie NHS

What will I get out of this?

Examine history of park landscape design. Explore successes and challenges of primitive area protection.

Abstract

At the height of the Mission 66 development frenzy, Fort Bowie National Historic Site was established to preserve the ruins of one of the most important military centers active during the Indian Wars. Anticipating 400,000 visitors yearly, Fort Bowie's first design plan envisioned full site development and a cable car to transport visitors to the ruins. Others saw a historic environment unaltered by human intrusion. By preserving Apache Pass in a primitive state, the visitor would instead experience a landscape of Historic Abandonment. Still without an entrance road, today's visitor must hike this foreboding landscape marked by past tragedies and redolent of ghosts to reach the Fort ruins. Though visitation numbers are small, hikers almost uniformly praise this park experience as one of the best. However this primitive area designation has engendered challenges -- ecological, administrative, and financial -- that were unforeseen at Fort Bowie's inception.

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Additional

primitive area, design

Lead author / Session organizer **Robin Pinto** Cultural Landscape Historian

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authors / organizers

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Measuring color and brightness of artificial sky glow from cities using an all-sky imaging system

What will I get out of this?

This poster will display information about the impacts of LED lighting in cities across America and how this impacts night sky quality in National Parks.

Abstract

Artificial light at night, when observed at some distance from a city, results in a dome of sky glow, brightest at the horizon. The spectral power distribution of electric light utilized will determine its color of the light dome and the amount of light will determine its brightness. Recent outdoor lighting technologies have included blue-rich light emitting diode (LED) sources that may increase the relative amount of blue to green light in sky glow compared to typical high pressure sodium (HPS) sources with warmer spectra. Measuring and monitoring this effect is important to the preservation of night sky, we present a method using a wide field CCD camera which images the entire sky in both Johnson V and B photometric bands to evaluate the impacts to night sky and night vision of this new lighting technology.

Keywords

Night Skies, Photometry

Lead author / Session organizer

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Additional authors / organizers

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Shifts in Messaging at Coupled Human-Natural Systems to Achieve Reduced Impacts to the Acoustic Resource.

What will I get out of this?

Monitoring soundscapes is an important way to quantify wildlife and visitor use. Educating the public about natural quiet can make positive changes to acoustic resources.

Abstract

Muir Woods National Monument, right outside of the San Francisco metro area, had over a million visitors last year. The park encompasses 554 acres, including magnificent old-growth Coastal Redwoods. Managing large numbers of visitors in a geographically small park takes creative planning. The monument has worked with the Natural Sounds and Night Skies Division and Universities to test different treatments evaluating how the natural soundscape could be improved for the visitor experience. After previous research, there was a management decision to place signs ahead of the Redwood groves asking visitors to "enter quietly." For the current project, we proceeded with two different treatments, additional "quiet" signs throughout the park and removal of all "quiet" signs in the park. Trail counters collected visitor data, along with sound pressure level meters and acoustic recording units. A wildlife study was conducted simultaneously to determine how levels of activity changed with different treatments.

Keywords

Soundscapes, Visitor Experience

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Mitch Levenhagen, Boise State

10831 Update Session

Update on U.S. World Heritage Program

What will I get out of this?

Will be of particular value to managers of U.S. World Heritage sites, those on the Tentative List, and those interested in becoming World Heritage sites.

Abstract

During 2016 - 2017, the U.S. World Heritage program has been very active. A newly revised U.S. World Heritage Tentative List was announced in early 2017 and one or more nominations to the World Heritage List are being considered. In addition, the NPS is working to develop draft guidance to Department of the Interior agencies regarding how to consider World Heritage values in planning activities, with the ultimate goal to make such guidance government-wide. Input from managers of World Heritage sites in the U.S. on this guidance will be sought at this session. We will also provide updates on other aspects of the World Heritage program, including the World Heritage Fellowship, dues to UNESCO, and other hot topics.

Keywords

World Heritage, international,

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Chief, Office of International Affairs, Status & Future Plans for U.S. World Heritage Program
International Cooperation Specialist, Co - Presenter on Above topic

Visitors management at Colomos park in Guadalajara, Mexico and carrying capacty.

What will I get out of this?

If you have experience managing visitors in areas where latin people is an important group, learn how an emblematic park is managed in Mexico.

Abstract

Bosque Los Colomos is a 92 hectare urban park where the environmental services the forest provide is an asset as a recreation area within the city of Guadalajara. Collaboration with the public University of Guadalajara, has resulted to be a good alliance to serve as a laboratory to experience practical education training for students in Biology and Agronomy careers at the undergraduate level and graduate in public policy topics. Special focus has been social analysis to develop management options when carrying capacity would be the tool both social and biological. Free access to the public is a challenge when management of visitors is key for the conservation.

Keywords

Social-carrying-capacity, Mexico-Guadalajara, Visitors-managment.

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Pedro Torres is professor at the University of Guadalajara-CUCBA, College of Agriculture and has worked in extension services.

Manfred Mainers works at bosque Los Colomos, Guadalajara, and has worked on natural protected areas projects, mostly.

Fifty Years of Change to a Rare Maritime Forest

What will I get out of this?

Sea level rise is putting an already critically imperiled ecosystem at more of a risk. How do we manage this?

Abstract

The Sunken Forest is a critically imperiled (G1 status) habitat and is one of only two known old-growth maritime holly forests in the world. The park has been studying the vegetation of the Sunken Forest for the last 50 years, via permanent vegetation plots. This data has shown that the understory is extremely impacted from deer browsing. More recent data (over the last decade) has identified erosion and vadose zone thinning as an additional pressure causing mortality in the understory and canopy of the forest. The erosion on the bayside of the Sunken Forest has been exponential causing mortality of trees and understory vegetation. The mortality of vegetation in the lower portions of the forest is most likely due to the thinning of the vadose zone, the unsaturated portion of earth underlying ground water system. This is caused by both erosion and the rise in sea level.

Keywords

sea level rise

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The Southern Pine Beetle Attacks Fire Island National Seashore

What will I get out of this?

Management of a forest pest to protect forest health in a National Park

Abstract

Southern pine beetle (Dendroctonus frontalis), native to the southeastern United States, has expanded its range northward. In October 2014, southern pine beetle (SPB) was discovered at Fire Island National Seashore. Southern pine beetles are known to mass attack pines trees which overwhelms the tree, killing them within two to four months. Since the presence of the SPB was confirmed at Fire Island National Seashore (FIIS) in the fall of 2014, Seashore staff have monitored infestations and taken action to slow the spread of the beetle across the park. During this time more than 1,500 trees have been identified as infested within federal tracts on Fire Island. The Seashore quickly responded to the new infestation utilizing suppression methods implemented throughout the Eastern United States. SPB is suppressed by cutting down, or felling, infested trees. Results so far show that the effort has slowed the spread of the beetle at the park.

Keywords

forest health

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Hurricane Sandy Dune Overwashes in Fire Island's High Dune Wilderness Area and Subsequent Vegetation Recovery

What will I get out of this?

habitat recovery after a hurricane

Abstract

One of the most significant natural impacts to park lands from Hurricane Sandy was dune overwashes. These overwashes pushed sand northward into the interior of the island, burying the coastal habitat that existed behind the former dune. Overwash areas were monitored for vegetation recovery and data quickly showed coastal habitats rebounding. Incorporated into the overwash vegetation monitoring, deer exclosures were constructed around a subset of vegetation plots. The exclosures were built to determine if the abundant white-tailed deer (Odocoileus virginianus) population was influencing the habitat recovery. Thus far, data indicates that the total percent cover of vegetation is higher in exclosed plots vs open plots suggesting white-tailed deer may be influencing vegetation growth in the overwashes. Going into our forth growing season we've seen dune building plants, such as Ammophila breviligulata (American beach grass), help to slowly bring back the high dunes of this wilderness area.

Keywords

barrier islands, dunes

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10402 Update Session Return of the Buffalo: A discussion of the impacts of federal buffalo on receiving Tribes

What will I get out of this?

Current issues concerning regulations that limit the ability of buffalo to get to Tribes and the transfer of live buffalo from Yellowstone NP.

Abstract

The session will provide an update on current Tribal usage of buffalo acquired from federal facilities and show the positive impacts on Tribal life. ITBC has been assisting Tribes in acquiring buffalo considered "surplus" by federal parks and refuges since 1992. During that time Tribes have incorporated the buffalo into various aspects of their life and this session will show the impacts. Tribes have utilized the buffalo for cultural purposes, for addressing health issues and economic development. Current issues concerning regulations that limit the ability of buffalo to get to Tribes as well as the transfer of live buffalo from Yellowstone National Park will also be discussed. The role Tribes play in federal buffalo management and "conservation" of the species as well as the future of tribal buffalo management and the inclusion of federal "surplus" buffalo will also be discussed.

Keywords

bison, national mammal

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ITBC President, Blackfeet Nation

ITBC Region 4 Director, Taos Pueblo

ITBC Vice President, Standing Rock Sioux Tribe

ITBC Tribal Representative for Fort Peck Assiniboine & Sioux Tribes

10759 Challenge Session

International Protected Area Management Priorities and Perspectives - Identifying Common Challenges and Leveraging Shared Solutions

What will I get out of this?

Protected areas around the globe face common challenges and constraints. Identifying shared solutions can leverage expertise, improve administrative efficiency, better protect resources, and sustain benefits.

Abstract

Multiple models of natural and cultural resource protection have been developed around the globe, at a range of scales, and to realize diverse objectives. While the differences among protection models and mechanisms reflect respective administrative, physical, and social environments, many areas experience common management challenges and constraints. Solutions to these challenges can be shared across political boundaries and among protected areas with similar priorities and circumstances. Sharing management solution can leverage scientific expertise and organizational investment to greatest effect. This session outlines priorities for and perspectives on protected area management around the globe, including World Heritage Sites, Biosphere Reserves, the NPS Scaling Up Initiative, and other approaches. Through a panel of diverse speakers, we look for points of intersection and divergence among management challenges and priorities, and consider when, where, and how management solutions can best be shared among diverse protected areas.

Keywords

International Protected Areas

Lead author / Session organizer

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Additional authors / organizers

Jenn Thomsen, Assistant Professor, University of Montana

Counting visitors – alternative approaches for estimating public lands visitation

What will I get out of this?

Managers must know how many people visit their lands. Many current counting approaches are inaccurate or out-of-date. Alternative approaches may yield better, cheaper estimates.

Abstract

The number of visitors using public lands and waters is basic and necessary information for planning and management. Accurate and up-to-date visitor use statistics are important for administrative planning and resource allocation, visitor use and resource management, and public relations. While counting visitors may seem simple, developing accurate estimates of visitor use can be difficult in complex, porous, extensive, and/or dispersed visitor use areas. Further, many existing visitation estimation systems overcount some visitors and under-count others, with few mechanisms to correct these errors or validate results. This poster presents alternative approaches that can improve the accuracy and efficiency of estimating visitor use. Case studies describing approaches for a diverse range of public lands and waters include Western Arctic National Parklands, Hot Springs National Park, and the Chattahoochee River National Recreation Area.

Keywords

Visitor use estimation

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Pam Ziesler, Dave Pettebone, and Bret Meldrum; National Park Service, Social Science Program

Application of the Spatial Marsh Equilibrium Model to parks in Northeast Coastal and Barrier Network

What will I get out of this?

High-resolution spatial modeling of sea level rise using site specific input data produces more accurate and higher quality tools to guide management decisions.

Abstract

While the amounts and rates of sea level rise predicted during the next century are contested, the inevitability of sea level rise is real, and 92% of coastal national parks are or will be affected by sea level rise. The purpose of this project is to model saltmarsh resiliency and migration in four national parks - Cape Cod, Fire Island, Gateway, and Assateague. The Spatial Marsh Equilibrium Model (MEM) utilizes site-specific inputs derived from analysis of field data (biomass, total suspended solids, water levels, and sediment organic content among others) to forecast future relative marsh surface elevation based on observed and predicted sea level trends. Digital elevation maps and maps of future intertidal plant community distributions provide the National Park Service with information needed to guide management and mitigation decisions to reduce the negative impacts of sea level rise.

Keywords

saltmarsh, sealevel, spatial

Lead author / Session organizer

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Additional authors / organizers

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A Delicate Balance - Public Access and Healthy Ecological Function

What will I get out of this?

Simple rules of thumb to begin crafting equilibrium between site ecology and built environments. Successes, limitations, and implications of choices made at popular recreation destination.

Abstract

Restored and protected natural landscapes with their supporting ecological systems are a central component of open space resources in natural and urbanized areas throughout the world. Sustaining a healthy functioning ecosystem is critical to longevity of the resource and its contributions to the site, the region, and the planet. Human access to those places, in whatever form the built environment takes, will affect the dynamic balance within the system. Human uses and wild nature can coexist, or even thrive and become an ordinary part of daily life if the access systems are conceived to support the natural system instead of dominating and disrupting. This paper examines the successful ecologically-based design strategies employed in balancing public access with a 30+ acre wetland restoration at the heavily used Muir Beach unit of the Golden Gate National Recreation Area just north of San Francisco, with application to similar conditions in other popular parks.

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Ecological-design, public-access

Lead author / Session organizer

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"La Familia": a powerful tool for engaging Hispanic youth in National Parks

What will I get out of this?

The enduring value of engaging sibling pairs in research at Channel Islands National as a way to engage diverse audiences.

Abstract

CSU Channel Islands is a Hispanic Serving Institution (HSI) with an alliance to the National Park through our involvement with the Santa Rosa Island Research Station. This places our institution in a unique position to engage underserved students and youth. This project builds upon the literature that suggests familial engagement with National Parks can provide unique and enduring relationships with these special places. Utilizing students from the CSU Channel Islands this project invited students and their siblings enrolled in local high schools or community colleges to experience the National Park in the company of a trusted family member over a 3 days. As a culture that values collectivistic family values, this initiative speaks to the connection between family members creating trust and opportunities for genuine engagement. Follow up focus groups were used to assess program outcomes regarding a host of learning objectives that included a commitment to future park engagement

Keywords

Diversity, Hispanic, engagement

Lead author / Session organizer

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Cause Hanna, Ph.D. Director Santa Rosa Island Research Station

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10910 Panel Discussion (CMP)	Traditional Science: What is its Place in Protected Area Management Today?
What will I get out of this?	This session will explore the role of traditional science in protected area management today.
Abstract	This session will explore the role of traditional science in protected area management today.
Vormonde	traditional science
Keywords	
Lead author / Session organizer	Freddie Romero Cultural Resources Coordinator Santa Ynez Band of Chumash Indians freddyromero1959@yahoo.com
Additional authors / organizers	
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10581

Utilizing mobile applications to engage a new generation of citizen scientists at Cabrillo National Monument

What will I get out of this?

Learn how Cabrillo NM used the NPS Centennial Bioblitz as a platform to engage youth and introduce the concepts of biodiversity and resource stewardship.

Abstract

To celebrate its Centennial anniversary, the National Park Service conducted a series of BioBlitzes across the nation, including a 24 hour effort at Cabrillo National Monument (CABR). A relatively new mobile application, iNaturalist, was utilized to streamline participation and data collection for the event. The success of using this application during the Centennial Bioblitz has served as a platform for the development of "mini-blitz," outreach events, held throughout the broader San Diego community, and as the foundation for a hands-on science education program at CABR. While the data themselves can be of interest and value to managers and conservationists, perhaps the greatest benefit from these efforts is the ability to inspire tech savvy children to engage with the natural world around them and to use technology as a means to advance the mission of the National Park Service for years to come.

Keywords

inaturalist, science, data

Lead author / Session organizer

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10763 Compass Session

Shifting Seasons in Protected Areas: Science and Engagement in the New Century

What will I get out of this?

We will build on our shared interests and experiences to strengthen the role of phenology in science, engagement, and conservation in the new century.

Abstract

Phenology, the study of recurring life cycle events like migration and flowering, is key to both understanding biological response to climate change, and in engaging the public in nature and the scientific process. Phenology monitoring, with both scientific and engagement dimensions, is underway in more than 50 protected areas across the United States. Short presentations will provide an update on these diverse efforts, giving examples of success in meeting science, resource management and education goals, while also addressing challenges faced. Through questions and discussion we will come to a shared understanding of the current status, and key next steps to maximize the value of phenology-related programs across protected areas. The session will also provide a great opportunity to meet fellow phenology enthusiasts!

Keywords

phenology, science, engagement

Lead author / Session organizer Alyssa Rosemartin Partner and Application Specialist

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Additional authors / organizers

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Jana Newman, Branch Chief, USFWS

Kathy Gerst, Research Scientist, USA-NPN

Jake Weltzin, Ecologist, USGS

John Gross, Ecologist, NPS CCRP

Phenology Citizen Science - Current Status Across Protected Areas

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

AT Seasons: Partnering to Understand Phenology Across 11 Degrees of Latitude

Science in the Parks: Phenology for Climate Change Engagement at the Grand Canyon National Park

Citizen Science for Climate Adaptation: Integrated Phenology Research at Acadia National Park

Spring Onset Advancing at the National Park Service

Equitable engagement?: Constraints and place attachment of diverse groups in Portland parks

What will I get out of this?

Audience members will gain a better understanding of constraints to park visitation and their effects on place attachment to these parks.

Abstract

This study focuses on urban parks in the Portland, Oregon metropolitan area and examines relationships between perceived constraints to park visitation for traditionally underserved communities (i.e., ethnic and racial minorities) and attachment of these communities to parks. Data were obtained from: (a) a mixed-mode survey (i.e., internet, mail) of a representative sample of ethnic and racial minority residents in Clackamas, Multnomah, and Washington counties; and (b) an internet survey of a convenience sample of Opt-In panel members (Portland area residents interested in park management who signed on to this panel). This study: (a) identifies primary constraints that inhibit visitation to urban parks in this area, and (b) examines relationships between these constraints to visitation and attachment to these parks. Findings will not only inform local management objectives associated with reaching ethnic and racial minorities and engaging them in parks, but they will also inform similar objectives at a national scale.

Keywords

Constraints, place attachment

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Ashley D'Antonio, Ph.D., Department of Forest Ecosystems and Society, Oregon State University

Elizabeth Metcalf, Ph.D., Department of Society & Conservation, University of Montana

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10596 Update Session

Innovative Strategies for Inventory and Monitoring of National Park Service Paleontological Resources

What will I get out of this?

Paleontological Resources Preservation Act (2009) specifically mandates paleontological resource inventory and monitoring. This session shares new and effective strategies and methods for management of fossils.

Abstract

Advances associated with the inventory and monitoring of National Park Service paleontological resources are directly attributed to the rapid development of new technologies and specific legal mandates identified in new federal law. The Paleontological Resources Preservation Act (2009) specifically mandates paleontological resource inventory and monitoring, requiring federal land managing agencies to develop strategies and plans to support fossil management. This session will include presentations which reflect cutting-edge work which is transforming the methods and strategies in paleontological resource management. Paleontological resource photogrammetry, geospatial data acquisition, digital geologic mapping and other technologies collectively enhance opportunities for informing park managers and scientists. The benefits gained through the advances in paleontological resource inventory and monitoring have helped to promote science and stewardship of America's paleontological heritage.

Keywords

Paleontology, Inventory, Monitoring

Lead author / Session organizer

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Justin Tweet

Integration of Paleobiological Data into All Taxa Biodiversity Inventories: A Temporal Perspective

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

The Paleontology Synthesis Project: Data Management and the National Park Service's Fossil Record

Quantifying and Assessing Vulnerability of National Park Service Paleontological Resources

Paleontological Resource Monitoring of Coastal Areas at Point Reyes National Seashore, California

Photogrammetric Applications Supporting Paleontological Resource Inventory, Monitoring and Research

11007 Compass Session

Positioning for Success in a World of Continuous Change

What will I get out of this?

This session will invite discussion and address key concerns about the future of park resource stewardship in a world of continuous and accelerating change.

Abstract

Parks and protected areas exist in a world of continuous and accelerating change. From altered ecosystems to shifting socioeconomic characteristics, park managers are confronting significant challenges as well as potential opportunities. Resource stewardship must rely on scientific and scholarly information about these changes and application of this knowledge in innovative ways. Conservation scientists must approach these issues as a multidisciplinary community, ensuring that diverse expertise is engaged and that collaboration sparks creativity. We will explore these ideas from the perspectives of emerging thinkers in science, scholarship, and resource management. We will ask how managers, conservation stakeholders, and the public are responding to these challenges, and what new directions may be necessary to sustain conservation success. These issues are especially timely as the U.S. National Park Service enters its second century, and as parks and protected areas remain imbedded in changing physical landscapes and shifting landscapes of public expectation.

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stewardship, science, change

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What will I get out of this?

The pace of new natural resource threats exceeds understanding. This effort raises awareness and proposes triage thinking and processes for parks to use.

Abstract

National Parks are increasingly under siege by known and unknown external threats to natural resources. Such threats include a wide variety of invasive organisms, diseases, pollution, development, and a changing climate. The pace of new and different threats far exceeds our understanding and development of specialized tools to combat the threats. Resource Managers are overwhelmed and with limited fiscal resources forced to frequently choose what to fight and what is a lost battle. This work is to elevate awareness of this struggle, especially to parks in the East, and to consider a triage approach to resource decision-making.

Keywords

external threats, triage

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Engaging citizens through technology in the field - an overview iNaturalist in Colorado's State Parks

What will I get out of this?

Learn how iNaturalist can encourage on-park plant and animal observations and how those data integrate into decision making processes for park use and development.

Abstract

Encourage your citizen scientists and visitors to embrace the digital age and collect data that become immediately available for educational programs and park management decisions. Learn how iNaturalist has been a successful program for Colorado Parks and Wildlife to help document biodiversity. This ongoing effort is providing new ways to connect visitors, staff and volunteers with biological resources. This presentation will focus on an overview of iNaturalist, our State Parks NatureFinder project, the challenges and opportunities that have presented themselves along the way and how these data are utilized for park management.

Keywords

citizen, GIS, technology

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10745 Update Session Communicating coastal vulnerability and climate change adaptation strategies to varied audiences

What will I get out of this?

Clear, informative communication through various media and methods is crucial for garnering public support of parks' adaptation to climate change and coastal vulnerability.

Abstract

Parks and protected areas have opportunities to explain the role of climate change in increasing the vulnerability of coastal resources, and to describe how parks are preparing for and adapting to coastal changes in order to protect park resources and facilities. The topic of climate change can provoke heated discussions among park visitors and stakeholders. The conversation and public support for climate adaptation benefits from informative communication. In this session, parks and partners showcase various media and methods that they have developed to communicate with different types of public audiences about coastal vulnerability, the scientific and decision-making processes that inform park management, and park adaptation strategies and opportunities. Examples include interactive websites with teaching modules, interpretive wayside exhibits, newsletters, and synthesis reports.

Keywords

coastal, climate, adaptation

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Picture This: Using Novel Elements to Provoke Climate Conversations

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Animating Outreach: Designing public texts that move audiences toward community resilience

Communicating Place-Based Climate Change Adaptation in the Great Lakes: The Apostle Islands National Lakeshore

Communicating Sea-Level Rise and Coastal Resource Impacts in the Pacific West

Development of a Resource Stewardship Strategy Tool for the National Capitol Region

10819 Compass Session

Gnarly problems: examining natural resource climate change adaptation in the NPS through the policy lens

What will I get out of this?

Here we showcase an NPS effort that analyzes current policy regarding adaptation, identifies where further guidance is needed, and provides a foundation for policy evolution.

Abstract

The advent of the NPS' second century is an opportunity both to reflect on 100 years of ground-breaking natural resource management and address emerging challenges. As managers seek to adapt stewardship approaches to an era of accelerating and complex global change, they confront the fact that many natural resource management policies, goals, and core management principles developed within a comparatively static climate paradigm. Efforts to shift management are therefore often considered in the absence of policy that clearly considers climate change and its impacts, and this situation can potentially inhibit effective climate change adaptation. This session features brief presentations followed by a panel conversation with a diverse group of NPS working group leaders who will share analyses of truly 'gnarly,' policy-related park questions about issues as diverse as fire and vegetation management, ecological restoration, endangered species and managed relocation, wildlife and human health, and climate-driven species extirpation.

Keywords

climate change, policy

Lead author / Session organizer

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Cat Hawkins Hoffman, Acting Chief - NPS Climate Change Response Program

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here Adapting to wildlife range and distribution shifts in response to climate change: the Desert Tortoise

Managing wet meadow systems at Sequoia and Kings Canyon National Parks in a changing climate

Fuels management and shifting fire regimes

Infectious disease management in wildlife in the climate change context

'Take home' messages - grounding policy evolution for an era of continuous change

'Resilience' – it's everywhere, but what does it mean in a climate change adaptation context?

What will I get out of this?

Attendees will learn about challenges associated with the term 'resilience' in climate adaptation, and about alternative frameworks and more specific terminology that support collaborative action.

Abstract

Climate change adaptation is a rapidly evolving field in conservation and includes strategies from resisting to actively directing change on the landscape. The term 'climate change resilience,' frequently used to characterize adaptation strategies, deserves closer scrutiny because it is ambiguous, often misunderstood, and difficult to apply consistently across disciplines and spatial and temporal scales. Current definitions of resilience encompass all aspects of adaptation from resisting and absorbing change to reorganizing and transforming in response to climate change. Climate change adaptation practitioners, funders, and stakeholders require clear terminology to articulate and understand management strategies and the inherent tradeoffs involved in adaptation. Language that distinguishes among strategies that seek to resist change, accommodate change, and direct change (i.e., persistence, autonomous change, and directed change) is prerequisite to clear communication about climate change adaptation goals and management intentions in conservation areas. This presentation illustrates the challenges and presents alternative frameworks and terminology.

Keywords

Climate change, adaptation

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10685 Compass Session

Either Leave No Trace...or no trace of this park will be left

What will I get out of this?

This session will examine state-of-knowledge of Leave No Trace research, sharing lessons learned and practical implications for management and directions for future research.

Abstract

Messaging promoted through the Leave No Trace (LNT) Center for Outdoor Ethics is the most prominent visitor education strategy in protected areas, with the goal of protecting resource and social conditions by positively influencing behaviors. To influence protected area visitor behaviors, we must understand those cognitive processes that drive behavior, and use that knowledge to influence behaviors in a manner that reduces impact. A growing body of transdisciplinary LNT research including paired recreation ecology and social science approaches has emerged, improving our understanding of scientific processes to protect resource and social conditions. This session will provide case study examples from expert panelists, describing innovative methods, results, and key lessons learned from these studies. Ultimately, this presentation will provide protected area managers and researchers with information that can be used to influence visitor behaviors in a manner that aligns with management objectives, and protects ecological and social wellbeing.

Keywords

LNT, Attitudes, Behavior

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presentations are given here

Special events on public lands: Understanding participants' attitudes so we can mitigate impacts.

Diffusion of the Leave No Trace Visitor Education Program in Two U.S. National Parks.

Strategies for understanding off-trail travel in an open-space environment: Pairing observation and self-report data.

Is dispersed pristine-site camping effective? Evaluating a Wilderness Therapy program in Grand Staircase-Escalante

Will they 'leave what they find'? Efficacy of a Leave No Trace program for youth.

10755 **Compass Session** Decision support for cultural resources climate adaptation planning: Advancing an optimization model piloted at Cape Lookout NS

What will I get out of this?

Prioritizing historically designated structures for adaptation treatments necessitates continued deliberation of how to best integrate aspects of vulnerability, significance and use potential.

Abstract

Cultural resource adaptation planning requires consideration of multiple and competing values, as well as fiscal, environmental, and technological constraints. Transparent, science-driven modeling can help managers optimize decision-making given climate change uncertainties. In this workshop, we will present the components of a decision support tool developed as a pilot study at Cape Lookout National Seashore. Specifically, we will explain how we integrated the NPS Coastal Hazards & Climate Change Asset Vulnerability Assessment Tool with newly developed indicators of historic significance of NHRP listed buildings and the use potential of those buildings for park operations and visitor services. We will also demonstrate how different management objectives and budget allocations can yield different adaptation strategies. Then, we will elicit feedback on the historic significance and use potential indicators and deliberate the utility of the tool for park-by-park and regional decision-making, as well as other types of cultural resources.

Keywords

CRM, Climate change

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Max Post van der Burg, Research Ecologist, USGS, Northern Prairie Wildlife Research Center

Patrick Kenney, Superintendent, Cape Lookout National Seashore

Jeri DeYoung, Chief of Resources Management, Cape Lookout National Seashore

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Building Blocks for Integrating Wilderness Character

What will I get out of this?

Fundamental information needed to effectively integrate the preservation of wilderness character into park planning, management and monitoring.

Abstract

Building blocks provide the foundation for effectively integrating wilderness character into planning, management, and monitoring. They break down the components of outstanding wilderness stewardship into achievable and meaningful steps and establish a shared understanding of what is most important about each wilderness area and articulate those values for inclusion in a wilderness character framework. The building blocks and their content include: Wilderness Basics (background information, wilderness character narrative, future issues); Wilderness Character Assessment (select measures, collect baseline data, conduct monitoring), Integrate Wilderness Character into Management and Operations (use minimum requirements analysis, consider wilderness character in operations).

Keywords

Wilderness, Stewardship

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Traveling through our past: Documenting historic resources on National Trails and Parkways

What will I get out of this?

Audience members will learn from three National Park Service projects the methods, benefits and challenges of documenting large, linear historic resources.

Abstract

The Appalachian National Scenic Trail and Captain John Smith Chesapeake National Historic Trail are utilizing Multiple Property Documentation Forms to document historic properties along the trails; the Blue Ridge Parkway recently used a comprehensive survey and inventory to inform a National Historic Landmark nomination effort. These projects involve very different types of linear resources---a water-based trail whose historic resources are more than 400 years old; an over 2,000-mile-long foot path built in the twentieth century; and a 469-mile recreational motorway. Each project presents unique challenges, among them: how to document indigenous cultural landscapes within the National Register of Historic Places rubric, best capture a mutable resource on public or private property, adequately record the character of vast landscapes, and distinguish between regional typologies. At the same time, how do we balance the needs of multiple stakeholders? The presentation will address lessons learned, as well as outreach strategy approaches.

Keywords

historic, trail, documentation

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Liz Sargent, Principal, Liz Sargent HLA

Virginia H. Adams, Senior Architectural Historian, Public Archaeology Laboratory

Assessing public perception of the value of long-term ecological monitoring

What will I get out of this?

We hope to inspire attendees with talking points and tools for elevating the phrase, "long-term monitoring," into the public dialogue on science.

Abstract

Despite the demonstrated value and mandated usage of long-term ecological monitoring for environmental decision-making, organizations tasked with implementing these programs often struggle to stay funded. Government agencies are typically the only entities with sufficient capacity and motivation to support long-term programs that generate data for environmental management and conservation.

Taxpayers bear this funding burden, yet few studies describe the public perception of long-term monitoring. To safeguard its future, monitoring must be valued as a general public good. We present the results of a survey conducted in Alaska to determine the extent to which the general public values long-term monitoring. Three factors influenced support: 1) types of ecosystem services monitored, 2) place-based relationships with natural systems, and 3) sociodemographics such as income and age. Promisingly, our results demonstrate that the public generally values long-term monitoring. We leverage these results to recommend steps for ensuring public support of monitoring into the future.

Keywords

monitoring, ecology, public

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Mining Claims in Selected Wilderness Areas of the Greater Yellowstone Ecosystem

What will I get out of this?

The Wilderness Act permitted mining in wilderness areas. For five pre-1984 GYE wilderness areas, only the New World Mine was a subsequent mining threat.

Abstract

Keywords

wilderness, mining, Yellowstone

The general public may think that mining cannot occur in wilderness areas. However, the Wilderness Act of 1964 permitted new mining claims to be filed in wilderness areas until the end of 1983 and allowed already existing mining claims to be "grandfathered" into new wilderness areas. The eight selected wilderness areas in the Greater Yellowstone Ecosystem (GYE) were designated between 1964-1984 and five of these were designated before the end of 1983. My research sought to determine now many mining claims existed in these five national forest wilderness areas adjacent to Yellowstone and Grand Teton National Parks from pre-designation until now. I was able to answer this question: did this 20-year mining claim window result in more mining claims today? The only attempt at mining in these eight wilderness areas was the New World Mine, next to the Absaroka-Beartooth Wilderness Area, halted through Presidential intervention beginning in 1995.

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10746 Compass Session

Ocean Acidification: Clarifying and Enhancing NPS Effectiveness in Research and Monitoring

What will I get out of this?

NPS ocean acidification research/monitoring currently occur provincially and bottom-up. Would higher-level coordination improve quality and effectiveness? If yes, how could greater coordination be achieved?

Abstract

Ocean acidification (OA) as a marine manifestation of climate change is gaining ever more attention as an important threat to the health of ocean communities and associated human populations. Marine protected areas like national parks have an important role to play in understanding and responding/adapting to the issue. Currently, National Park Service OA activities (research, monitoring, outreach/education) are mostly de-centralized and originate at the park level. Panelists will present today's NPS programs and emerging initiatives, both internally and with outside agency and institutional partners. The panel will then discuss among themselves and with the audience whether and how the current NPS "grass-roots" model can be enhanced by greater coordination to make the agency's OA efforts more effective, and to maximize the NPS contribution nationally and internationally.

Keyv	vords
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acidification, ocean, marine

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10630 Compass Session

Advancing the practice and discourse of visitor capacity in parks

What will I get out of this?

Past lessons learned will be applied to new forward thinking frameworks on visitor use and visitor capacity in parks and protected areas.

Abstract

Visitor capacity is considered the amount and types of visitor use that a park unit or zone can accommodate while maintaining desired resource and experiential conditions consistent with the purposes for which the park was established (IVUMC, 2016). Recent increases in visitation has required many parks to confront capacity issues and complex capacity decisions. As managers move forward with the implementation of new guidance related to visitor capacity, the following should be considered: a) is capacity different from use limits, b) are 'multiple capacities' practical and efficient for park managers, c) can managers and researchers 'confirm' when capacity has been addressed, d) do agencies have the institutional and political will to alter use when necessary, and e) can inconsistent monitoring negate the value of capacity decisions? Each panel member will provide a statement about visitor capacity and then engage in an interactive conversation with the audience.

Keywords

Visitors, capacity, research

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World Ranger Congress 2016 – Facilitating International Collaboration for the Front-line Guardians of Protected Areas

What will I get out of this?

The presentation highlights the benefits of international collaboration and the importance of facilitating a global community for front-line rangers in the conservation of protected areas.

Abstract

Keywords

international, Rangers, Collaboration

The global impact of human activities on the environment has led to an increasing awareness of the need for information and knowledge exchange among protected areas on an international level. The challenge is often to reach the front-line protected area professionals directly facing these threats, including pollution, the effects of climate change, encroachment, poaching, and many others. The IRF World Ranger Congress (WRC) is a tri-annual event that brings together rangers from all over the world and provides them the opportunity to learn new skills, share knowledge, create partnerships and be inspired by their colleagues. In May 2016, over 300 protected area professionals from 71 countries attended the eighth Congress, hosted for the first time by the US and held at Estes Park, CO. This presentation provides an overview of the Congress, its successes and how it provided both formal and informal opportunities for collaborative partnerships to build conservation capacity.

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Did you see that? How differences in attention and perception lead to differences in experience.

What will I get out of this?

Participants will learn the value of human attention and perception. Participants will be urged to consider a new wave of research that examines these issues.

Abstract

Every day we are bombarded with millions of sensory impulses, of which we pay attention to just a few and our individual differences influence our perceptions of these objects. Utilizing eye-tracking technology, researchers can measure what it is people attend to. For parks and recreation, the design of signs, maps, and websites are all things we see and perceive differently than other people. Using measures of visual attention (eye-tracking), we can understand how the presentation of external information influences human behavior. To emphasize the power of subtle differences, we focused our study on the small and seemingly insignificant insect. We took a collection of insects with varied external traits (e.g. stingers, jaws, wings) and assessed human visual attention and perception of these traits through the use of eye-tracking methodologies. During our presentation we will briefly discuss our findings and discusses the application of attention and perception theories to park management.

Keywords

visual-attention, eye-tracking, insect

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10823

Ecotourism impacts on conservation and local livelihoods: A case study of Ranthambore National Park, India

What will I get out of this?

This presentation uses a case study to illustrate how ecotourism impacts conservation and transforms the lives of local residents around protected areas in developing counties.

Abstract

Ecotourism has been recognized as both a boon and a bane for conservation, depending on how ecotourism ventures are conceptualized and structured. If ecotourism enterprises are successfully designed to minimize consumption, generate economic benefits for local communities, support conservation efforts, and enrich and educate visitors and locals alike; they can represent a powerful tool for transforming and empowering rural communities of developing countries. This case study explores the impact of 'tiger tourism' in and around Ranthambore National Park, Rajasthan, India. The qualitative analysis highlights tourism practices in Ranthambore and illustrates the diverse ways in which tourism has benefited the community while also supporting conservation efforts in the park. The Ranthambore case study demonstrates the dire need to study the complex relationship between ecotourism, conservation, and rural community development around parks and protected areas, with the ultimate goal of maximizing benefits for all stakeholders.

Keywords

Ecotourism, Conservation, Communities

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Evaluating visitor support for restricting brown bear viewing at Katmai National Park & Preserve

What will I get out of this?

Understanding visitors' wiliness to restrict their own access to conserve wildlife will become increasingly important as habitat shrinks and visitation increases.

Abstract

Does viewing wildlife, such as brown bears, create an emotional connection within visitors and drive actions for conservation? Katmai National Park & Preserve provides a unique setting to explore this phenomenon as visitors are virtually guaranteed a once in a lifetime brown bear viewing experience. Visitors flood the Brooks Camp area to view some of the 2,200 brown bears feasting on the largest salmon run in the world. Managers must balance viewing opportunities with visitor safety and impacts to bears. Often this results in limiting viewing opportunities. This study explored the impacts of the viewing experience on visitors' support for management polices and pro-conservation behaviors. Data were collected from 235 visitors in July 2016. Results indicate visitors form a strong emotional connection to brown bears and this predicts visitors supporting restricting viewing options (β = .44, R2 = .20). Mangers may consider these results with projected increases in visitation.

Keywords

wildlife, visitor behaviors

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What will I get out of this?

Learn how the National Historic Preservation Act has shaped the practice of historic preservation in parks over the last 50 years and today.

Abstract

Fifty years after the passage of the National Historic Preservation Act in 1966, how have park professionals applied and adapted the law, how have parks innovated, and how have we applied the laws to create authentic places and experiences? What are we doing today that will take that legacy to the next level? "Fifty Years of Preservation in the Parks" will explore the parallels between the conservation and preservation movements of the mid-to-late 20th century, evolving trends in the application of historic preservation practice in parks, and the development of highly specialized ways of defining and caring for historic properties within national parks. The session will conclude with current practice, issues, and broad trends that are reshaping the profession of historic preservation in parks and beyond.

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Cultural Resources

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A growing trend: Recreational vehicles in public lands

What will I get out of this?

Discusses the state of the recreational vehicle industry and the implications of increased recreational vehicle usage in public lands.

Abstract

Recreational vehicles (RVs) are designed as temporary living quarters for recreational, camping or travel use and include motorized (e.g., motorhomes), towable (e.g., travel trailers) and conversion units. Already owned by 8.5% of American households, RVs are growing in popularity and production. The RV industry is in the midst of its largest expansionary period, with 2016 marking the sixth consecutive annual increase in the shipment of new RVs. Public lands, such as national parks and state parks, are common destinations for RV travelers. This presentation provides an overview of the RV industry, its current trends and potential implications to public land management. Research needs will be discussed.

Keywords

Recreational vehicle, growth

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Climate change and maple syrup quality: A citizen science collaboration at Indiana Dunes National Lakeshore

What will I get out of this?

Attendees will discover a scientific investigation in which local citizens participate in science, learn about climate change, and strengthen their connection with national park resources.

Abstract

Sugar maple (Acer saccharum) is a significant cultural and ecological resource in northeastern North America. Climate change may affect maple syrup production by influencing tree health, the timing and duration of the tapping season, sap quality, and ultimately the availability of trees to tap. ACERnet (Acer Climate and Socio-Ecological Research Network) has teamed up with park staff and citizen scientists to examine the impacts of climate variability on sap flow and quality at Indiana Dunes National Lakeshore. Citizen scientists weigh sap, determine its sugar content, collect sap samples, and record data. ACERnet analyses the phytochemistry of the sap samples and combines the data with that from other sites across sugar maple's range. Through this partnership, researchers gain valuable data from the western part of the species' range. Local citizens gain a better understanding of scientific investigations, climate change, and park resources while strengthening their connection with their local national park.

Keywords

Climate, maple syrup

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Connecting people and natural resources through social media

What will I get out of this?

With thought and creativity, social media connects diverse audiences to the NPS and its natural resources. Various platforms helped the NRSS directorate receive national attention.

Abstract

Fifteen years ago people heard "America's Storytellers" share experiences through written and print publishes. Now, people can participate and share their experiences through social media, engaging visitors unlike ever before. Taking advantage of this opportunity extended the reach of the 2016 National Parks BioBlitz through vast social networks. This poster summarizes the reach of this event digitally. Presented by the number of hits, likes, comments, and posts garnered, social media proved to be a powerful tool for the NPS to promote and communicate with their primary audience for the event, even at one point trending as one of the top 10 most discussed topics on Twitter during the two day celebration. The success of utilizing social media for the event can be held as proof to park units as well as researchers the benefit of letting strategic and creative technology play a role in their respective missions.

Keywords

social media, science

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Reimagining the Preservation Workforce, Public Engagement, and Technical Education

What will I get out of this?

Understanding of the NPS ethic facilitates their participation in the preservation of communities and identification of cultural values that reflect their histories.

Abstract

Mather High School was conceived as a way to realize several complementary aims in both preservation and education. NPS recognized an opportunity to begin to train a new generation of practitioners in the preservation trades, in a more hands-on way than had traditionally been available in the US. The NPS saw in the model a means to enhance the educational mission of the organization; increase engagement with the country's changing demographic. The DOE saw an ideal focus for a Career and Technical Education school (CTE), an update of the 20th-century vocational-technical model where instead of being tracked into career skills training or a college preparatory education, all students receive both, with the two curricula (trades and core academic) drawing from one another to produce an engaging, relevant education for a wide range of public high school students.

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Education, Preservation, Hands-on

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Backcountry Use Concentrated within Denali National Park Wilderness

What will I get out of this?

This paper illustrates GPS Visitor Tracking (GVT) as a technique for understanding visitor use patterns in large protected areas.

Abstract

The capacity for parks and protected areas to accommodate recreational use is an increasingly important issue to consider in the face of social-ecological change. Understanding recreational use through the analysis of travel patterns and use densities is particularly difficult in backcountry settings due to their remoteness and the large areas they encompass. This study used GPS visitor tracking methods to determine use patterns in the backcountry of Denali National Park and Preserve. During the 2016 summer season, spatial data were collected from groups of backcountry hikers; the destination, length, distance, and level of remoteness of Denali backpacking trips were examined. Although the park's backcountry management plan encourages wide-spread dispersion of backpackers to reduce environmental and social impacts, backcountry use was highly concentrated along the park road and clustered within specific areas. Implications include the ways GPS visitor tracking informs managers' decisions about visitor carrying capacity and resource protection.

Keywords

backcountry use, GVT

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10849
Collaboration Session

The Next 100 Years: Principles to Guide the National Park Service

What will I get out of this?

By identifying ways to embed the principles of the Urban Agenda throughout the Service, this session will illuminate the potential of NPS to impact communities.

Abstract

As the NPS begins its second century, the agency continues to look for innovative ways to work with communities, leveraging its portfolio of parks and programs. The NPS designed an Urban Agenda to catalyze the adoption of three principles—Be Relevant to All Americans, Activate One NPS, and Nurture a Culture of Collaboration. While these principles were developed regarding the NPS' role in urban areas, they have resonated with the Service. Exploring pioneering work in the NPS, partners, and communities, this session focuses on how parks, programs, and partners can work together to embed these principles in the NPS. Participants will discuss how these principles relate to parks, programs, partners, and communities and how we can enhance the dialogue around these issues and the role of the NPS in enhancing community quality of life. Participants will share examples of the principles in action, and opportunities for expanding those approaches.

Keywords

Collaboration, Relevancy, Parks

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10847 Compass Session

The Promise & Challenge of New Parks & Protected Areas

What will I get out of this?

Bringing together practitioners and researchers to identify promising practices in establishing and managing new units allows for knowledge sharing that improves practice and fosters connections.

Abstract

In the US National Park Service alone 23 units have been designated in the past 10 years. New units everywhere hold great promise for protecting important natural and cultural resources, interpreting a more inclusive history, and making connections with diverse communities. In the US and Canada, new units are making connections directly into communities and bridging the gap between natural areas and urban environments. Globally, protected areas are being managed in increasingly diverse and complex governance structures. New units also provide a unique set of challenges and opportunities for governments, non-profits, and communities including governmental support, landowners, partnership and collaboration efforts, philanthropic funding and support, and management.

This session will explore how new parks and protected areas are being established, supported, and managed. We will examine the challenges of designing and managing 21st century parks, how the definition of partnership parks is evolving, and hear from practitioners about promising practices.

Keywords

parks, partnerships, management

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Parks Canada- Invited

CONANP- Invited

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SDrawNPS: A Graphical User Interface for GRTS Sampling and Analysis

What will I get out of this?

Participants will learn about R tools with a graphical user interface for drawing spatially-balanced samples, status estimation, and weighting for nonsampling error.

Abstract

Spatially-balanced sampling provides a probabilistic sampling mechanism that avoids selecting locations that are close in proximity and distributes sampling locations more-or-less evenly across the landscape. Generalized random tessellation stratified (GRTS) sampling is a spatially-balanced sampling approach that provides an efficient and flexible alternative to simple random sampling. WEST, Inc. developed a new tool with a graphical user interface for drawing and analyzing data from a GRTS sample of points. The SDrawNPS package combines elements of existing R packages with new features for sample selection, data analysis, mapping, and R code archival. This work is funded by Western Region networks of the National Park Service.

Keywords

GRTS, sampling, status

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Trend Analysis for Complex Survey Designs

What will I get out of this?

Participants will learn about different ways to estimate trend in R software and when design complexity should be accounted for in a trend analysis.

Abstract

The National Park Service is tasked with monitoring trend in outcomes of interest, often across challenging landscapes and with limited sampling resources. Sampling design complexity and temporal panel structure incorporate features such as stratification, unequal probability sampling, and revisit designs for statistical and practical efficiency to optimize effort in both time and space. The impacts of design weights and temporal revisit designs on model-based trend analysis are investigated for acid neutralizing capacity measured at Sierra Nevada lakes. An unweighted linear mixed model for trend is compared to a trend analysis of annual design-based estimates and a probability-weighted trend model. Simulations indicate sensitivity of the methods to the revisit design specification, variance composition of the outcome of interest, and the presence of extreme trends in an undersampled subpopulation. This work is funded by Inventory and Monitoring Networks in the Western, Intermountain, and National Capital Regions of the National Park Service.

Keywords

Trend, design, weights

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Regional vegetation monitoring: emerging themes and challenges

What will I get out of this?

Audience will gain insight into how we are using this regional data to give context to our results and how it can inform management decisions.

Abstract

One of the greatest benefits of long-term vegetation monitoring is the ability to compare the same sites over time, gaining insight into long-term patterns and trends, and sorting local causes from regional phenomena. In the desert southwest a single protocol has been implemented by three I&M networks, with well over 400 sites now established in 19 parks and refuges in the Sonoran Desert and Chihuahuan Desert over the past 9 years. This broad application allows managers and scientists to compare and contrast rates, patterns, and trends at multiple spatial scales, and on lands with similar ecosystems but divergent land management and disturbance histories. At the individual park scale, local results are given regional context for resource protection, interpretation and land management planning. We will present emerging themes from this broad-scale effort, and link our results to key challenges facing land managers in the American Southwest.

Keywords

Vegetation; Scale; Monitoring

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Cheryl McIntyre is a physical scientist/ecologist with the Chihuahuan Desert Network, inventory and monitoring program.

Preserving Parks in a Changing World: A Mixed-Methods Approach at Joshua Tree National Park

What will I get out of this?

Audience members will learn how a mixed-methods approach (manager focus groups and visitor choice modeling) could help managers make decisions despite rapid change and uncertainty.

Abstract

In this poster, I describe an interdisciplinary project seeking to answer: How will environmental and social changes and uncertainty influence management priorities in and visitor perceptions of U.S. National Parks? I conduct research at Joshua Tree National Park (JTNP), a landscape at the center of management concerns about the cultural and ecological consequences of rapid environmental change. Here, I present the results of a focus group with JTNP staff that discussed challenges facing the park and alternative management options in anticipation of those changes. This first phase of the research will lead to the design of a "choice experiment," a survey instrument in which participants make selections among different future scenarios for JTNP, to quantify visitor acceptance of the biophysical and management changes under each scenario. My research will contribute novel insights for the management of vulnerable park systems facing changing environmental baselines and evolving visitor preferences.

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Choice experiment, interdisciplinary

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Geospatial Analytics for Park & Protected Area Decision Support

What will I get out of this?

Many park and protected area management agencies have yet to generate knowledge from data trapped within visitor reservation databases. I argue that should change.

Abstract

Reservation databases utilized by parks and protected lands (PPLs) are a source of empirical data that holds a wealth of spatiotemporal information about both destination usage (from the supply side) and visitor characteristics (the demand population). Unfortunately, PPL reservation databases are rarely leveraged with these goals in mind. Inductive exploration and geovisualization of reservation data identify longitudinal trends, geospatial patterns and relationships that can help PPL managers generate knowledge useful in decision support. To demonstrate the knowledge that can be gained through geospatial analytics of PPL reservation data, 12.5 million reservation records from the recreation.gov database between January 1, 2007 and December 30, 2015 are explored. Both visitor origin characteristics and 3272 distinct destinations providing camping, permitting or ticketing on U.S. Federal PPLs are examined. Similar geospatial analytics and geovisualization approaches can be applied to support tourism and resource management decisions being made by international, national, state and local agencies.

Keywords

Geospatal, analytics, planning

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Bigger than a BioBlitz: Great Smoky Mountains ATBI—What to do with all that Data

What will I get out of this?

Audience members will learn some strategies for conducting a biodiversity inventory and how to use the data and make it available to others to interpret.

Abstract

Biodiversity in NPS units has been celebrated across the system this centennial year with over 100 bioblitzes. Great Smoky Mountains National Park and their NGO partner, Discover Life in America, have been conducting an All Taxa Biodiversity Inventory (ATBI) since it started in 1998. We will here present the current status of the ATBI, what we have found, what we have left to do, and how we are making the data available for use. Particular focus will be on the on-line park species mapper (https://science.nature.nps.gov/parks/grsm/species/), which uses what we know about the locations where species have been found to help predict other places they may occur in the park, using geospatial data. As we receive additional observations of each species, they are added to the model to make it more accurate.

Keywords

biodiversity, data-management, inventory

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10647 Challenge Session

Healthy Parks Healthy People: State of the Evidence and Paths to Improve the Science

What will I get out of this?

After learning about the state of evidence, panelists and participants will identify deficiencies and develop strategies for advancing park-based health science.

Abstract

Parks and public lands are increasingly recognized for their diverse contributions to public health. Beyond traditional values such as recreation, new paradigms assess park-related impacts through metrics such as ecosystem service provision and coupled environmental and social health. Directives such as the National Park Service's Healthy Parks Healthy People program and the associated Science Plan have catalyzed research and programming focusing on parks and health. Although scientific understanding is rapidly advancing, many opportunities exist for improving methodological approaches to park-based health assessment, enhancing management of park health resources, and developing health promotion policies and programs based on empirical evidence. This session will feature expert panelists from diverse academic disciplines and agencies describing the state of scientific evidence and practice. After presenting, panelists will lead a facilitated discussion framed around the emerging Healthy Parks Healthy People Criteria Tool to enhance strategies for identifying, monitoring, and managing park health resources.

Keywords

Health, Wellbeing, Parks

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"NPS's Healthy Parks Healthy People Program – Optimizing health values and benefits of public lands"

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"Parks & Health: The State of the Scientific Evidence"

"Trails as Health Resources: Examples from Montana's Park and Trail Rx Program"

"Participatory mapping: a tool to elicit nonmaterial values and identify the health benefits of nature"

"Urban Parks, Healthy People, and the Pursuit of Environmental Justice"

Valuation study of social and economic benefits generated by Barigui Park to society

What will I get out of this?

This study strengthens the relevance of parks as productive areas, bringing them closer to other processes of human, social and economic development.

Abstract

Barigui Park is the most relevant protected area in the capital of Paraná State. It has 140 hectares and 9 million visitors/year. This study aimed valuating the social and economic benefits generated by the park. The methodology compares scenarios considering the city WITH and WITHOUT this park. In that context, six benefits were considered, such as: 1) Recreation; 2) Green taxation; 3) Impact of personnel hiring and local purchasing; 4) Environmental Education; 5) Scientific Research; 6) REDD. These six social and economic benefits generated by the existence of the park amounted U\$ 14,889.767 versus an annual investment of U\$ 1,413.667. Therefore, for each U\$ 0.31 invested in the maintenance and implementation of the park, an excess of U\$ 3.93 returned to the society as benefit. This information builds an robust argument to new public policies in Curitiba to the implementation and the creation of new areas.

Keywords

benefits valuation, parks

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10588 Poster

Rare plant restoration and pollination concerns for Agave shawii

What will I get out of this?

A rare agave species is missing its pollinator, a bat (Choeronycteris mexicana). With no new recruitment we are researching how to manage this rare species.

Abstract

Agave shawii (Shaw's agave) is a rare agave species living at its northernmost extent in San Diego, CA. Shaw's agave prefers coastal bluffs and is therefore threatened by both habitat destruction and coastal erosion. The main pollinator for this plant is thought to be the Mexican long-tongued bat (Choeronycteris mexicana). After several seasons of bat monitoring no detection of C. mexicana has been observed (nine other species were observed). There has been no new recruitment of A. shawii over the several decades they have been at Cabrillo National Monument. We have been monitoring local populations and performing pollination experiments to determine pollination success rates. We have also made efforts to grow new recruits from seed in our greenhouse. Successful germination from a low percentage of viable seed has lead to more questions regarding the future success of this plant at its edge habitat.

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restoration, pollination, bats

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10738
Poster

Developing Mercury Conditions for National Parks and Applications for Resource Management

What will I get out of this?

The audience will gain insight about the condition of mercury contamination across the NPS areas based on novel methods for a previously unassessed condition.

Abstract

Understanding the risk of mercury contamination is a challenge because deposition inputs do not always equate with ecosystem harm. Risks associated with mercury are strongly tied to environmental conditions that promote the conversion of elemental mercury to its bio-available form (methylmercury). To better understand the potential threat of mercury contamination across parks, the National Park Service (NPS) worked with U.S. Geological Survey to complete a research synthesis that 1) identified threshold levels for harmful effects on wildlife, and 2) compiled a dataset on mercury exposure in biota from NPS units. These data are being used to compare measured mercury concentrations in park wildlife with established thresholds to generate park-specific condition assessments. Where park-specific biological exposure data do not exist, the condition is based on atmospheric mercury deposition coupled with predicted methylmercury concentrations in surface waters. This novel approach provides insight for previously unassessed mercury conditions in our national parks.

Keywords

mercury, condition assessments

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Scenic Views – Inventory is the First Step Toward Protection

What will I get out of this?

Scenic views: we know them, we love them, let's protect them starting with a systematic inventory. Come learn about the NPS visual resources inventory.

Abstract

Most people experience parks, first, through their eyes; making scenic views core to how they understand and appreciate places. The National Park Service (NPS) is charged with protecting scenery and recently launched a visual resource inventory system. This system seeks to accurately and consistently capture the scenic quality and importance of individual views across diverse landscapes. Inventory results can support informed resource management and collaborative conservation. Twenty three parks have already initiated inventories and more are in the cue for 2017. The groundswell of support and enthusiasm for this process speaks to the long standing need for a scenic inventory method that is tailored to NPS needs. This paper will describe the key design elements that make the NPS visual resource inventory effective, relevant, and sustainable.

Keywords

visual resources, inventory

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10923

Assessing Climate Change Vulnerability using Measures of Exposure and Terrestrial Resilience

What will I get out of this?

New data for NCR parks shows climate already changing compared to mid-20th century 30 year baseline. High terrestrial resilience lessens vulnerability in some places.

Abstract

To better understand climate change vulnerability and adaptation potential of NPS NCR park resources, NatureServe integrated measures of historic and near-term future climate exposure with measures of terrestrial resilience. Estimates of climate exposure were derived from bioclimatic variables generated annually from TopoWX and PRISM datasets. Terrestrial resilience was measured as a derivative of landscape diversity and connectivity, using data developed by the Nature Conservancy. Results, presented as a series of compelling visualizations for parks and the region, provide managers with specific information about how climate is changing, which areas are most at risk, and which areas are most important for facilitating adaptation. The region is becoming hotter and wetter, with some local variation. Many NCR parks are characterized by relatively high landscape diversity. As pockets of natural vegetation in a fragmented landscape, these parks have an important role to play in facilitating adaptation in the face of climate change.

Key	W0	rds

climate, resilience, terrestrial

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10924 Poster www.ExploreNaturalCommunities.org – a place based, interactive website for exploring natural communities at national parks

What will I get out of this?

www.ExploreNaturalCommunities.org engages park staff and visitors in place-based, mobile friendly, interactive maps and multimedia content on natural communities in National Capital Region parks.

Abstract

With NPS support, NatureServe formed a team including ecologists, software developers, writers, and college-level interns to create a mobile friendly interactive website focused on the natural history and natural communities of NPS National Capital Region parks. Starting with Rock Creek Park, the Explore Natural Communities website is now expanding to other parks. With a mobile device (cell phone, tablet, iPad, etc.) and an internet connection, website users can access a map of the park, track their location along trails, query the map for information about nearby natural communities, use pictures of plants and animals that help form the natural communities to learn to recognize them in the field, enjoy prebuilt hikes, listen to podcasts, and watch videos all focused on the natural history and natural communities of the park. Check it out on your mobile device at http://explorenaturalcommunities.org/parks-places/rock-creek-park/mobile-map.

Keywords

mobile, map, plant

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Climate Driven Extent Changes in Perennial Snowfields in Gates of the Arctic National Park, Alaska

What will I get out of this?

Audience members will learn how climate change is affecting both the physical environment and cultural resources of Alaska Arctic National Parks.

Abstract

Perennial snowfields are an important component of National Parks in Alaska. The Arctic is shifting rapidly, and these small, but widespread features are retreating quickly. Reductions in extent have been observed in Gates of the Arctic National Park & Preserve in the Brooks Range. Perennial snowfields are important ecosystems for wildlife, influence hydrology, affect Native Alaskan subsistence caribou hunting, and have implications for cultural resources. Rare, well-preserved archaeological artifacts and paleoecological specimens are sometimes preserved in snowfields. They also influence geology, hydrology, and permafrost distribution. To study extent changes, hydrology, archaeological potential, and relationship to wildlife, a geographic extent model was created. The model utilizes satellite imagery, field data, and caribou movement data. To date, no artifacts have been discovered; however, well-preserved animal remains were identified, and field results indicate agreement with the model. Work is ongoing to address the needs of both scientists and local Native Alaskan subsistence users.

Keywords

Climate, Snow, Arctic

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Turtle T.H.i.S. (Teens Helping in the Seashore) A Citizen Science Project

What will I get out of this?

Participants will be provided information allowing them to develop research projects which engage youth and produce scientifically sound results.

Abstract

Turtle T.H.i.S. is a research study with three goals; 1) to produce scientifically sound results to manage sea turtle nesting habitats; 2) to cultivate environmental stewardship for sea turtle habitat; and 3) to provide youth field experiences. Gulf Islands National Seashore (GINS) spans 160 miles of Gulf coastline in the states of Mississippi and Florida and due to the nominal presence of development, provides pristine environments for sea turtles. However, nearby anthropogenic light sources are attributed with disorienting hatchling sea turtles and are hypothesized to affect females attempting to lay eggs. This light may reduce how far ashore the adult females crawl to lay eggs. GINS and the Gulf Islands Research and Education Center partnered with the U.S. Geological Survey, National Park Service Night Skies Program, Conservation Legacy, the National Park Foundation, and local high schools to collect nocturnal ambient light data at sea turtle nest locations.

Keywords

research, stewardship, youth

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10387 Exhibit --

Turtle T.H.i.S. Citizen Science at Gulf Islands National Seashore

What will I get out of this?

GWS participants will recieve details suffiecient to duplicate a research project which is staffed and managed by youth citizen scientists. Interships will be advertised.

Abstract

Turtle T.H.i.S (Teens Helping in the Seashore) is a youth oriented citizen science research project developed to provide park managers with scientifically sound information about ambient light influences on nesting sea turtles and to raise awareness in the community about light pollution impacts to nesting sea turtles. The project has expanded to include an employment ladder, beginning with local high school volunteers, leading to paid summer internship, the next level are post college internships lasting 12 months. This series of internships prepares the students well for seasonal employment and entry level permanent positions in the National Park Service and other land management organizations.

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research, citizen-science, youth

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Growth in Chinese Tourism to National Parks: A Case Study in West Yellowstone

What will I get out of this?

Audience will learn about recent trends in Chinese tourism to U.S. national parks and the implications for tourism and management in the park's gateway communities.

Abstract

Recently, China has experienced a rapid growth in outbound international tourism. Marketing of Yellowstone National Park and other iconic national parks has amplified Chinese visitation and the parks' gateway communities. While this growth in tourism has many opportunities, park professionals and tourism operators have been faced with challenges for managing the park's resources and the tourists' experience. Despite this continuous growth of Chinese tourism, there has been no research investigating Chinese tourists' motivations and expectations in the U.S. national park setting, their understanding of management practices, and the best strategies for communication and interpretation. This presentation will present a study exploring Chinese tourism in West Yellowstone, the park's major gateway community. The findings, which explore perspectives from Chinese tourists, tour operators, and local business owners, can inform tourism marketing and management of Chinese tourism to national parks and gateway communities in addition to strengthening communications with Chinese tourists.

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Yellowstone, tourism, Chinese

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10543 Compass Session

GWS Student Summit Reflections: Challenges and Opportunities Facing Protected Areas over the Next Century

What will I get out of this?

This session offers reflections on where we have been and where we are going in protected area management from the inaugural GWS Student Summit.

Abstract

The National Park Service (NPS) centennial represents a time for professionals in protected area management to reflect on the past and look toward the future. The challenges in protected area management are increasingly complex and uncertain. However, these challenges can be viewed as opportunities to further strengthen protected area management and research. Recently, future leaders in protected area management have begun to form student chapters of the GWS and the inaugural student-led summit was convened this past July in Glacier National Park with representation from six universities. Five themes were discussed: unbounding parks, core park values, visitor use management, perspectives on natural change, and reimagining the NPS. During this compass session, summit attendees will provide an overview of each theme and engage the audience in discussions to address the challenges of protected area management in the NPS' second 100 years.

Keywords

student, summit, future

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PhD Student, University of California, Merced

Invasive seagrass functionally alters marine communities: Impacts, control and management of the species Halophila stipulacea

What will I get out of this?

Presents new data on potential effects of exotic Halophila stipulacea on native seagrass and coral reef species and approaches to outreach, education and resource management.

Abstract

The spread of the exotic seagrass Halophila stipulacea, a marine angiosperm native to the Red Sea and Indian Ocean and now found across the Caribbean is impacting native seagrass and coral reef habitats. NPS and UCLA are working in partnership to understand impacts of this species to native habitats at Virgin Islands National Park, the northernmost extent of this exotic. Preliminary data suggests the rapid expansion of H. stipulacea is impacting the biodiversity of seagrass and coral reef communities. H. stipulacea supports half the number of juvenile-stage fish as native seagrass and it is seemingly avoided by native herbivores. Additional laboratory and field experiments are providing much-needed impact data. Ecological niche models based on data from native Indian Ocean habitats are projecting sites at risk to further invasion. On-the-ground mapping efforts are being used to confirm predictions and assess local impacts. Research results and potential management actions will be presented.

Keywords

invasive, seagrass, marine,

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10708 Update Session Making nature-culture connections by broadening metropolitan conservation alliances

What will I get out of this?

Bringing cultural heritage together with natural heritage on equal terms has many benefits. How can metropolitan conservation partnerships move in this direction?

Abstract

This session is an update on the Natural Neighbors concept, discussed at GWS 2015 (see Trzyna, "Natural Neighbors," in the proceedings) and at the 2016 IUCN World Conservation Congress. A new movement to integrate natural heritage and cultural heritage ("Nature-Culture") promises to produce many benefits. It is represented by the USNPS Director's landmark Interim Order 100, "Resource Stewardship for the 21st Century" (2016); and efforts to connect natural and cultural heritage practice in the World Heritage System. Another movement, bringing together conservation actors in metropolitan regions, such as in the Chicago Wilderness alliance, also has great potential. Such alliances include protected area and wildlife management agencies, museums, zoos, aquariums, botanic gardens and local governments. How can these two movements be brought together? This session focuses on the "how."

Keywords

nature, culture. urban

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Currently Director, USFWS; will be head of American Zoo Assn. at time of conference

Chair, IUCN WCPA Urban Conservation Strategies Specialist Group; Project Director, Natural Neighbors

Urban Fellow, USNPS; anthropologist

VP, American Alliance of Museums; Director, Center for the Future of Museums

10608

Parks and Protected Areas as an Evidence-Based Health-Promotion Context for Veterans with PTSD

What will I get out of this?

Attendees will learn about how parks and protected areas can serve as a health-promoting context for veterans with posttraumatic stress disorder.

Abstract

The National Park Service's Healthy Parks, Healthy People program and current research suggests that parks and protected areas have the potential to serve as a valuable health-promoting context for veterans with posttraumatic stress disorder (PTSD). Evidence-based recreational therapy interventions also encourage the use of nature-based experiences to promote health, wellbeing, and overall symptom reduction among veterans with PTSD. While multiple theoretical frameworks provide potential explanations for the benefits of nature-based interventions, further research will help determine the specific components of these settings that produce therapeutic effects. Furthermore, collaboration among multiple interest groups can enhance the benefits and outcomes of using parks and protected areas as a health-promoting context. Topics addressed in this presentation will include the unique challenges faced by veterans with PTSD, current evidence-based interventions, user access issues, visitor use considerations, and the potential to cultivate an investment in parks and protected areas among the veteran community.

Keywords

Parks, Veterans, Health

Lead author / Session organizer

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Dr. Kelly Bricker is a professor and director of Parks, Recreation, and Tourism at the University of Utah in Salt Lake City. She is also a member of the International Ecotourism Society and the Global Sustainable Tourism Council.

Dr. Daniel Dustin is a professor of Parks, Recreation, and Tourism at the University of Utah. His current research focuses on nature's restorative and resiliency-building properties for veterans, service members, and their families.

10940 Collaboration Session

Developing a Sustainable Recreation Research Agenda for Public Lands

What will I get out of this?

We want them to contribute their thoughts and ideas toward Developing a Sustainable Recreation Research Agenda for Public Lands.

Abstract

The Forest Service, through its Pacific Northwest Research Station and in collaboration with Colorado State University, are planning a national symposium to re-envision and re-invigorate recreation research about the new planning paradigm of sustainable recreation and tourism on public lands. This session's purpose is to provide a quick presentation on sustainable recreation and tourism on public lands and then follow that presentation with an open interactive group dialogue on what the nature of a research agenda would look like. The design of that engagement would depend on the amount of participants but would most likely involve participatory break-out groups following by plenary presentations of the group results and a final discussion period. The results of this dialogue would then be used as direct input in the national recreation research symposium in the fall.

Keywords

Sustainable Recreation, Tourism

Lead author / Session organizer

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Monitoring and Evaluating Indicators of Recreation Quality on the White Mountain National Forest

What will I get out of this?

Audience members can expect to learn about a method for developing an efficient, sustainable monitoring program of experiential indicators of recreation quality.

Abstract

Research to support monitoring and evaluation of experiential indicators of quality was conducted in White Mountain National Forest (WMNF). A first phase of research focused on arrival counting, and indicator monitoring. A second phase of research focused on development of distribution models of visitor use at study sites, and administration of visitor surveys. These activities were designed to determine the experiential quality of recreation in the WMNF, the relationship between visitor use levels and experiential quality, and visitor evaluation of different levels of experiential quality. The information was used to develop a system for easily monitoring and evaluating indicators of experiential quality on the forest. Monitoring protocols were developed, tested and documented and visitor-based evaluative standards were elicited. This program of research provided WMNF with the tools necessary to deploy an efficient, sustainable and scientifically valid program of experiential indicator monitoring and evaluation.

Keywords

visitor capacity management

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Nathan Reigner - Resource Systems Group, Inc.

Elizabeth Perry - University of Vermont

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#NatureForAll: Parks at the heart of a global movement to inspire a love of nature

What will I get out of this?

During this session, attendees will develop best practices for connecting new audiences (e.g., youth, urban) with nature to build support for parks and protected areas.

Abstract

#NatureForAll – a global movement to inspire a universal love for nature – was launched at the 2016 International Union for Conservation of Nature (IUCN) World Conservation Congress with over 100 partners. It is now an important new area of work for IUCN that will raise awareness of nature and its values and enable more people to experience, connect with, and take action to conserve nature. Parks and protected areas will benefit from #NatureForAll through increased and sustained support and action for these treasured places. But they and their partners also have a huge role to play in delivering #NatureForAll programs. Building on outcomes of previous international and North American events, feedback on this presentation will contribute directly to on-line best practice guidance for implementing #NatureForAll.

Keywords

youth, urban, connection

Lead author / Session organizer

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Integrating multiple values and environmental behavior reported by visitors to Denali National Park and Preserve

What will I get out of this?

This paper will advance understanding of how values relate to human activities that influence environmental management in the context of a federally designated Wilderness.

Abstract

Human behaviors that benefit the environment are influenced by an array of factors, particularly values that reflect the underlying cognitive processes that shape decisions. Despite the importance of understanding values to inform resource management decisions, few studies have integrated different kinds of values (i.e., cultural, individual, and assigned) to determine their relative effects on behavioral engagement. We share results from a study that explains why people choose to act in environmentally friendly ways in Denali National Park and Preserve. Drawing on a sample of visitors contacted in summer 2016, we found that variation in reported behaviors was explained by cultural cognitions (e.g., egalitarian and hierarchical worldviews), individual value orientations (e.g., egoistic, biopsheric, altruistic), and the perceived qualities of nature (e.g., aesthetics, perceived biodiversity). This paper aims to stimulate a dialogue about how to better characterize the relationship between values and behaviors performed in parks and protected areas.

Keywords

recreation, behavior, values

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The Discovery of American Marten in the Apostel Islands

What will I get out of this?

Remote cameras and DNA technology have enabled the park to obtain information not previously feasible.

Abstract

What started as a pilot study to determine the effectiveness of remote cameras on one island has evolved into a park-wide project with multiple partners and the discovery of the State's only endangered mammal, the American marten, that was thought to have been extirpated from the state in the 1920's. The use of remote cameras has opened new doors to wildlife research within the park, revealing not only American marten, but also a much high diversity and abundance of carnivores than had been known in the past. Apostle Islands National Lakeshore includes 21 islands spread out over an area of Lake Superior that is over 250,000 acres in size. Always at the mercy of the Lake in the summer and not accessible in the winter, traditional wildlife research on the islands has proven difficult to impossible. The use of remote cameras combined with DNA analysis has changed that immeasurably.

Keywords

wildlife, cameras, marten

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Dr. Erik Olson is a wildlife professor at Northland College, Ashland, Wisconsin

Dr. Jonathan Pauli, is a professor of wildlife ecology at the University of Wisconsin, Madison

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10671
Fasttrack Session

Calling the Shots; Closing the Ranks: Partnerships on the Front Lines of Preservation

What will I get out of this?

Our presentation provides examples of effective partnerships with stakeholders to preserve battlefields, and the importance of grassroots preservation to achieve permanent protection of battlefield landscapes.

Abstract

The National Park Service's American Battlefield Preservation Program (ABPP) will present four case studies highlighting how its two grant programs have empowered community partners to be the front lines of battlefield preservation. In alignment with the ABPP's mission to assist citizens, public and private institutions, and governments, our grant programs provide funds and technical assistance to local communities allowing them to advocate for the preservation of battlefield landscapes. Through a planning and partnership approach, partners of the ABPP use program grants to identify resources, strategize, garner support, enact plans, and acquire land leading to the preservation of battlefield landscapes in perpetuity. This Fasttrack Session will demonstrate the various ways partners in the Mid-Atlantic have used the program's grants to preserve battlefield landscapes while simultaneously addressing the diverging needs between numerous stakeholders.

Keywords

Battlefields, Preservation, Partnerships

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Princeton: A Reorientation of the Landscape and New Strategies for Land Preservation

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Local Communities Driving Preservation Change

Conflicting Preservation Directions in a Small Community

Connecting to the Latino Community

10548 Update Session Developing the Process: Initiation, Administration and Delivery of the Inaugural Social Science Park Break Experience

What will I get out of this?

The NPS and researchers identified growing social science needs in the NPS to inform planning and decision-making and have responded by advancing social science initiatives.

Abstract

The purpose of this session is to present on the publication and experience from the Inaugural Social Science Park Break; a Social Science Needs Assessment for Great Sand Dunes National Park and Preserve. The program demonstrates a collaborative effort among social scientists, park managers, and universities to promote proactive, science-based visitor use management. Specifically, the contributing presenters will provide on the administration and delivery of the first social science park break experience. The National Park Services' Social Science Division and the Denver Service Center supported the initiatives in addition to faculty from Clemson and Kansas State Universities. Student perspectives come from the nine graduate students representing six universities from across the U.S. The presenters will discuss the final report, Great Sand Dunes National Park and Preserve Social Science Needs Assessment including the methods, central research themes and how this informs decision-making as well as international transference.

Keywords

park break

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Understanding and Informing Decision Making in the NPS: Social Science Initiatives, Planning, and Park Break

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International Transference from Park Break: Integrating Social Science in Parks, Protected Areas, and Cultural Sites

Unplanned trail creation in Gatineau Park, Canada: engaging users in finding a sustainable solution

What will I get out of this?

The audience members will learn about an innovative collaborative approach to find sustainable solutions to unplanned trail creation in a Canadian federal conservation park.

Abstract

Gatineau Park, Canada, receives 2.7 million visits per year. Visitors enjoy hundreds of kilometres of hiking, skiing, snowshoeing, and biking trails. While the official trail network has remained essentially the same, unauthorized new trails have been continuously created by users, such that the network of "unofficial trails" has become larger than the official network. Habitat fragmentation created by trails and conflicts with habitat protection for species at risk have become significant problems for the Park's ecological health. The National Capital Commission has initiated a series of consultations with over eighty user groups to engage them in finding a sustainable solution. Awareness of the negative environmental and public safety impacts caused by unofficial trails was enhanced among user groups and solutions to reduce these impacts were found collaboratively and are now being implemented. Recreational, operational, and natural resource management requirements have been taken into account to arrive at a sustainable solution.

Keywords

trail engagement fragmentation

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Human dimensions of aquatic invasive species management in Texas protected areas

What will I get out of this?

Conference participants will learn alternative methods to education and awareness methods that are used to guide users behaviors to align with protected areas management goals.

Abstract

Invasive species are ubiquitous aspect of contemporary protected areas management across people, places, and time. Often, users of parks, protected areas, and cultural sites are unintentional vectors leading to the establishment and spread of invasives. Therefore, managers must develop practices and policies that augment users' behavior in an attempt to reduce or eliminate this potential. Conventionally, practice and polices are disseminated in the form of education and awareness campaigns, which are thought to increase or change behaviors. However, these approaches, by themselves, are known to be limited in their effectiveness at changing behavior and increasing users level of engagement the necessary behavior. This project sought to understand the effectiveness of social norm messaging strategies. Results indicate both regulation messages (focusing users on the law) and social norm messages (focusing user on what others do/approve of) significantly increase users intentions to perform invasives species mitigation behaviors than information/education messages.

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behavior, invasives, norms

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10786
Poster

3D Cabrillo: Lessons From Building a 21st Century Rocky Intertidal

What will I get out of this?

Discover how Cabrillo NM produces 3D tactile models to connect the next generation of stewards to our park's natural resources.

Abstract

Our goal as interpreters is to facilitate meaningful connections for park visitors to the resources we protect. We effectively accomplish this goal by linking intangible ideas to tangible objects. Unfortunately, select examples are unavailable for tactile learning purposes due to their high value or fragile nature. Through the 3D Cabrillo program, we initiated a platform to construct 3D replicas of our park's natural and cultural resources. These objects enhance our public interpretive programs at the park and are freely available online for community use. Cabrillo is a leader in science communication in the National Park Service and our 3D program is one innovative example of how we are bringing our nation's parks into the digital age with opportunities for a quickly evolving youth in our local and national communities. With these techniques, we look to raise awareness of park resources and foster excitement for the next century of stewardship.

Keywords

Biomodels, Communication, 3DPrinting

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Dr. Keith Lombardo - Chief of Natural Resources

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10627 Update Session

National Parks as Part of a Broad National "Learning Ecosystem"

What will I get out of this?

Participants will be inspired to collaborate within and outside the NPS to extend the contribution of NPS science and history to the learning ecosystem.

Abstract

Learning can happen at all ages; at places, times, and modes selected by the learner; in formal and informal settings; with or without institutions; in solitary and social contexts, etc. What and how can the National Park Service uniquely contribute to this "learning ecosystem" and have a significant impact consistent with our mission? Engaging visitors in park science and historical study -- especially in ways that help visitors discover how we know what we know -- is an important opportunity. That requires collaboration and bridge-building between interpreters and educators on one hand with scientists, scholars, and resource managers on the other. It also requires strong relationships with other educators. The goal of this session is to illustrate how park science and history contribute to the learning ecosystem; explore the challenges and opportunities faced by innovators; and inspire creativity to expand what is accomplished in and by parks.

Keywords

science, history, learning

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10558 Update Session	NPS CESU Coordinators Business Meeting
What will I get out of this?	Participants will identify priority needs and interests and contribute to strategic direction for NPS involvement in the CESU Network
Abstract	This is a business meeting for NPS CESU Research Coordinators to discuss a variety of operational and
Abstract	strategic issues.
	officegie foodes.
Keywords	NPS, CESU
Landaudeau /	Tim Watkins Science Access & Engagement Coordinator
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ocosion organizer	National Park Service tim_watkins@nps.gov
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authors / organizers	

10559 Update Session	NPS Research Learning Centers Business Meeting
What will I get out of this?	Participants will gain an understanding of operational and strategic issues across the RLC Network
Abstract	This is a business meeting for NPS RLC staff and partners to discuss a range of operational and strategic issues.
Keywords	NPS, RLCs
,	
Lead author /	Tim Watkins Science Access & Engagement Coordinator
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additional speakers/panelists and titles of their presentations are given here 10589 Poster

National Parks and America's Scientific Heritage

What will I get out of this?

Some parks have made major contributions to the history of scientific fields. Learn about a project to tell the stories, and suggest stories to share.

Abstract

Some national parks protect places that have played important roles in the development of major scientific ideas and practices. For instance, in the late 1890s the dunes at the southern end of Lake Michigan, which are now protected within Indiana Dunes National Lakeshore, provided the first evidence for succession in plant communities. Succession has been one of the most important and influential concepts in ecology ever since. Other examples include Isle Royale, Yellowstone, Tule Springs, and Yosemite – all places where research has profoundly shaped the progress of scientific and technological fields. Parks are valuable not only for protecting natural and cultural resources, but also for revealing our intellectual heritage and the development of scientific ideas. We are starting a project to find and tell digital stories of such intellectual heritage via a new History of Science page on nps.gov, and we invite your story ideas.

Keywords

Parks, History, Science

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10717 Poster

NPS Research Learning Centers in the 21st Century

What will I get out of this?

The audience will learn how RLCs help parks and partners meet major strategic goals related to research, science-based stewardship, and science communication.

Abstract

Keywords

presentations are given here

RLC, Research, Learning

Science is becoming more prominent in the NPS. Major initiatives, policy statements, strategic frameworks, and investments focus on bolstering and integrating science into the diverse operations of the Service. Examples include new Servicewide science priorities for resource stewardship; a call for increased science literacy among employees; the blossoming of citizen science in parks across the country; internship programs that connect parks with the next generation through scientific research; and new collaborations among researchers, resource managers, and interpreters. The NPS Research Learning Centers (RLCs) foster the conduct, application, and communication of science in national parks. They have recently created a new strategic framework and set of actions that help parks realize their potential as living laboratories, science storytellers, and exemplars of science-based stewardship.

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America's Lost National Monuments and the Limits of the National Park System

What will I get out of this?

The audience will learn about places cut from the national park system and why, what became of them, and how they differ from surviving units.

Abstract

Keywords

Delisting, National Monuments

The count of national park units has recently reached 413 units, but over the years 28 national park units have been delisted from the system and disappeared off the map. This includes one national park, nine national monuments, five national recreation areas, five small markers and memorials, and seven other sites. This paper will examine the changing geography of the nine lost national monuments. These forgotten places will be mapped out in detail using Geographic Information Systems (GIS) and the reasons for their loss, their continuing development as state parks or other protected lands, and how their development compares to similar places still in the park system will be examined. It will be argued that while the other delisted units represent changing priorities of the NPS and transfers from other agencies, the lost monuments represent geographic limits to the expansion of the national park system.

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10586
Update Session

NPS and NASA: A Partnership to Address Resource Concerns Through Application of Geospatial Imagery

What will I get out of this?

A partnership to enhance understanding of natural and cultural park resources and responses to stressors through credible science that informs management decisions.

Abstract

Our national park units are experiencing an ever-increasing range of stressors, such as urban encroachment and climate change, which are impacting the natural and cultural resources they were established to conserve and preserve. To better understand how park resources are responding to these stressors, the National Park Service (NPS) has partnered with NASA's DEVELOP Program, using NASA's Earth Observing satellites, to help inform appropriate management decisions. The NASA DEVELOP Program is part of NASA's Earth Science Division with the purpose of developing a scientific understanding of Earth's system and its response to natural or human-induced changes, and to improve prediction of climate, weather, and natural hazards. This session will share several NPS natural and cultural resource projects the NASA DEVELOP Project teams have been working on over the past year.

Keywords

NASA, Partnership

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Monitoring Snow and Ice Coverage in Intermountain Region Parks to Assess Vulnerability of Archaeological Sites

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Seeking Ancient Roadbeds Around Chaco Culture National Historical Park

Monitoring of Tropospheric Ozone Along the Appalachian National Scenic Trail

Monitoring Invasive Bromes in National Park Lands of the Northern Great Plains

NASA DEVELOP Program: Capacity Building through Earth Observations

10784 Compass Session

Sink or Swim Together: Cultural & Natural Resources methods for flood related disaster

What will I get out of this?

Floods and rising water threaten historic and natural resources. Understand how landscape adaptation and ecological solutions can be a viable protection measure for historic properties.

Abstract

his session will explore methods to protect shoreline and low-lying communities from the risk of flood disasters. Traditional adaptations to water risk can provide insight and instruction for modern practice. The session will start with a discussion of past and current methods intended to reduce risk to historic properties. The panel will explore alternative ways to reduce risk through natural systems, such as living shorelines. Learn how well-managed protected lands provide the known benefits of natural habitat and open space, and can also mitigate the impacts of natural disaster, climate change, and help local resident resilience. The panel will highlight several examples of "inadvertent" hazard mitigation via open space preservation. In addition, the group will delve into recent publications regarding land conservation practices that reduce the risk of disaster events and ask the audience what more can, and should be done.

Keywords

Disaster, Mitigation, Cultural

Lead author / Session organizer Jennifer Wellock Architectural Historian

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Architectural Historian. (20 Minutes)

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Chief, State and Local Assistance Programs (25 minutes)

Program Assistant to the Associate Director of Cultural Resources (20 minutes)

Technical Reviewer, (20 minutes)

10712

The USA National Phenology Network: Providing capacity for monitoring, management and engagement in protected areas

What will I get out of this?

Learn about practical tools that can facilitate integrated implementation of monitoring, decision-making and stakeholder engagement – from staff to visitors – at your protected area.

Abstract

The USA National Phenology Network (USA-NPN; www.usanpn.org) serves science and society by promoting a broad understanding of plant and animal phenology and the relationships among phenological patterns and environmental change. The Network provides a set of integrated tools to support implementation of phenological monitoring and related applications within protected areas. Capacities include standard protocols and monitoring designs; data management, analysis and visualization; and tools for communication including training materials and formal and informal educational curricula. The network of over 150 partners actively engaged in phenological monitoring – for applications as diverse as inventory and monitoring, natural resource decision-making, and education and outreach – form a thriving community of practice across many types of protected areas, from parks and refuges to multiorganizational regional subnetworks. Here, we describe these tools –including our online and mobile user interface Nature's Notebook – and illustrate applications relevant to users across a variety of protected areas.

Keywords

Climate change, monitoring

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10842

MonitoringResources.org: Enterprise tools for designing and documenting large-scale, long-term monitoring programs

What will I get out of this?

Learn about this practical on-line tool suite that can help design and implement your large-scale, long-term, multitaxa monitoring programs at your your protected area.

Abstract

Individual natural resource monitoring programs have evolved in response to different organizational mandates, jurisdictional needs, issues and questions. We are establishing a collaborative forum for large-scale, long-term monitoring programs to identify opportunities where collaboration could yield efficiency in monitoring design, implementation, analysis, and data sharing across geopolitical boundaries or organizational cultures. Here, we outline components of an existing on-line tool suite, MonitoringResources.org, that supports aquatic monitoring programs in the Pacific Northwest. Components include survey design, standardization of protocols and methods, and information management and delivery. We also present results of a workshop focused on (1) establishing a collaborative forum for monitoring programs, (2) identifying and prioritizing shared needs, (3) evaluating existing enterprise resources, (4) defining priorities for development of enhanced capacity for MonitoringResources.org, and (5) identifying pilot projects to define and test development requirements for specific monitoring programs.

Keywords

Monitoring, Tools, Protocols

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10808 Fasttrack Session

Coastal Parks and Refuges as Part of Marine Protected Area Networks

What will I get out of this?

This fast-paced session will explore how Coastal Parks and Refuges are an integral part of MPA networks through video, social media, lightening talks and discussion.

Abstract

This fast-paced, fun session will look at the ways in which Coastal Parks and Refuges are an integral part of marine protected area networks. Coastal areas can both add to and benefit from broader networks of protected areas. Don't think of your park as an MPA? Perhaps it's time you did. We'll explore issues that connect us, including climate change, land/sea connections, invasive species, visitor use and building public support. The session will feature video, social media, lightening talks and discussion covering questions including: What is an MPA network, and why is it important? Making connections, I – building ecological networks to expand our conservation impact. Making connections, II – connecting managers and communities for coastal and marine conservation. Oceans are us – taking next steps for healthy oceans and communities.

Keywords

marine, oceans, coasts

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What is an MPA network, and why is it important?

If this is a session of Invited Speakers or a Panel Discussion, additional speakers/panelists and titles of their presentations are given here

Making connections, I – building ecological networks to expand our conservation impact

Making connections, II - connecting managers and communities for coastal and marine conservation

Oceans are us - taking next steps for healthy oceans and communities

11013 Poster

Natural History as a Cultural Resource

What will I get out of this?

This poster will provide practical guidance on proper long-term curation and preservation of natural history specimens and why it's important to natural and cultural resources.

Abstract

Natural resources are an important part of understanding and managing our national parks. Through scientific studies of these resources, we gain a better understanding of a park's natural environment. Once a study is completed the specimens become important objects that tell not only the story of a park's natural resources, but also the story of its human environment. They become cultural resources. These natural history specimens must be curated and preserved to ensure their longevity for present and future generations. Using best practices in the preservation of natural history specimens allows us to establish cross-discipline partnerships between natural and cultural resource staff. It also allows us to tell a more complete story of how humans are interacting with their natural environment on cultural and social levels. Preserving natural history specimens as cultural resources develops a more complete understanding of park resources and forges new relationships between staff of different disciplines.

Keywords

Natural History Curator

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Title of poster: Natural History as a Cultural Resource

Developing a Gateway for Future Land Stewards through Education and Resource Protection

What will I get out of this?

A best practice model on how: 1) a partnership can promote Public Land Hiring Authority, and 2) balancing interns personal development and meeting conservation-related tasks

Abstract

given here

Over the past two summers Lake Mead NRA has partnered with the Great Basin Institute to establish a robust internship program for diverse youth blending outreach, resource management, and individual career development. Outreach activities target recreational boaters and develop awareness about Aquatic Invasive Species (AIS). Education messages highlight sense of place, stewardship, and the interconnectedness between human behavior and species distribution. Natural resource management activities focus on research and restoration activities that showcase the National Park Service's role in resource stewardship. Each intern participates in unique experiences to gain greater self-awareness and leadership skills. Interns completing this program have a gateway toward future positions through the Public Lands Corps Hiring Authority. To date, 23 interns have collectively guided close to 80,000 park visitors on a journey to better understand the delicate relationships between native and invasive species, and tested solutions to slow the spread of AIS.

Keywords	Diverse youth stewardship			
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Recreation habitat vs. ecological habitat in riparian areas – Managing for both in Yosemite Valley

What will I get out of this?

Learn about "recreation habitat," riparian impacts, and support for management strategies to address impacts in high use riparian areas like Yosemite Valley.

Abstract

Many riparian features important for plants and animals are also attractive to people, but recreation use can seem incongruous with ecological restoration. Using the heavily-visited Merced River in Yosemite Valley as an example, this paper considers what makes riparian zones attractive to visitors and connects high quality recreation with healthy riparian systems. The paper then explores how capacities and other management actions can control amounts and types of use to mitigate adverse visitor impacts, and calls for interdisciplinary projects that recognize how human uses fit with restoration. It also examines Yosemite visitors' perceptions of riparian impacts and their support for management actions that might reduce impacts or restore riparian conditions. Management actions that limit rather than exclude use, focusing on specific problems, impacts, and related behaviors, are more likely to succeed and develop advocates for riparian stewardship.

ripario	an, recreatior	n, habitat
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On the road to capacities -- registration systems, redistribution, and the "self-limitation" ideal

What will I get out of this?

Learn about web-based registration systems that help visitors gauge use levels and redistribute use, possibly reducing the need for permit-enforced capacities.

Abstract

When use is related to impacts, capacities are an effective strategy to protect visitor experiences. But many agencies find it challenging to set capacities or develop acceptable permit systems. Web-based real-time registration systems (RTRs) accurately measure use, while allowing everyone to calibrate the ways use affects high quality conditions.. In concept, visitors may "self-limit" to avoid crowded times, redistributing use and delaying the need for more formal permit systems. Implementing registration before use exceeds capacities also allows visitors, stakeholders, and agencies to re-assess capacities as they are approached, solidifying support or encouraging adjustments. Examples from Wyoming's Snake River, Oregon's Deschutes River, Alaska's Inland Passage, Washington's San Juan Islands, and California's Yosemite Valley show how RTRs have been used to address specific impacts, re-distribute use, or choose better capacities.

Keywords

capacity, recreation, permits

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10820 Challenge Session

The Contextual Landscape Values of Werowocomoco and Captain John Smith Cheaspeake NHT through different vantage points

What will I get out of this?

Challenge participants to see the many layers of values found in extraordinary places like Werowocomoco and the Captain John Smith Chesapeake Historic Trail

Abstract

Four hundred years ago, Werowocomoco was the home and spiritual place of the Algonquian speaking people known as the Powhatans . In 1607, Captain John Smith and the Virginia Colony arrived in this land for exploration and settlement. The land, water and people of the Chesapeake tell the historical story of at least two worlds and two cultures in one place. How can we identify, understand and respect the many values in a cultural landscape context from different vantage points? What tools exist and are being developed?

Keywords

indigenous, cultural landscapes,data

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Spiritual Values of the Landscape: Engaging indigenous communities

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The View from the Water: The Virginia Colony arriving in North America in 1607

Identifying the Character Defining Features in the cultural landscape context of Werowocomoco

Indigenous Cultural Landscape Predictive Modeling: Using Data and GIS to identify Cultural and Natural Resources

First Day Hikes: An Innovative Strategy for Connecting People and Parks

What will I get out of this?

This study demonstrates the First Day Hike initiative's capacity to foster connections between people and nature in America's State Parks.

Abstract

First Day Hikes, which occur on New Year's Day, are part of a nationwide initiative led by America's State Parks to get people outdoors. Despite the success of the initiative (which included 1,200 hikes and 56,000 hikers in 2016), little is known about the hikers. Our study across three states (n = 1,955) sought to characterize First Day Hikers, identify their motivations for hiking, and describe the impacts of their experience on future outdoor recreation participation and support for parks. Top reasons for hiking included exploring nature, spending time with family/friends, and improving physical health. Many hikers (30-40%) indicated their hiking and state park visits increased following the First Day Hike experience, and almost 25% were more likely to donate money to support parks. Results of this study could help to inform the marketing and management of First Day Hikes, ultimately strengthening connections between people, parks, and nature.

Keywords

Hiking, Parks, Programs

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The Park Atlas: GIS for All National Parks

What will I get out of this?

The Atlas is a compilation of each park's unique baseline geospatial data presented in an interactive web mapping site. More at http://arcg.is/2dk2LbR.

Abstract

he Park Atlas is a series of maps compiled from available geographic information system (GIS) data on natural and cultural resources, visitor use patterns, facilities, and other topics unique to each park. It serves as a GIS-based support tool for planning and park operations. Park Atlases are published as geospatial data for use in a web mapping environment. The Park Atlas web maps are dynamic and are updated frequently to stay relevant for park operations and a broad spectrum of NPS projects. The tools associated with each Atlas allow users to create new data in concert with existing data layers as well as download or print maps that support project planning or training initiatives. The Park Atlases are a companion product of the NPS Foundation Documents.

Keywords

GIS, webmaps, parks

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Opening a near-wilderness regional park close to Victoria, British Columbia, Canada

What will I get out of this?

To better understand the some of the opportunities and challenges in planning for and managing a large near-wilderness area within a growing metropolitan area.

Abstract

CRD Regional Parks is undertaking a multi-year project to open the Sea to Sea and Sooke Hills Wilderness Regional Park Reserves - together almost 9,000 hectares of near-wilderness set against the rapidly growing Victoria, B.C. metropolitan area. Phase one of the project focuses on opening the Mount Manuel Quimper section and includes: 1) a carnivore risk assessment; 2) a trails assessment; 3) trail upgrades; 4) development of facilities; and 5) development of a communications plan. This presentation will discuss phase one of the park opening and highlights the future planning phases. The Mount Manuel Quimper section provides a perfect example of the inherent challenges in balancing between nature conservation and outdoor recreation as more people with diverse interests, abilities, and levels of outdoor experience choose to visit these close-by regional parks. The importance of near-wilderness areas in shaping an urban population's awareness of and value for nature is also discussed.

Keywords

Park planning, metropolitan

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Seasonal water use of Saguaro cacti (Carnegiea gigantea) and their nurses

What will I get out of this?

Audience members will learn about a biological phenomena that may explain the distribution and demography of the iconic Saguaro cactus.

Abstract

Saguaro National Park is currently experiencing multiple climate change factors and changes to its native plant community. The impact of climate change on the park's iconic Saguaro cactus is unknown, but survival of young plants has declined dramatically in the past 20 years as the park has experienced higher temperatures and drought. Saguaros are well-known for being part of a nurse-protégé relationship with desert trees and shrubs. This relationship protects young saguaros from extreme temperatures, but may also provide a water benefit to saguaros from nurse trees through ecological phenomena. Our project examines the seasonal use of water in saguaros, their nurses, and if these associations assist saguaros by providing adequate moisture during periods of stress. Further, we evaluate the potential results of decreased winter precipitation and hotter, drier summers on the nurse-protégé relationship and how these changing conditions may impact saguaros for generations to come.

Keywords

climate, desert, precipitation

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The unusual population structure of a pervasive invasive: Sahara Mustard in National Parks

What will I get out of this?

Audience members will learn about evolutionary mechanisms and human drivers promoting invasive species success in National Parks, with hints at how to effectively control them.

Abstract

Sahara mustard has successfully colonized semi-arid Parks eastward from California to Texas and northward into Nevada and Utah since its introduction in the early 20th century. The dispersal and genetic mechanisms that have enabled its success remain unexplored and are a major hurdle in the successful control of the species in National Parks. We sequenced genomes for 943 individuals from 55 locations across the species' range to identify population structure and invasion history. We found evidence for distinct genetic clusters of Sahara mustard but overall genetic diversity was low across sites, perhaps due to the species dispersal modality and natural history. Surprisingly high heterozygosity across the range likely indicates admixture of multiple introduction sites after initial invasions. Overall, we found low levels of genetic structure supporting human-mediated migration. We present Sahara mustard as an eminently-suited study system to understand invasion evolutionary biology, and discuss implications for the National Park Service.

Keywords

invasives, climate, deserts

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Aquatic Invasive Species: Challenges and Solutions Across Boundaries

What will I get out of this?

Will increase awareness of the the nature of the growing threat of aquatic invasive species and engage participants in developing solutions.

Abstract

Keywords

AIS aquatic invasive

Aquatic invasive species (AIS) are among the greatest threats to the integrity of resources, values and uses in protected areas including National Parks. A recent report found that over 300 AIS have been detected within 129 National Park Service units. This information is incomplete and there is high potential for new introductions via trailered boats, fishing tackle and bait, NPS and partner equipment, and release or escape of organisms from aquaria and aquaculture. The risks of invasion are elevated by human use and climate change. AIS compromise fundamental resources and values. The costs of prevention are substantial but typically orders of magnitude lower than costs that result from establishment. This overview of a growing threat will prepare attendees to contribute to solutions by participating in an electronic survey. Results will be used by NPS program staff to establish priorities, develop recommendations, inform issue papers, pursue funding indicatives and inform planning.

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10602 Update Session People, Politics, and Place in the Historic Shaping of America's Western National Parks

What will I get out of this?

Our topic is the evolving understanding of present and absent western national parks. Historians and historical geographers will present the results of original, cutting-edge research.

Abstract

Our session focuses on national parks in the American West. It updates attendees on the shifting understanding of the historic purposes, variable interpretations, and notable individuals at the center of many nationally significant sites. Lary Dilsaver begins by asking why one of the most formative events in western US history – gold and silver rushes – is so badly represented in today's National Park System. Peter Blodgett then surveys the regionally inspired and gender liberating identities that women tourists were encouraged to embrace when visiting western parks during the interwar years. Michael Pretes continues our western exploration by examining the art and science of FS Dellenbaugh whose paintings helped to promote the creation of Grand Canyon and Zion National Parks. Finally, Terence Young argues that the mismanaged Yosemite State Park was more important in the shaping of America's national park system than has been recognized. John Sprinkle will discuss.

Keywords

history, western US

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Why Are There No Mining Frontier Units in the National Park System?

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"In the Wild Heart of America": Tourism, Gender and the Promotion of Western National Parks

Frederick S. Dellenbaugh: Geographer, Explorer, and National Park Artist

Yosemite and the Origins of America's National Parks

Discussant

Air quality and manager decision-making in parks and protected areas

What will I get out of this?

Attendees will learn about the various mental models that guide managers' air quality-related decision-making in diverse contexts and agencies

Abstract

One third of National Parks and historic units exceed the ambient air quality threshold set by the EPA (Hammit, Cole, & Monz, 2015). Traffic congestion and degraded air quality in Zion National Park led to a mandatory shuttle system (Mace et al., 2013), however, poor air quality in other protected areas may not spur the same management actions. This study explores manager perspectives of the various factors that influence air quality-related decision-making across contexts and agencies (e.g., NPS, USFS, BLM) in the United States. Park and protected area managers (n = 30) were recruited using maximum variation sampling (Miles, Hubberman, & Saldana, 2014) to participate in semi-structured, in-depth interviews (Seidman, 2006). Interviews were analyzed to assess managers' mental models (e.g., Otto-Banaszak et al., 2011) and ecologically rational management strategies (e.g., Todd & Brighton, 2016). These findings have implications for air quality management in diverse park and protected area contexts.

Keywords

Mental Models

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Dr. Matthew Brownlee is an Assistant Professor of Parks, Recreation and Tourism at the University of Utah. His interdisciplinary research links outdoor recreation and resource management, and provides information to help park and protected area managers plan, monitor, and evaluate visitor experiences

10593

Daily life methods for social science research in parks and protected areas

What will I get out of this?

Attendees will learn about the various 'daily life' methods available for social science park research. Situational implications for each method will be presented.

Abstract

Social scientists regularly employ survey methods and methodologies to assess visitor behavior in parks and protected areas. While often informative and practical, these self-reported, cross-sectional strategies have also been shown susceptible to response biases, such as retrospection and recall errors (e.g., Godbey et al., 2005; Schwarz, 2012; Zajchowski, Schwab, & Dustin, 2016). In contrast, "daily life" methods (Connor & Mehl, 2012) have been shown to reduce the temporal delay between experience and self-report (Reis, 2012) and increase the ecological validity of findings (Czsikszentmihalyi, 2012; McKay, Brownlee, Hallo, 2012). The purpose of this poster presentation is to share a framework that introduces various 'daily life' methods – experience sampling, daily dairies, event reconstruction, visitor employed photography, and head-cam videos – as well as assess their situational utility for park research. Presenters will provide implications for diverse management contexts, as well as diverse research programs (e.g., active living, nature connectedness, benefits-based management).

Keywords

Methods, Experience Sampling

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Dr. Jeff Rose is an Assistant Professor of Parks, Recreation, and Tourism at the University of Utah. His research agenda explores productions of social and environmental (in)justice through the interlocking systemic inequities associated with class, race, political economy, and relationships to nonhuman nature

Dr. Matthew Brownlee is an Assistant Professor of Parks, Recreation and Tourism at the University of Utah. His interdisciplinary research links outdoor recreation and resource management, and provides information to help park and protected area managers plan, monitor, and evaluate visitor experiences

Harmful Algal Blooms and Our National Parks: Developing Plans and Partnerships

What will I get out of this?

Learn new techniques, valuable communication tools, and learn how other parks are responding to harmful algal blooms

Abstract

Harmful Algal Blooms (HABs) are an environmental problem that can have severe impacts on human health, aquatic ecosystems and the economy. Nutrient pollution from human activities such as agriculture, failing septic tanks, and fertilizer use in homes, among other activities, are contributors to the development of harmful algal blooms. For example, in south Florida, critical triggers for algal blooms include nutrients and high temperature. Harmful algal blooms require long term solutions. To that end, the National Park Service (NPS) is a member of the Harmful Algal Bloom and Hypoxia Research and Control Act Interagency Working Group. We are forming partnerships and collaborating with other agencies to detect and quantify cyanobacterial blooms and collect data on harmful algal blooms and associated human and animal illness. The NPS is developing a community of practice, including communication tools and protocols, to help deal with HAB issues in parks.

Keywords	Harmful Algal Blooms			
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