

Profile

NPS/JEFF SELLECK



Bruce Peacock, Chief, NPS Social Science Division, Natural Resource Program Center

that we use for GPRA [the Government Performance and Results Act of 1993] reporting and other purposes. Another standard program we have is the Public Use Statistics Office, and that's system-wide visitation statistics. It's perhaps our most widely used product.

Can you distinguish the Visitor Services Project from the Visitor Survey Card for us?

BP: The Visitor Services Project is the park-specific survey program, which is tailored to park needs. We initiate and complete about 15 of these studies in a year. And each of these studies takes three years to complete from design to finish, so at any particular point we have 45 or so of these kinds of studies ongoing. That is a park-specific survey program and helps meet the needs for informing some large park decision document like a general management plan or EIS [environmental impact statement]. Then there's the Visitor Survey Card, and that is generally park-system-wide, covering 330 parks. It is a much more cursory, satisfaction-level survey effort in which we're trying to get a general feel for how satisfied visitors are when they go to a park. From our latest round of surveying I can tell you that 97% of visitors are either satisfied or very satisfied with their experience. We also break that down from just

Giving natural resources a vote

The Park Science interview with National Park Service economist Bruce Peacock

By the editor

Editor's Note: See the table on page 16 for a list of Social Science Program staff and contact information.

Park Science: You recently became chief of the Social Science Division. Tell us a little about your programs, products, and plans for the division.

Bruce Peacock: We're in a planning, growing phase, but

we do have a number of ongoing programs (table 1, page 16). These include some familiar acronyms: VSP [Visitor Services Project]—the flagship surveying program of NPS social sciences; also the VSC [Visitor Survey Card], which is our visitor satisfaction survey

the overall satisfaction level to the satisfaction level with the facilities, interpretive programs, and so forth. This kind of information directly plays into reporting on GPRA goals for visitor satisfaction with the park experience and their understanding of park needs to manage park resources for the future.

What is the Public Use Statistics Office?

BP: When we think of land management agencies, what comes to mind are National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Army Corps of Engineers—and there may be others—even the Department of Defense operates some recreational facilities. But the National Park Service is the only one with a visitation and statistics program as developed as it is. Visitation data are fed into forms on a Web site that are then used to calculate visitation statistics. For example, when a car rolls over a car counter in a park, that's not one visitor; that's however many people are in the car, two and a half people or whatever, on average. Through those sorts of statistics we're able to calculate total visitation. We're constantly revising how we do that to make sure that we're capturing all of the visitor flows, that we're not double-counting visitors, that we're getting an appropriate count. It is the most advanced visitation recording system in any federal government agency. These are important inputs into budget

allocations and they're also very important inputs into calculating regional economic impacts through the Money Generation Model. It's probably the most used product that this division produces.

Tell us about the Money Generation Model (MGM).

BP: The idea behind this program is to quantify how many sales are generated in the [national park] economy, so think of how many dollars are flowing through cash registers and how many jobs are supported by visitors coming into the local area to visit those parks, as well as the local economic inputs generated by park payroll. It's a relatively simple spreadsheet application and it's conservative in its estimates. But it does provide reliable dollar values that indicate how much sales and job activity is going on. These dollars that are spent by visitors, by park employees, and in purchases by the park itself reverberate through the economy in kind of a domino effect of spending. And that just illustrates how visitation within a local area is very important to supporting local businesses, to supporting the local tax base, which supports school districts, road infrastructure, and other necessary and important structures. [Recently we've been in a] recession and everyone is thinking about their jobs, so it's very important information to get out there. The MGM has gone through some improvements over the years and now we're into MGM II. We're

looking at ways of making it a little bit more user-friendly and accessible to the public. In fact, in "Flat Hat Chat 10" [Jon Jarvis's regular addresses to NPS staff], the director recently talked about how superintendents should look up the values that are generated by the MGM for their own particular parks so they can talk to local businessmen and chambers of commerce about the economic value of parks.

Is the MGM something a park implements itself?

BP: No. We have a cooperative agreement with Michigan State University that quantifies these kinds of impacts for all of the National Park System, and all of the states and territories system-wide. We produce a report every year, which details how many jobs and how many cash register sales are generated by park visitation.

Are there any aggregated figures on economic impacts of the National Park System as a whole?

BP: In 2006 the National Parks Conservation Association had a consulting firm try to produce the comprehensive value of the National Park System to the American public. And you know, they did a pretty good job. There are some interesting figures, and one of them is that parks in general generate \$4 in net economic value for each \$1 of tax invested. These net economic values—the value of a scenic view to a visitor, the value of taking a hike in a park,

a fishing opportunity—totaled \$10.1 billion, and I suspect that's a conservative estimate. For local economic activity that study indicated \$13.3 billion in private-sector spending was supported by parks, generating or supporting 267,000 jobs. While I think they're important figures, they don't describe the full nonmarket or market value of parks associated with trade-offs. They don't come anywhere close to talking about some of these intangibles.

Why was the Social Science Program elevated to division status?

BP: A couple of reasons. One was to bring the Social Science Program into a greater area of visibility, certainly within the Natural Resource Program Center [NRPC]. It did not used to be within the NRPC; it was directly supervised by the associate director for Natural Resource Stewardship and Science. And so this brings it into and makes it more accessible to the NRPC, and makes the other divisions more accessible to the Social Science Division. It also increases the consistency of operations within NRPC for the budget, personnel, activities, and that sort of thing. But perhaps more importantly, it takes what are inherently governmental actions, namely information collection and review under the Paperwork Reduction Act, and brings that under federal management as opposed to nonfederal management. [In the past this function had been

Table 1. Social Science Division

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managed by the visiting chief social scientist under a cooperative agreement with Texas A&M University]. So, something as basic and important as reporting on GPRA goals to Congress is now federally managed within the National Park Service, whereas before it was not.

Your background is that of a nonmarket resource economist. How does economics help us do a better job managing parks and protecting their values?

BP: It all comes down to what vote, if you will, natural resources have in public management decisions. If you take a look at an EIS, say from the 1970s, you're not going to find natural resources represented in a value sense in those EISes. In a cost-benefit analysis, which some EISes have and certainly all regulatory actions have, natural resources are going to come up short. If they have no benefit, no dollar amount to represent their benefit, then they don't receive a vote. One of the important applications of economics is to be able to quantify that vote for natural resources.

Give us an example.

BP: I came on board with the National Park Service in 1998 to monetize natural resource damage claims. The one we're thinking of these days is *Deep-water Horizon*. Fortunately, at least to date, we haven't seen the massive amounts of damage that might have been anticipated. Nevertheless, when injury does occur we want to compensate the public for it. The underlying idea here is, if you have a beach that is managed for public use and you're prevented from using it either completely or fully because of some exogenous impact like an oil spill, then that's a public loss because those resources are specifically set aside and managed so that the public may use them. Compensation promotes the restoration of those kinds of resources so that they may be available in greater amounts or in better quality for the future.

How do you determine the monetary value of a park resource?

BP: There's a well-established economics literature that has been around since the 1960s that monetizes these economic values. One technique that's

understood by a lot of people is what's called travel cost analysis. While we don't charge visitors for individual park vistas, or each hiking trail they take, or each fishing opportunity they avail themselves of, they do spend money to get to the parks. They pay for gas, hotels, restaurants, and other related expenditures. And so they do demonstrate that they're willing to give something for that opportunity. If we look at the costs they pay for those ancillary goods and services as a price to get at these opportunities, then that gives economists a model to be able to quantify the value. The simple summation of those travel costs is not the value that we calculate but it's a key input into putting a value on those behaviors.

Another technique is simply asking people, through a number of methods, what their values are for certain resources or activities. This technique is what we call stated preference methods. This type of valuation often presents respondents with alternative resource management scenarios and asks them to choose their preferred scenario. And from those choices we're able to elicit those kinds of trade-offs from statistical analysis.

What about putting a value on preserving national parks as a legacy whether or not we ever go there ourselves?

BP: Absolutely. I think there's a correspondence to our mission in the National Park Service: preserving resources and allowing for their enjoyment by current and future visitors. The types of values associated with a day at the beach, hiking, or enjoying scenic views are current visitor uses, and we can put a dollar amount on that experience. But what about preserving those resources for the future? We can put a value on that as well or at least approach that value. Economists call that passive use value. It also goes by other names, such as "nonuse value" and "existence value." But it's the value that people would be willing to pay to know that a resource exists in a given condition and is preserved for the future. Certainly paying taxes is one expression of that; contributing to ecological or environmental causes is another expression of that. We have techniques that are along the state-of-preference idea that I mentioned earlier that actually get at those numbers. An example of this was done for the

Glen Canyon Dam reoperation EIS in the mid-1990s.

Related to water releases through Grand Canyon and on to Lake Mead?

BP: Yes. Before that EIS, the Bureau of Reclamation had been managing water releases to maximize power generation. What happens is, there are peak demand times at which electricity can be sold for higher prices than at low-peak demands. That's during the middle of the day when people flip on the air conditioners during the summer, or perhaps at night when people turn up the heat during winter. They would time the release to maximize flows during those peak demand times. That had direct impacts on the canyon below because it would alter the way in which natural beaches had been formed; it would cause erosion in natural areas, affecting cultural resources and camping opportunities for visitors. Certainly it would affect fishing opportunities for anglers.

The National Park Service was interested in representing those impacts and not just the impacts on hydropower revenues. So a passive use study was done. It was a nationwide study, which quantified what people thought while sitting in their homes about the value of the Grand Canyon being preserved in a favorable condition. As it turned out, it came out to be much higher in value than the corresponding loss of hydropower revenue.

That study was instrumental in the Secretary of the Interior's decision for how to operate the dam, and it resulted in a modified release schedule that moderated those big flows at high-peak electricity demand times. It also included some experimental flood releases to simulate springtime releases of snowmelt to be able to generate more natural conditions down in the canyon. This is an example where through economics we were able to give those impacts and those resources a vote in that decision. I think that's very exciting.

Are there times when monetizing resource values can be counterproductive?

BP: Some values, in my opinion, have no trade-off, and those include perhaps esoteric concepts associated with spirituality, with democracy, with liberty, and a lot of those things that we tie to the national park idea. And those are very important. Economics does not purport to quantify those things for which humans have no trade-offs. We don't talk about, in meaningful ways, the value of the earth, because there is no trade-off for us right now, the earth being a functional, viable biosphere. But what economics does provide is a framework in which we can plug in different factors that should be influential in a decision. Some of those factors may be impacts on the profitability of local businesses, or how much enjoyment visitors receive from their park visit. This framework identifies what

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we know and don't know about these kinds of decisions and how much of a vote natural resources receive in a decision. The purpose of economics is not necessarily to put a number in every cell of every spreadsheet but rather to help a decision maker identify the value of the information that they have before making a decision.

We've heard a lot about ecosystem services lately and how that kind of knowledge can be valuable to park managers. Is economics relevant to understanding the value of ecological services provided by national parks?

BP: Yes, it is. The recent way of thinking about ecosystems and people is to divide these concepts into three broad categories. The first is what we call structure or resources: the number of trees in a forest stand, the quality and quantity of water coursing through a riverway, the geology of a certain park area. We can count these things and inventory them. The next concept

is function, and these are interactions of those resources in and among themselves. These are things that can occur whether we like them or not. Take photosynthesis. I could not begin to trace out the chemical interactions that result in transforming sunlight into usable energy for the tree, but it happens. And because it happens, the tree grows and is green, so that is a function. Now, the third concept in this triad is ecosystem services, and those specifically are the beneficial outcomes of either the resources or their functions.

What about replenishment of oxygen to the environment or habitat for wildlife?

BP: Those are functions that occur among resources. But there are certain things about them that I as a human being may appreciate. I appreciate that a viable upland forest reduces downstream flooding of my house and my block. I appreciate that forests sequester carbon, which may have some beneficial impact on the climate change situation.

It helps economists in their analysis of these matters to split these things out, to split function from services.

Does knowledge of ecosystem services help people appreciate the full value of national parks?

BP: It does, and I think it makes our sales job, if you will, for promoting the upkeep of these resources to the public easier. That a forest ecosystem is healthy and functioning, that it has a viable native bird population, that it is performing its watershed functions of flood reduction and contaminant filtering, are functions that I may appreciate in a passive use sense. In other words, not only are they functions within the ecosystem, but they provide a service to me not simply because I have an appreciation for a viable forest stand continuing into the future, but because I also want my kids to play in the forest and understand that's where these interactions occur between wildlife populations. So a function and a service sometimes may be closely related, but that kind of value can be incorporated in a cost-benefit analysis for an important decision and it gives a vote to the continuing existence of those ecosystems.

We've talked a lot about economics, and yet the new division is the Social Science Division. Does the division do research or publish?

BP: We do have a number of operational projects that are

ongoing. Though I don't do many damage assessments now, I do provide economic support for them. A recent example is the *Cosco Busan* oil spill at Golden Gate National Recreation Area in California, which generated \$20 million of recovery from lost beach use from that oil spill. I also do regulatory economic analyses. I've been associated with the Yellowstone winter use [study] since the year 2000, and it continues. Other projects are what's called "compensatory mitigation scaling" under the Clean Water Act. Section 404 of the act requires a permit from the U.S. Army Corps of Engineers if a developer is going to affect waters of the United States. The National Park Service is not in the business of filling wetlands, but we do have other needs that have some of those effects. For example, right now in Kalaupapa National Historical Park, Hawaii, there is a need to repair their deteriorated dock, which is how they bring in necessary supplies. Just by performing the minimal maintenance work that they do, they will be affecting some coral colonies. I'm helping them calculate how much mitigation they need to offset that, which is a requirement for them to be able to get a permit to do that work.

Is that difficult to quantify?

BP: That type of analysis is relatively simple to conduct. An approach that we use—habitat equivalency analysis—has been used extensively in damage assessment, as in the *Cosco*

Busan habitat equivalency analysis. Basically it's a technique that takes existing data and relates them to resources and how they function, examining how long they will be impaired and how long it will take to get other resources functional to replace the ones lost. It's a trade-off analysis, like what economics is, but is relatively straightforward.

Other than the programs you've outlined here, does your division play a role in facilitating social science research in parks?

BP: Our division has very few federal employees and does the vast majority of its work through cooperative agreements with the CESU networks. For example, about a half year ago the USS *Arizona* Memorial in Hawaii opened its new visitor center, which serves a variety of activities in the area, not all operated by the National Park Service: excursions to the USS *Arizona*, the USS *Oklahoma*, an old World War II submarine called the USS *Bowfin*, and the USS *Missouri*, which is famous for being the ship on which the surrender agreement with Japan was signed. And so there's a combination of historical sites to see in Pearl Harbor that go beyond the USS *Arizona*. These new options and this new visitor center have now enabled visitors to schedule all of these different attractions in a much more efficient way than had been possible before. It's always beneficial to cooperate with the partners and generate

mutually increased benefits. And so the superintendent wanted an analysis of how people's flow through this new visitor center to these other venues is occurring, how it has changed, and how different demographics use the visitor center. I put the superintendent, Paul DePrey, in contact with one of our cooperators, the Park Studies Unit at the University of Idaho, which runs our VSP and VSC studies. They have now designed a study and are working on funding it and getting it approved and actually will be implementing it this coming year.

How should a park go about requesting your assistance?

BP: They can just give me a call or send me an e-mail [see table 1]. I try to find out what their goals are and then I'll put them in contact with someone who can help. We have a number of cooperators that we have used—certainly the University of Idaho is geared up, but there are others: the University of Wyoming, Texas A&M University, and many others that can be brought to bear. It's a very straightforward matter of using the CESU network to get that information.

What is the process for a park to plan for a visitor survey?

BP: In the division we have the expedited review program for what's called Information Collection Review of Surveys. This is for social science

investigations that necessarily or generally involve surveying people, which require review and approval by the Office of Management and Budget [OMB] under the Paperwork Reduction Act. Our program helps speed up that process for some surveys. There are certain thresholds that determine if review and approval are necessary. First, we don't need approval unless we're asking 10 or more people a systematic set of questions. So, an interpretive ranger just walking up to a group of visitors and chatting with them and exchanging ideas is what I would refer to as informal discussion and does not require OMB approval. For parks to collect systematized information from 10 or more people requires that we have a clear understanding of the goals they want to satisfy. That's very important, because another purpose of the Paperwork Reduction Act is to make sure that the information we collect is relevant and useful and not just academic. They also need a design for how they're going to collect this information, not only the questions to get at those goals, but also to make sure it's statistically valid and that we can expand the information we collect to the population we're trying to describe.

Jim Gramann is the visiting chief social scientist for the National Park Service. What are some of his interests?

BP: Jim is the second visiting chief social scientist, following Gary Machlis, now the

director's science advisor, who first held this position. Since 2000 or 2001 Jim has been very involved in the information collection review process with OMB, but now is focusing more on some of our higher-end research projects, for example the Comprehensive Survey of the American Public. The first one of these was released in 2001 and we are looking to release a second one a decade later in 2011. This is a nationwide public survey effort—not just of visitors within parks. The term “comprehensive” says it all. Certainly, we're interested in knowing how visitors think about and use the parks, but we're also interested in how nonvisitors think about our parks and what they may perceive about impediments to their visiting, including their attitudes toward parks and the existence of parks.

Reaching nonvisitors is a big concern of the National Park Service these days.

BP: Young people are not visiting parks in the numbers they were in the past. People perceive different needs that we don't offer in parks. For example, social networking, wi-fi in the campgrounds, getting notices about the availability of interpretive programs by tweets. The world has moved on and we need to understand how we can accommodate those changes. The Comprehensive Survey of the American Public is one of those high-end research projects that will help us address these needs. It's a multiyear effort

and that's what Jim is working on. He is also finalizing research that we have done from secondary data to analyze the impacts of the Ken Burns TV series that aired in September 2009 on the national parks. These are examples of a couple of different research products that are not our everyday sort of studies that we do, but are more comprehensive and very specialized.

The whole issue of nonvisitors is my single research goal for the coming two fiscal years and will involve a multiphased project with significant funding to look at the nonvisiting public. We want to understand what their needs are and what their perceived hurdles are to visiting parks, so that we can make parks more relevant to people. This is certainly one of the director's four main points—relevancy—and so I'm putting significant effort in.

Much of what you're talking about could be integrated into the communication efforts of the National Park Service, not just for natural resources but more generally.

BP: Absolutely. One of the specialized research topics that Jim Gramman has been spending some time on is the health benefits that parks provide. We all struggle to make time in our busy days for an adequate amount of exercise, and this is one opportunity, a rather enjoyable opportunity, for those living around parks or for those vacationing in parks to be able to take advantage of.

It seems like an exciting time for social sciences and for managers to have an organization to support social sciences that is on better footing within the National Park Service. I'm sure everyone wishes you the best of luck in the job and in building divisional capacity.

BP: It is really exciting because what I would like to do is not only strengthen the existing programs that we have but also to expand the role of social sciences. For example, we talked about economics, and economics has heretofore had very specific applications that may not have been so widely understood as far as the benefits it may provide park managers. I'd like to be able to expand that service more formally to all of the parks.