



Creating Stewardship through Discovery

Visitor Participation in the Biscayne National Park / National Geographic BioBlitz

Natural Resource Report NPS/BISC/NRR—2016/1268



ON THE COVER

Images of Biscayne National Park

Photograph by: Biscayne National Park Photo Gallery: <http://www.nps.gov/bisc/photosmultimedia/photogallery.htm>

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Gerard T. Kyle
Jee In Yoon
Carena J. van Riper
Jinhee Jun

Human Dimensions of Natural Resources Laboratory
Department of Recreation, Park & Tourism Sciences
Texas A&M University
600 John Kimbrough Blvd
College Station, Texas, 77845-2261

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Data in this report were collected and analyzed using methods based on established, peer-reviewed protocols and were analyzed and interpreted within the guidelines of the protocols.

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Executive Summary

- This study evaluated participants' experiences with a BioBlitz held at Biscayne National Park (BISC), which was co-sponsored by the National Park Service (NPS) and National Geographic Society (NGS). Information about why the program was important and benefits accrued from this event were gathered to provide management agencies with a greater understanding of their constituencies. Social outcomes related to the BioBlitz aim to enhance interest in science and stewardship within protected areas.
- Respondents at BISC reported moderate visitation histories with the park but not an extensive history with the BioBlitz program. Many visitors experienced the BioBlitz through an organized group and the majority knew others at the event. To engage with these participants in the future, managers should note that the most important source of information was "friends, relatives and/or word of mouth."
- Respondents were involved in the BioBlitz for a variety of reasons. The most important factor that encouraged involvement was their attraction to and the appeal of the program. The least important facet of participants' involvement was the idea of centrality, in that most did not organize their life around nor feel that the program was central to their lives.
- The impact of the BioBlitz program manifested in different ways, in that the impact of participation on understandings of science and nature allowed visitors to experience the park in new ways and provided opportunities to learn from professionals. Citizen science programs such as the BioBlitz will likely yield similar outcomes to keep people engaged with and interested in the protected area system.
- Respondents considered themselves to be natural resource stewards, though most felt their stewardship was nature rather than human-oriented. The majority was modestly willing but did not feel responsible as individuals to engage in protection behavior.
- The most important reason for engaging in the program was centered on individuals' contributions to society. Opportunities to learn from others with more experience also compelled participants to engage in this event.
- Respondents felt connected to places within the park, in that approximately one third reported having favorite places within the park. The levels of attachment formed between people and places were mostly driven by affective / emotional bonds, individual identities, and opportunities made available to associate with other people.
- Overall, there were slightly more males than females. Most respondents were just over 45 years of age, the majority was well-educated (at least a four-year college degree), and over half reported earning more than \$75,000 per year. Also, at least half of the respondents were employed outside the home and the majority of those individuals were employed full time. The majority was not Hispanic or Latino and the vast majority was White.
- The diversity of experiences, attitudes, and behaviors reported by survey respondents suggest that a "one size fits all" management approach may exclude important segments of the survey population. Research results that shed light on the varied elements that comprise visitor experiences can be used as a guide to most effectively respond to the preferences reported by BioBlitz participants.

Acknowledgments

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Introduction

The national park system contains some of the most biologically rich ecosystems in the United States. Although vertebrates and vascular plants are often well documented, biodiversity of national parks remains relatively unknown considering the vast number of undocumented invertebrates, non-vascular plants, fungi, and bacteria remaining to be discovered. Management and protection is hindered by few surveys for these lesser-known taxa. The result is that invasive species from these groups can go undetected, and distribution and abundance of rare, threatened and endangered species remain unknown. Greater knowledge of extant species from a full taxonomic array is crucial in order to improve a park's ability to protect its natural resources. All-taxa biodiversity inventories (ATBIs) and BioBlitzes help to assess and document the variety of species within a given area.

National parks also have a large number and rich diversity of visitors; they come to experience, learn about, discover, and explore a park's natural and cultural resources. Visitors generally are limited in their ability to learn about and discover the invertebrate and other unique lifeforms in parks due to the lack of opportunities and expertise. In addition to increasing NPS knowledge of the diversity of life found in parks, ATBIs and BioBlitzes provide safe learning environments for visitors to participate in a new non-traditional park experience. Engaging citizen scientists in supervised biological surveys increases visitor investment and can lead to greater interest in park advocacy and preserving park resources. Utilizing citizen scientists to help document the biodiversity of a park that may harbor tens of thousands of species may seem daunting, but this task is feasible using an ATBI approach that includes BioBlitzes.

The NPS and NGS have been co-sponsoring a large-scale BioBlitz in a park near a large urban area annually since 2006. These BioBlitzes are compressed 24-hour events where teams of volunteer scientists, families, students, teachers, and other community members work together to find and identify as many species of plants, animals, microbes, fungi, and other organisms as possible. There is also a public component to these BioBlitzes, with goals of getting the public interested in biodiversity, science, and park stewardship. NPS-NGS BioBlitzes will be conducted in a different national park each year during the decade leading up to the NPS centennial in 2016. The purpose of this study was to learn more about the type of people who participate in BioBlitzes and examine the social benefits of the NPS-NGS BioBlitz program.

Specifically, the following elements of the BioBlitz experience were examined:

- Participation in the BioBlitz and NPS program
- Experiences with the park that hosted the BioBlitz program
- Commitment to and involvement in BioBlitzes
- Motives for engaging in BioBlitz programs
- Impacts and implications that emerge from participation
- Feelings about the natural environment
- Attachment to places within the protected area
- Stewardship and attitudes toward resource protection
- Socio-demographic characteristics

Methods

Data Collection

Data were collected from volunteers attending the BISC BioBlitz over a 28-hour period beginning 10am Friday April 30th through noon Saturday May 1st. This sampling period covered the duration of the event. Five trained researchers conducted onsite surveys; three were stationed at the Homestead pick-up and two at the visitor center shuttle drop-off. Every second visitor was approached to participate in the survey. For groups greater than one, adults (≥ 18 years of age) with the most recent birthday were asked to participate. The survey took approximately three minutes to complete.



Figure 1. Texas A&M graduate student surveys visitors at National Park Service BioBlitz.

At the conclusion of the on-site survey, respondents were requested to provide their email or postal address to participate in a follow-up survey about their BISC BioBlitz experience following Dillman, Smyth and Christian's (2008) protocols for the administration of mixed mode surveys. For the web-based survey, respondents were sent an email one week after the BioBlitz inviting their participation and directing them to a website to complete the survey. At the completion of the survey, respondents were sent an automated thank you note for the participation and assistance. Over the following three weeks, non-respondents were sent additional email reminders (one each week, $n=3$) encouraging their participation and feedback.

For the mailback surveys, two weeks following the event, respondents were sent hard copies of the survey. The survey packet contained: (a) a cover letter thanking them for their participation and a brief description of the survey; (b) a survey questionnaire; and (c) a stamped, self-addressed return envelope. One week following the initial mailing, a reminder, thank you post card was sent to non-respondents. Two weeks following the initial mailing, another survey packet was sent to non-respondents. A final survey packet was sent to non-respondents one month following the initial mailing.

To reduce respondent burden, two versions of the web-based and mailback surveys were constructed. Both versions took approximately 25 minutes to complete. For large scales containing a battery of items (e.g., motivations, enduring involvement), the scales were randomly split across the two instruments. The survey instruments were divided into the following sections:

- Questions about (a) respondents' previous ATBI/BioBlitz involvement and other NPS volunteer activities, (b) their motivations for participating in the BISC BioBlitz, and (c) the extent of their commitment to NPS ATBI/BioBlitz programs;
- Questions about respondents' attachment to BISC;

- Questions about respondents' sense of stewardship toward BISC and compulsion to protect the Park; and
- Respondents' socio-demographic information.

Data Analysis

Completed and usable survey data were coded and entered into a database for analysis using Statistical Package for the Social Sciences (SPSS) Version 20.0. For various response categories, frequency distributions and valid percentages (i.e., percentages excluding missing values) were estimated. Descriptive statistics were also calculated to illustrate mean values (i.e., averages) and standard deviations. Figures were created for selected variables to guide interpretation of the study findings.

Results

SECTION A: Response Rate

The on-site survey protocols yielded 196 completed surveys with 13 refusals (93.7% response rate). One hundred and sixty three (83.2% participation rate) respondents provided additional contact details; 131 email addresses and 32 names/postal addresses. Nine emails and three postal addresses were returned owing to bad addresses. There were 20 completed hard copies of the survey returned by mail (68.9% response rate) and 80 completed web-based surveys (65.0% response rate). In total, 100 completed questionnaires were collected (66.2% response rate).

SECTION B: Past Involvement

As displayed in Table 1a, most respondents (93%) were first-time participants in the BISC BioBlitz. The respondents who had previously participated in BioBlitz/ATBI programs reported, on average, that they had been involved with the program twice in past year (including BISC) and had spent 18.8 hours volunteering in various BioBlitz activities (Table 1b). Fewer than 20 percent of respondents (17%) indicated that they had participated in other NPS programs at the park.

Table 1a. Number and percent of respondents that have participated in Bioblitz and park activities.

Participation Question	Response	N (%)
Previous participation in a BioBlitz?	No	93 (93.0%)
	Yes	7 (7.0%)
Other BioBlitz/ATBI programs participated in over the past three years?	<i>Indiana Dunes National Lakeshore</i>	6 (60.0%)
	<i>Santa Monica Mountains National Recreation Area</i>	4 (40.0%)
Participation in other NPS Programs at Biscayne National Park?	No	83 (83.0%)
	Yes ¹	17 (17.0%)

¹ List of other NPS programs at BISC: Baynanza clean up, Celebration of park formation, Coral nursery program, Family fun fest, Field trips, Fish count with reef, Habitat restoration, MOCC, Public outreach, Service to America –GS, Scouting activity, Special events for kids, Spies count on key Biscayne, Visitor center, Visiting park visitor center grounds, Ranger briefings, Snorkeling, Elliott key camp for kids, Science consultation.

Table 1b. Mean and standard deviation of respondents that have participated in Bioblitz and park activities.

Participation Question	Response
Number BioBlitz programs attended over past 12 months?	<i>Mean=2.0 SD=1.3</i>
Hours of participation per month in BioBlitz activities?	<i>Mean=18.8 SD=34.2</i>
Hours of participation per month in other NPS programs at Biscayne National Park?	<i>Mean=5.5 SD=9.7</i>

Table 2 below provides a summary of information sources from which respondents first learned about the BISC BioBlitz program. The most cited information source was friends/relatives/word of mouth (31.4%), followed by other organization they belong to (16.5%), BISC homepage (8.3%), other internet websites (5.8%), and during previous visits to the park (5.8%).

Table 2. Information sources about the BioBlitz program at Biscayne National Park.

Information Source	N (%)
Friends/relatives/word of mouth	38 (31.4%)
Other organization(s) I belong to ²	20 (16.5%)
Internet – Biscayne NP homepage	10 (8.3%)
Internet – others ¹	7 (5.8%)
Previous visit to Biscayne NP	7 (5.8%)
Previous BioBlitz/ATBI program participation	4 (3.3%)
Videos/Television/Radio	1 (0.8%)
Newspaper/Magazine article	1 (0.8%)
Convention/Visitors' Bureau	1 (0.8%)
Other ³	32 (26.4%)
Chamber of Commerce	0%
Dive shops	0%
Information at marina	0%
Tackle/Bait shop	0%

¹ List of other Internet sources: Miami Blue Butterfly Club- North American Butterfly Association NANB, Natgeo.com.

²List of other organizations provided by respondents: 305 consortium, Boy Scouts, EEP Miami, eepmiami.org, Encyclopedia of Life, Fairchild Tropical Botanical Garden, Miami Blue Chapter NABA, Fairchild tropical botanical gardens, FIU marine biology club, Island, Miami Metrozoo, National geographic, REEF, Royal Caribbean, Sierra Club, South Florida Parks Trust.

³List of other sources: NGS BB team, Accident, FIU, Dolphin booth care, Email, Invited by BNP, Just showed up, Kids ecology Corps., My professor/ Teacher/Supervisor, National Geographic, Nature Conservancy, NGS association, Park personnel, Presenter, Reef scientist, Royal Caribbean Cruise Lines/Event, South Florida fair, Starbucks, Wife, Education Department at Fairchild Tropical Botanic Garden, South Florida/Caribbean Network.

As shown in Table 3, fewer than half of respondents (44.4%) indicated that they participated in the BISC BioBlitz as a part of an organization. Most (78.8%) came with friends, family or colleagues.

Table 3. Organizational affiliations among respondents at Biscayne National Park.

Affiliation Question	Response	N (%)
Participated in the BioBlitz as a part of an organization?	No	55 (55.6)
	Yes	44 (44.4)
Participated in the BioBlitz with friends, family or colleagues?	No	21 (21.2)
	Yes	78 (78.8)

¹ List of organizations: Friend of NGS, 305 Consortium, American Association for the Advancement of Science and National Geographic, Biscayne Bay Waterkeeper (newly formed), Boy Scouts of America, Carrollton High School, Encyclopedia of life, Everglades Association, Fairchild Tropical Botanic Garden, FIU macro algae team, FLA Natural History Museum, Florida International University- Marine Biology Club Give Day, Great Lakes Naval Memorial and Museum, Island Dolphin Care, John S. Ano James L. Knight Foundation, Kids ecology corps, Marine Resources Development Foundation, Miami Blue Chapter NABA, Miami Metrozoo, Morrison Family Foundation, National Geographic, National park service-everglades NP, NGS, North American Butterfly Assoc, Nova Southeastern University, Oceanographic Center, Palmer Trinity School, Palmette Bay, FL/teacher/Chaperone/9th grade volunteer, RCCL, REEF, Royal Caribbean Cruise Lines, S Miami Middle, Smithsonian Institution South Florida / Caribbean Network (NPS), University of Miami, US Geological Survey, USGS, Wildlife Rescue of Dade County

Table 4 below presents data on respondents' motive for a participation in the BISC BioBlitz. Respondents considered the following as most important to their participation (with a mean of 40 or higher):

- Act in a responsible manner towards the Earth ($M=4.1$)
- I like to support the park ($M=4.0$)

Table 4. Motivations for involvement in the BioBlitz program at Biscayne National Park.

Motivation	Mean ¹	SD
Act in a responsible manner towards the Earth	4.1	1.0
I like to support the park	4.0	1.0
Be of benefit to society or the community	3.9	1.1
Feel I can play a role in the conservation of nature	3.9	1.1
Learn about different species of flora and fauna	3.9	1.2
Make life better for the coming generation	3.9	1.1
Seek out and enjoy the wonders of nature	3.9	1.1
Cause good things to happen	3.8	1.1
Feel I am doing something useful	3.8	1.2
Be part of something profound	3.7	1.2
I find this aspect of science fascinating	3.7	1.2

¹ Measured along a Likert-type scale where 1= "Not important" through 5= "Extremely important"

Table 4 (continued). Motivations for involvement in the BioBlitz program at Biscayne National Park.

Motivation	Mean ¹	SD
Involve myself in something meaningful	3.7	1.2
Help me to be optimistic about nature's future	3.6	1.1
Learn how nature works	3.6	1.4
Opportunity to try new things	3.6	1.1
Meet friendly and interesting people	3.5	1.1
Have a sense of accomplishment	3.4	1.3
Have sense that things are getting done	3.4	1.2
Have shared goals	3.3	1.3
Learn about the practice of science	3.3	1.3
Refine my understanding of science	3.3	1.2
Accomplish something in a group	3.1	1.4
Apply my scientific skills	3.1	1.4
Work with different age groups	3.0	1.5
Be in a quiet peaceful spot	2.7	1.3
Help me with my personal growth	2.7	1.4
Help me to stay healthy	2.6	1.3
Restore or contribute to my spirituality	2.4	1.2
Get away from it all	2.3	1.2
Develop my physical fitness	2.2	1.1
Just let my mind wander	2.1	1.3
Help build my self-confidence	2.0	1.2
Be alone with my thoughts	1.9	1.1

¹ Measured along a Likert-type scale where 1= "Not important" through 5= "Extremely important"

Table 5 presents the degree to which respondents were committed to the NPS (including BISC) BioBlitz/ATBI program. Respondents considered the following most important with mean greater than or equal to 3.5:

- Participating in the BioBlitz/ATBI program is exciting ($M=4.1$)
- My involvement in the BioBlitz/ATBI program is important to me ($M=3.8$)
- I enjoy discussing the BioBlitz/ATBI program with my friends ($M=3.6$)
- I identify with the people associated with BioBlitz/ATBI programs ($M=3.5$)
- My involvement with the BioBlitz/ATBI program allows me to be myself ($M=3.4$)
- Participating in the BioBlitz/ATBI program says a lot about who I am ($M=3.4$)

Table 5. Involvement in the BioBlitz program at Biscayne National Park.

Involvement	Mean¹	SD
Participating in the BioBlitz/ATBI program is exciting	4.1	0.8
My involvement in the BioBlitz/ATBI program is important to me	3.8	0.8
I enjoy discussing the BioBlitz/ATBI program with my friends	3.6	0.9
I identify with the people associated with BioBlitz/ATBI programs	3.5	0.9
My involvement with the BioBlitz/ATBI program allows me to be myself	3.4	0.9
Participating in the BioBlitz/ATBI program says a lot about who I am	3.4	1.0
I am able to identify a large number of plants and animals when I volunteer in a BioBlitz/ATBI program	3.3	1.1
Participating in a BioBlitz/ATBI program provides me with an opportunity to be with friends	3.3	0.9
Participating in the BioBlitz/ATBI program is one of the most enjoyable things I do	3.3	1.0
Participating in the BioBlitz/ATBI program is one of the most satisfying things I do	3.3	1.0
I like to be seen participating in a BioBlitz/ATBI program	3.2	1.1
I like to think of myself as a serious BioBlitz/ATBI participant	3.1	1.1
You can tell a lot about a person by their involvement in BioBlitz/ATBI programs	3.1	1.0
I coordinate my schedule around BioBlitz/ATBI activities	3.0	1.1
My involvement in the BioBlitz/ATBI program takes precedence over other recreation and leisure pursuits	2.9	1.1
Special people in my life are associated with BioBlitz/ATBI programs	2.8	1.1
I consider myself to be somewhat of a BioBlitz/ATBI expert	2.3	1.1
I find a lot of my life is organized around the BioBlitz/ATBI program	2.2	0.9
The BioBlitz/ATBI program occupies a central role in my life	2.2	0.9
Most of my friends are in some way connected with a BioBlitz/ATBI program	2.1	0.9

¹ Measured along a Likert-type scale where 1= “Strongly Agree” through 5= “Strongly Disagree”

As displayed Table 6, respondents indicated that their participation in the BISC BioBlitz had impacted their thoughts about science and nature (all means were 3.8 or higher). Also, respondents indicated that their participation in the BioBlitz modestly impacted their knowledge of the Biscayne Bay ecosystem.

Table 6. Impact of participation in the Biscayne BioBlitz on understanding of science and nature.

Impact of Participation	Mean	SD
The Biscayne program has allowed me to experience the park in a new way	4.2	0.8
The Biscayne program has provided me with a unique opportunity to learn from professionals	4.1	0.9
The Biscayne program has provided me with an opportunity to learn about science	4.0	0.9
The Biscayne program has taught me a lot about a variety of species of plants and animals living in the park	3.8	0.9
Knowledge of the Biscayne Bay ecosystem as a result of participating in the Biscayne BioBlitz ²	4.2	1.1

¹ Note: Measured along a Likert-type scale where 1= “Strongly Disagree” through 5= “Strongly Agree”

²Note: measured along a scale where 1= “beginner” through 10= “expert”

SECTION C: Experience with Biscayne National Park

Respondents were requested to indicate what year they first visited the BISC. The sample was comprised of individuals with a broad range of park visit histories (range from 1971 to 2010), with a reported average of ten years experience visiting the park (Table 7). The average number of park visits reported for the previous 12 months was approximately three ($M=3.1$). One-quarter of the respondents (25%) indicated that they had a favorite location within BISC.

Table 7. Respondents reported experiences with Biscayne National Park.

Experience Question	Response	N (%)
Year of first visit?	<i>Before 1980</i>	9 (10.2%)
	<i>1980 – 1985</i>	8 (9.1%)
	<i>1986 – 1990</i>	4 (4.5%)
	<i>1991 – 1995</i>	7 (8.0%)
	<i>1996 – 2000</i>	5 (5.7%)
	<i>2001 – 2005</i>	11 (12.5%)
	<i>2006 – 2009</i>	11 (12.5%)
	<i>2010</i>	33 (37.5%)
Favorite place?	<i>No</i>	72 (75.0%)
	<i>Yes¹</i>	24 (25.0%)

¹ List of a favorite places: Elliott Key (cited 12 times), Boca Chita (cited twice), Arsnickers keys and other flats, Convoy Point, Billy's Point, Elkhorn Reef, Old Rhoades Key, Shark Valley, Southern bay, Stilville, The bay and card immediately north of the visitor's center, the spit of land projecture into the Bay and the shoreline all around

Table 8 below illustrates the extent of respondents' attachment to their favorite location within BISC. Overall, respondents were only modestly attached to the park with most means for the individual

items ranging from 1.5 to 2.8; the exception being “I really enjoy Biscayne National Park” ($M=4.1$). Respondents most strongly agreed with the following statements ($M \geq 2.7$):

Table 8. Reported levels of attachment to places in Biscayne National Park.

Place Attachment	Mean ¹	SD
I really enjoy Biscayne National Park	4.1	0.5
Biscayne National Park means a lot to me	2.8	1.1
Visiting Biscayne National Park allows me to release built-up tension	2.7	0.9
The time spent at Biscayne National Park allows me to bond with my family and friends	2.7	1.0
I feel a strong sense of belonging to Biscayne National Park	2.6	0.9
I can't imagine a better place for what I like to do than Biscayne National Park	2.5	0.8
I feel Biscayne National Park is a part of me	2.5	0.9
I am happiest when I get to visit Biscayne National Park	2.5	0.9
Visiting Biscayne National Park allows me to spend time with my family and friends	2.4	1.4
Biscayne NP is the best place for the recreation activities that I enjoy	2.2	1.3
I have a lot of fond memories of past experiences with family and friends in Biscayne National Park	2.2	1.4
I identify with Biscayne National Park	2.2	1.3
Visiting Biscayne National Park says a lot about who I am	2.2	1.2
I have a strong emotional bond to Biscayne National Park	2.1	1.3
Compared to Biscayne National Park, there are few satisfactory alternatives	2.0	1.2
I associate special people in my life with Biscayne National Park	2.0	1.2
I feel that my identity is reflected in Biscayne National Park	2.0	1.2
I feel that a lot of other places could substitute for Biscayne National Park	1.5	0.8

¹ Measured along a Likert-type scale where 1= “Strongly Disagree” through 5= “Strongly Agree”

SECTION D: Feelings about the Natural Environment

Presented in Table 9 are data illustrating how respondents defined “natural resource stewardship” in relation to BISC. Respondents considered the following as most close to their meaning of stewardship with mean of 4.3 or higher:

- Protecting the environment of Biscayne National Park for future generations ($M=4.6$)
- Preserving Biscayne National Park’s environment in its natural state ($M=4.5$)
- An ethical responsibility to care for the environment of Biscayne National Park ($M=4.4$)
- All animals and plants in Biscayne National Park having a right to exist ($M=4.3$)

Table 9. Natural resource stewardship in relation to Biscayne National Park.

Stewardship	Mean¹	SD
Protecting the environment of Biscayne NP for future generations	4.6	0.6
Preserving Biscayne NP's environment in its natural state	4.5	0.7
An ethical responsibility to care for the environment of Biscayne NP	4.4	0.7
All animals and plants in Biscayne NP having a right to exist	4.3	0.8
Sustainably and responsibly using Biscayne NP's natural resources	4.2	0.8
Trying to reduce my negative impact on the park's environment	4.2	0.8
Considering how others in society are affected when we use natural resources in Biscayne NP	4.0	.0
Managing Biscayne National Park's natural resources wisely to provide for human needs	3.8	1.1
Protecting all species in the park because we may find a use for them later (for example, curing diseases)	3.7	1
A religious obligation to protect the environment of Biscayne NP	2.4	1.2
Nothing at all; the term "natural resource stewardship" has no meaning for me	1.6	0.8

¹ Measured along a Likert-type scale where 1= "Strongly Disagree" through 5= "Strongly Agree"

Table 10 presents respondents' attitude toward protection of BISC. Overall, respondents felt that they could make personal contribution to reduce environmental problems at the park.

Table 10. Attitudes toward resource protection of Biscayne National Park.

Attitudes	Mean*	SD
It is important for me to reduce my negative personal impacts on the environment of Biscayne NP	4.2	0.7
I am willing to volunteer my time to help the environment of Biscayne National Park	3.9	0.7
I am willing to pay more for the products I buy or services I use if it improves the environment of Biscayne NP	3.9	0.8
It is primarily the responsibility of individuals, not the government, to protect the environment of Biscayne NP	3.2	1.0
Because my contribution to environmental problems at Biscayne NP is very small, I do not feel responsible for causing environmental problems in the park today	2.4	1.0
The efforts of one person to conserve the resources of Biscayne NP are insignificant as long as other people refuse to conserve	2.2	1.0
I do not feel I have any control over whether or not my daily activities harm Biscayne NP	2.1	0.9

* Measured along a Likert-type scale where 1= "Strongly Disagree" through 5= "Strongly Agree"

SECTION E: Information about Respondents

As shown in Table 11, over one-half of respondents (54.1%) were male. The average age was just over 43 years old (SD=14.1). Respondents were well-educated with over 95 percent indicating having completed a post-high school education (97.6%) and fewer than 90 percent (89.5%) reporting a college degree. More than two-thirds (67.4%) indicated being employed outside the home. Just over one half of the sample (50.6%) reported earning \$75,000 or more. The majority was White (97.5%) of non-Hispanic origin (86.7%).

Table 11. Socio-demographic characteristics of BioBlitz participants at Biscayne National Park.

Socio-Demographic Characteristic	Response Category	N (%)
<i>Gender</i>	<i>Male</i>	46 (54.1%)
	<i>Female</i>	39 (45.9%)
<i>Education</i>	<i>Less than high school</i>	1 (1.2%)
	<i>Some high school</i>	0%
	<i>High school graduate</i>	1 (1.2%)
	<i>Vocational/trade school certificate</i>	2 (2.3%)
	<i>Some college</i>	5 (5.8%)
	<i>Two-year college degree</i>	10 (11.6%)
	<i>Four-year college degree</i>	24 (27.9%)
	<i>Masters degree</i>	30(34.9%)
	<i>Ph.D. M.D. J.D. or equivalent</i>	13 (15.1%)
<i>Income</i>	<i>Less than \$24,999</i>	9 (12.0%)
	<i>\$25,000 to \$34,999</i>	3 (4.0%)
	<i>\$35,000 to \$49,999</i>	12 (16.0%)
	<i>\$50,000 to \$74,999</i>	13 (17.3%)
	<i>\$75,000 to \$99,999</i>	12 (16.0%)
	<i>\$100,000 to \$149,999</i>	16 (21.3%)
	<i>\$150,000 to \$199,999</i>	4 (5.3%)
	<i>\$200,000 or more</i>	6 (8.0%)
<i>Occupation</i>	<i>Unemployed</i>	7 (8.1%)
	<i>Retired</i>	6 (7.0%)

Table 11. Socio-demographic characteristics of BioBlitz participants at Biscayne National Park.

Socio-Demographic Category	Condition	N (%)
Occupation (continued)	<i>Full-time homemaker</i>	9 (10.5%)
	<i>Student</i>	6 (7.0%)
	<i>Employed outside the home</i>	58 (67.4%)
Ethnicity	<i>Hispanic or Latino</i>	11 (13.3%)
	<i>Not Hispanic or Latino</i>	72 (86.7%)
Race	<i>American Indian or Alaska Native</i>	0%
	<i>Asian</i>	1 (1.2%)
	<i>Black or African American</i>	0%
	<i>Native Hawaiian or other Pacific Islander</i>	1 (1.2%)
	<i>White</i>	79 (97.5%)

Discussion

The purpose of this investigation was to better understand the characteristics of visitors / participants that engaged in the National Park Service's (NPS) all taxa biodiversity inventory (ATBI)/BioBlitz program at Biscayne National Park (BISC) in 2010. This study provides insight on: (a) visitor participation in BioBlitzes and NPS programs; (b) experiences with the park; (c) commitment to and involvement in the BioBlitz program; (d) motives for becoming involved with the BioBlitz program; (e) impacts from participation including understandings of science and nature, park protection behavior, and associated implications for the national park system; (f) attachment to places within the park; (g) stewardship and attitudes toward resource protection; and (h) socio-demographics of participants.

Respondents did not report extensive previous experiences with BioBlitz activities, in that most were first-time participants that had limited previous exposure to the program. Over half of the respondents from BISC were affiliated with an organization. Many individuals engaged in program activities with friends, families, and colleagues and became familiar with the BioBlitz through various outlets including others' recommendations and newspapers and/or magazine articles. While visiting, approximately one third was involved with NPS programs outside of this NPS / National Geographic Society (NGS) sponsored event. The most popular on-site activities were hiking and going to the visitor and/or nature center.

Respondents' levels of commitment to the BioBlitz were based on a variety of factors. At BISC, participants felt that engagement in the program was exciting and important to one's self. Involvement in the BioBlitz was not central to participants' lives but it was supported by the appealing and attractive nature of the program. The most important motives that compelled people to become involved in the BISC program related to their potential contributions to society, experiencing solitude, and opportunities to for learning. Similar motivations were reported by respondents with the exception of the "solitude" dimension. This element of the on-site experience was a motivating factor for participants.

Impacts from participation in the BioBlitz program were widespread. Survey respondents were in agreement with statements indicating that the program provided opportunities to learn from professionals, better understand science, and experience the park in a new way. Various feelings about the natural environment were also influential. Participants reported moderate willingness to engage in park protection behavior such as volunteering time and reducing environmental impacts. However, responsibility was not ascribed at the individual level to conserve the park's resources and avert negative consequences from environmental impacts.

Survey respondents formed connections with places at BISC that have likely developed over time based on emotional ties (e.g., feelings of belongingness and happiness), individual identity (e.g., believing the park is part of one's self), and opportunities to socialize (e.g., spending time with family and friends). Additionally, affect / emotion, and social and individual factors underpinned human-place bonds at the park. These dimensions of place attachment may be supported by relatively high levels of self-expression and social bonding that comprised respondents' involvement

in the BioBlitz program. The least important factor that contributed to participants' reported levels of attachment was the notion that places provided unique opportunities that could not be attained elsewhere. These findings align with past research.

Reported levels of stewardship were examined. Respondents considered themselves to be natural resource stewards, though their stewardship was more nature-based than oriented toward people. For example, respondents more strongly agreed with statements defining stewardship such as, "all animals and plants have a right to exist" compared to statements such as "managing our natural resources wisely to provide for human need." An analysis of survey items examining attitudes toward protectionist behavior suggested it was important to reduce negative personal impacts on the environment and that it was up to individuals and not the government to protect the park. Analysis of socio-demographic characteristics indicated there were more males than females that completed the survey, most were in their mid-40s, were well-educated, and employed outside the home. Between half to three quarters of respondents reported earning more than \$50,000 on an annual basis. The majority was white and of non-Hispanic origin.

Implications and Management Options

- Given the limited previous experiences with BioBlitz activities among visitors, participants should be provided with sufficient background on the purpose of the program, its workings, and how to stay involved into the future. Providing sufficient information to be shared with others will be particularly important to maintain future interest in the program considering the proportion of visitors that becomes aware of BioBlitzes via friends/relatives/word of mouth and involved through organizational affiliations.
- Varied levels of visitation histories should be considered in the provision of information to potential stewards of the parks. At BISC, individuals that engaged with BioBlitz programs were “regular” visitors but were new to the BioBlitz program.
- The most important factor underlying involvement was centered on the attractive nature of a BioBlitz, suggesting that importance and pleasure are associated with engagement and can serve as a source of satisfaction. Managers should note that the program is not central to participants’ lives.
- Motivations reported by survey respondents can be targeted by managers in different ways. The contributions to society that emerge from BioBlitz data collection and opportunities to learn from others are the most important factors that push or pull respondents into BioBlitz activities. Opportunities for experiencing solitude were particularly important for BISC visitors to maintain satisfactory experiences and help ensure continued participation.
- Survey data suggest BioBlitz participants would be willing to engage in park protection behavior but do not feel responsible at the individual level. To encourage environmentally-friendly behavior, managers might consider framing interpretation / outreach messages in a way that suggests individual actions can substantially reduce environmental impacts and should be pursued despite reluctance from other people. More pronounced degrees of environmental protection will likely ensue if respondents take more ownership over their individual contributions to supporting the national parks, especially at BISC given the strong environmental attitudes toward park protection reported by survey respondents.
- Levels of place attachment measured by four dimensions were relatively low among participants at BISC. Affective / emotional bonds were key components of the connections formed between people and places, which can be maintained through experiential opportunities. The BioBlitz program may help to foster attachment to settings given its potential to allow participants to interact with the park in new and exciting ways.
- The majority of survey respondents were not dependent on BISC for hosting the BioBlitz programs for specific activities, which will require more complex approaches to satisfy visitors’ needs and communicate management priorities. Moving beyond activity and setting-based management will be necessary to consider the experiences, beliefs, and attitudes of survey respondents that comprise the emotional connections formed between people and settings.
- The diversity of experiences, attitudes, and behaviors reported by survey respondents suggest that a “one size fits all” management approach may exclude important segments of the survey population. Research results that shed light on the varied elements that comprise visitor experiences can be used as a guide to most effectively respond to the preferences reported by BioBlitz participants.

Literature Cited

Dillman, D. A., L. M. Christian, and J. D. Smyth. 2008. Internet, mail and mixed-mode surveys: The tailored design method. John Wiley and Sons, Hoboken, New Jersey.

Appendix A: Biscayne National Park BioBlitz Survey Questionnaire

Section A: Past Bioblitz Involvement

1. Have you participated in other Bioblitzes prior to your participation in the National Park Service (NPS)/National Geographic Society (NGS) Bioblitz at Biscayne National Park?

_____ Yes → Continue to Question 2

_____ No → Go to Question 5

2. How many Bioblitzes have you participated in within the last 12 months?

_____ Time(s)

3. On average, how many hours each month do you commit to Bioblitz activities?

_____ Hours

4. Which Bioblitzes have you participated in over the past three years? (*Please list*)

a. Biscayne National Park

b. _____

c. _____

5. Do you participate in other National Park Service presentations or programs at Biscayne National Park? (*check one*)

_____ No → Go to question 6

_____ Yes → Go to question 5a.

5a. If “yes”, what are these? (List)

a. _____

b. _____

c. _____

5b. On average, how many hours each month do you spend on NPS activities at Biscayne National Park?

_____ Hours

6. How did you first learn about the NPS/NGS Bioblitz at [Park Name]? (*check all that apply*)

- Previous Bioblitz participation
- Previous visit to Biscayne NP
- Friends/relatives/word of mouth
- Videos/Television/Radio
- Newspaper/Magazine article
- Internet – Biscayne NP homepage
- Other: _____
- Internet – Other sites (List: _____)
- Chamber of Commerce
- Convention/Visitors' Bureau
- Local businesses
- Other organization(s) I belong to (List: _____)

7. Did you come to the NPS/NGS Bioblitz at Biscayne National Park as part of an organization?

_____ No If "No", please proceed to question 8

_____ Yes If "Yes," which organization: _____

8. Do you have friends, family or colleagues that are also participating in the NPS/NGS Bioblitz at Biscayne National Park?

_____ No

_____ Yes

9. We are interested in understanding what attracts the public to become involved in NPS BioBlitz/ATBI programs. Below is a list of factors that might underlie your own involvement in the Biscayne NP BioBlitz program. Please rate the extent to which each item reflects the reasons for your involvement.

	Not a reason		Moderate reason		Major reason
a. Being in a quiet peaceful spot	1	2	3	4	5
b. Being alone with my thoughts	1	2	3	4	5
c. Just letting my mind wander	1	2	3	4	5
d. Getting away from it all	1	2	3	4	5
e. Applying my scientific skills	1	2	3	4	5
f. Refining my understanding of science	1	2	3	4	5

g. Making life better for the coming generations	1	2	3	4	5
h. Causing good things to happen	1	2	3	4	5
i. Acting in a responsible manner towards the Earth	1	2	3	4	5
j. Feeling I am doing something useful	1	2	3	4	5
k. Being of benefit to society or the community	1	2	3	4	5
l. A sense of accomplishment	1	2	3	4	5
m. A sense that things are getting done	1	2	3	4	5
n. Feeling I can play a role in the conservation of nature	1	2	3	4	5
o. Working with different age groups	1	2	3	4	5
p. Meeting with friendly and interesting people	1	2	3	4	5
q. Having shared goals	1	2	3	4	5
r. Opportunity to try new things	1	2	3	4	5
s. Involving myself in something meaningful	1	2	3	4	5
t. I like to support the park	1	2	3	4	5
u. Accomplishing something in a group	1	2	3	4	5
v. Being part of something profound	1	2	3	4	5
w. Restoring or contributing to my spirituality	1	2	3	4	5
x. Help build my self confidence	1	2	3	4	5
y. Developing my physical fitness	1	2	3	4	5
z. Help me with my personal growth	1	2	3	4	5
aa. Helping me to stay healthy	1	2	3	4	5
bb. Help me to be optimistic about nature's future	1	2	3	4	5
cc. Learning how nature works	1	2	3	4	5
dd. Learning about different species of flora and fauna	1	2	3	4	5
ee. Seeking out and enjoying the wonders of nature	1	2	3	4	5
ff. Learning about the practice of science	1	2	3	4	5
gg. I find this aspect of science fascinating	1	2	3	4	5
hh. Other	1	2	3	4	5

Describe:

10. We'd like to know how strongly you consider yourself to be involved with the NPS BioBlitz/ATBI program. Please circle one number for each statement that best reflects your level agreement.	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. Participating in the NPS BioBlitz/ATBI program is one of the most enjoyable things I do	1	2	3	4	5
b. My involvement in the NPS BioBlitz/ATBI program is important to me	1	2	3	4	5
c. Participating in the NPS BioBlitz/ATBI program is one of the most satisfying things I do	1	2	3	4	5
d. Participating in the NPS BioBlitz/ATBI program is exciting	1	2	3	4	5
e. I find a lot of my life is organized around the NPS BioBlitz/ATBI program	1	2	3	4	5
f. The NPS BioBlitz/ATBI program occupies a central role in my life	1	2	3	4	5
g. My involvement in the NPS BioBlitz/ATBI program takes precedence over other recreation and leisure pursuits	1	2	3	4	5
h. I consider myself to be somewhat of an NPS BioBlitz/ATBI expert	1	2	3	4	5
i. I coordinate my schedule around NPS BioBlitz/ATBI activities	1	2	3	4	5
j. I enjoy discussing the NPS BioBlitz/ATBI program with my friends	1	2	3	4	5
k. Most of my friends are in some way connected with the NPS BioBlitz/ATBI program	1	2	3	4	5
l. Participating in the NPS BioBlitz/ATBI program provides me with an opportunity to be with friends	1	2	3	4	5
m. Special people in my life are associated with the NPS BioBlitz/ATBI program	1	2	3	4	5

n. My involvement with the NPS BioBiltz/ATBI program allows me to be myself	1	2	3	4	5
o. I identify with the people associated with the NPS BioBiltz/ATBI program	1	2	3	4	5
p. I am able to identify a large number of plants and animals when I volunteer in the NPS BioBiltz/ATBI program	1	2	3	4	5
q. I like to think of myself as a serious NPS BioBiltz/ATBI volunteer	1	2	3	4	5
r. You can tell a lot about a person by their involvement with NPS BioBiltz/ATBI program	1	2	3	4	5
s. Participating in the NPS BioBiltz/ATBI program says a lot about who I am	1	2	3	4	5
t. I like to be seen participating in the NPS BioBiltz/ATBI program	1	2	3	4	5
u. My involvement in the NPS BioBlitz/ATBI program allows me to be a scientist					

11. Do you participate in NPS BioBlitz/ATBI activities as much as you would like to? (*check one*)

_____ Yes If “yes”, please proceed to Question 12

_____ No

11b. If “no”, what are the reasons that keep you from participating in the NPS BioBlitz/ATBI activities as much as you would like to? Please circle one number for each reason that reflects the degree to which it obstructs your involvement.	Not a reason		Moderate reason		Major reason
a. Poor health	1	2	3	4	5
b. Lack of information about ATBI programs	1	2	3	4	5
c. Fear of nature	1	2	3	4	5

d. Lack of time	1	2	3	4	5
e. No one to go with	1	2	3	4	5
f. Not at ease in social situations	1	2	3	4	5
g. Work commitments	1	2	3	4	5
h. Friends/family prefer to do other things	1	2	3	4	5
i. Park is too far away	1	2	3	4	5
j. No way to get to the park	1	2	3	4	5
k. Programs are over-crowded	1	2	3	4	5
l. Prefer to do other things with my time	1	2	3	4	5
m. Do not like to participate in nature or outdoor recreation activities	1	2	3	4	5
n. Too busy with other activities	1	2	3	4	5
o. Don't have the relevant scientific knowledge	1	2	3	4	5
p. Conflicting schedules with spouse/companion	1	2	3	4	5
q. Too busy with family responsibilities	1	2	3	4	5
r. Lack of transportation	1	2	3	4	5
s. Do not feel that I am knowledgeable	1	2	3	4	5
t. Do not have the right equipment	1	2	3	4	5
u. Activity it too strenuous	1	2	3	4	5
v. Some of the other participants are inconsiderate	1	2	3	4	5
w. Other [please list] _____	1	2	3	4	5

12. We would like to know what, if any, impact your participation in the Biscayne NP BioBlitz has had on your thoughts about science and nature. Please circle a number that captures your feelings about each statement.	Very Little		Somewhat		Quite a lot
a. The program has taught me about a variety of species of plants and animals living in the park	1	2	3	4	5
b. The program has provided me with an opportunity to learn about science	1	2	3	4	5
c. The program has allowed me to experience the park in a new way	1	2	3	4	5
d. The program has provided with a unique opportunity to learn from professionals	1	2	3	4	5

13. On a scale of 1 to 10, with 10 being “expert”, to what extent has your involvement in the Biscayne NP BioBlitz/ATBI program contributed to your knowledge of the local ecosystem? _____

Section B: Your Experience with Biscayne National Park

14. What year did you first visit the Biscayne National Park? _____ Year
15. In the last 12 months, how many times have you visited Biscayne National Park? _____
16. Do you have a favorite or special place within Biscayne National Park?
- ___NO → Skip to question Section C below
- ___YES (If YES, please answer 16a and 16b below)
- L> 16a. What is the name of this place? _____
- L> 16b. Why is it your favorite? _____
- _____
- _____
- _____

17. Please indicate how you feel about Biscayne NP by responding to each of the statements below. (circle one number for each statement that best reflects your level of agreement)		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a.	Biscayne NP is the best place for the recreation activities that I enjoy	1	2	3	4	5
b.	I feel that a lot of other places could substitute for the Biscayne NP	1	2	3	4	5
c.	Compared to the Biscayne NP, there are few satisfactory alternatives	1	2	3	4	5
d.	I have a lot of fond memories of past experiences with family and friends in the Biscayne NP	1	2	3	4	5
e.	I have a strong emotional bond to the Biscayne NP	1	2	3	4	5
f.	I can't imagine a better place for what I like to do	1	2	3	4	5
g.	I feel Biscayne NP is a part of me	1	2	3	4	5
h.	I feel a strong sense of belonging to Biscayne NP	1	2	3	4	5
i.	I identify with Biscayne NP	1	2	3	4	5
j.	I feel that my identity is reflected in Biscayne NP	1	2	3	4	5
k.	I really enjoy Biscayne NP	1	2	3	4	5
l.	Biscayne NP means a lot to me	1	2	3	4	5
m.	Visiting Biscayne NP says a lot about who I am	1	2	3	4	5
n.	I am happiest when I get to visit Biscayne NP	1	2	3	4	5
o.	Visiting Biscayne NP allows me to release built-up tension	1	2	3	4	5
p.	The time spent on Biscayne NP allows me to bond with my family and friends	1	2	3	4	5
q.	I associate special people in my life with Biscayne NP	1	2	3	4	5
r.	Visiting Biscayne NP allows me to spend time with my family and friends	1	2	3	4	5

Section C: Feelings about the Natural Environment

18. When I hear the term “natural resource stewardship” in relation to Biscayne National Park, I think of... (circle one number for each statement that best reflects your opinion)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. Managing our natural resources wisely to provide for human needs	1	2	3	4	5
b. Sustainably and responsibly using our natural resources	1	2	3	4	5
c. Protecting all species because we may find a use for them later (for example, curing diseases)	1	2	3	4	5
d. Trying to reduce my negative impact on the environment	1	2	3	4	5
e. All animals' and plants' right to exist	1	2	3	4	5
f. Considering how others in society are affected when we use natural resources	1	2	3	4	5
g. Preserving the environment in its natural state	1	2	3	4	5
h. A religious obligation to protect the environment	1	2	3	4	5
i. An ethical responsibility to care for the environment	1	2	3	4	5
j. Protecting the environment for future generations	1	2	3	4	5
k. Nothing at all; the term “natural resource stewardship” has no meaning for me	1	2	3	4	5

19. We are interested in understanding how you feel about ways to protect the Biscayne National Park. Please indicate the extent to which you agree or disagree with the following statements. (Circle one number for each statement that best reflects your opinion).

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. I am willing to volunteer my time to help the environment of Biscayne National Park	1	2	3	4	5
b. I do not feel I have any control over whether or not my daily activities harm Biscayne National Park	1	2	3	4	5
c. I am willing to pay more for the products I buy or services I use if it improves the environment	1	2	3	4	5
d. It is important for me to reduce my negative personal impacts on the environment of Biscayne National Park	1	2	3	4	5
e. It is important for me to reduce my negative personal impacts on the environment of Biscayne National Park	1	2	3	4	5
f. The efforts of one person to conserve the resources of Biscayne National Park are insignificant as long as other people refuse to conserve	1	2	3	4	5
g. It is primarily the responsibility of individuals, not the government, to protect the environment of Biscayne National Park	1	2	3	4	5
h. Because my contribution to environmental problems at Biscayne National Park is very small, I do not feel responsible for causing environmental problems in the park today	1	2	3	4	5

20. To what extent do you consider yourself a natural resource steward? (Circle one number that best reflects your opinion).

Not at all					Yes, very much	
1	2	3	4	5	6	7

21. Listed below are some statements about the relationship between humans and the environment. For each statement, please indicate the extent to which you agree or disagree. (<i>circle one number for each statement that best reflects your opinion</i>)		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a.	We are approaching or have surpassed the number of people earth can support	1	2	3	4	5
b.	Humans have a right to modify the natural environment to suit their needs	1	2	3	4	5
c.	All National Parks should have areas that are off limits to human use					
d.	Human ingenuity will ensure that we do NOT make the earth unlivable	1	2	3	4	5
e.	The earth has plenty of natural resources if we just learn how to better develop them	1	2	3	4	5
f.	Plants and animals have as much right as humans to exist	1	2	3	4	5
g.	The so-called “ecological crisis” facing humankind has been greatly exaggerated	1	2	3	4	5
h.	Humans were meant to rule over nature	1	2	3	4	5
i.	If things continue on their present course, we will soon experience a major ecological catastrophe	1	2	3	4	5
j.	There should be fewer restrictions on human activities in national parks so that more people can build a stronger connection to the natural world	1	2	3	4	5
k.	My religious beliefs tell me it is wrong to abuse the natural world	1	2	3	4	5
l.	It would be better if national parks were even more protected against human use and encroachment	1	2	3	4	5
m.	It would be better if there was more land in the United States set aside as a National Park	1	2	3	4	5
n.	We have to protect the natural environment for our children and grandchildren, even if it means reducing our standard of living today	1	2	3	4	5

22. Please indicate how often you engage in the following activities.	Never	Sometimes	Always	N/A
a. Recycle newspapers, cans, or bottles	1	2	3	4
b. Encourage others to recycle	1	2	3	4
c. Pick up litter that is not your own	1	2	3	4
d. Walk, bike, carpool, or take public transportation to reduce environmental impacts	1	2	3	4
e. Buy recycled paper or recycled plastic products	1	2	3	4
f. Turn off water instead of letting it run while brushing teeth	1	2	3	4
g. Make an effort to purchase and use products that are less harmful to the environment	1	2	3	4
h. Written letters or e-mails to government officials supporting an environmental issue	1	2	3	4
i. Voted for a candidate largely because of his or her pro-environmental views	1	2	3	4
j. Contributed money (in addition to membership dues) to an environmental conservation organization	1	2	3	4
k. Volunteered time to help an environmental group or project	1	2	3	4
l. Actively opposed an environmentally damaging development project	1	2	3	4
m. Stopped buying a product because it caused environmental problems	1	2	3	4
n. Helped clean up a local beach or stream	1	2	3	4
o. Dispose of used motor oil at approved waste collection sites	1	2	3	4
p. Use of low-wattage, energy-efficient light bulbs	1	2	3	4

23. Thinking about the activities listed in Question 22 (above), how important are each of the following reasons in preventing you from acting in ways that have little impact on the environment (<i>circle one number for each statement that best reflects your opinion</i>)	Not important reason at all	1	2	3	4	5	Very important
a. I think environmentally sensitive behavior and action cost too much		1	2	3	4	5	
b. I do not always know what actions adversely impact the environment		1	2	3	4	5	
c. I am not really concerned about trying to act in ways that protect the environmental		1	2	3	4	5	
d. I think acting in environmentally sensitive ways is inconvenient		1	2	3	4	5	
e. I don't have time to volunteer for environmental causes		1	2	3	4	5	
f. I don't know where to find information about how to behave in environmentally sensitive ways		1	2	3	4	5	

24. We are interested in the types of activities you participate in at Biscayne National Park. Please mark ALL of the activities you have participated in at Biscayne National Park over the last 12 months.

- | | |
|--|---|
| <input type="checkbox"/> Camping | <input type="checkbox"/> Picnicking |
| <input type="checkbox"/> Hiking | <input type="checkbox"/> Wildlife watching or Birdwatching |
| <input type="checkbox"/> Mountain Biking | <input type="checkbox"/> SUBA diving |
| <input type="checkbox"/> Fishing | <input type="checkbox"/> Crabbing / lobstering |
| <input type="checkbox"/> Visiting the Visitor Center/Nature Center | <input type="checkbox"/> Swimming in a natural setting (lake, river, ocean) |
| <input type="checkbox"/> Nature/landscape photography | <input type="checkbox"/> Motor boating |
| <input type="checkbox"/> Snorkeling | <input type="checkbox"/> Going to a beach or lakeshore |
| <input type="checkbox"/> Kayaking, canoeing, rafting | |

Section D: Information about You

25. What is your gender? (*circle one*) 1. Female 2. Male

26. What year were you born? _____

27. What is the highest level of formal education you have completed? (*circle one of the following*)

6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

High Technical College Master's Doctorate
School College

28. What was your total household income (before taxes) in 2010? (*circle one of the following*)

- | | |
|-------------------------|---------------------------|
| 1. Less than \$24,999 | 5. \$75,000 to \$99,999 |
| 2. \$25,000 to \$34,999 | 6. \$100,000 to \$149,999 |
| 3. \$35,000 to \$49,999 | 7. \$150,000 to \$199,999 |
| 4. \$50,000 to \$74,999 | 8. \$200,000 or more |

29. Are you presently:

1. Employed outside the home →

full time

part time →

Occupation: _____

2. Unemployed

3. Retired → Previous occupation: _____

4. Full-time homemaker

5. Student →

full time

part time

30. Are you Hispanic or Latino? (Circle one)

- 1. Hispanic or Latino
- 2. Not Hispanic or Latino

31. What is your race? Please circle one or more.

- 1. American Indian or Alaska Native
- 2. Asian
- 3. Black or African American
- 4. Native Hawaiian or other Pacific Islander
- 5. White

If you have any other comments about Biscayne NP's Bioblitz, please feel to write them below.

THANK YOU FOR YOUR TIME AND INPUT

PRIVACY ACT and PAPERWORK REDUCTION ACT statement:

16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. Permanent data will be anonymous. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB number.

Burden estimate statement. Public reporting for this form is estimated to average 30 minutes per response. Direct comments regarding the burden estimate or any other aspect for this form to Myrna Palfrey-Perez, Biscayne National Park, 9700 SW 328 Street, Homestead, FL, 33033.

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

NPS 169/133752, August 2016

National Park Service
U.S. Department of the Interior



Natural Resource Stewardship and Science
1201 Oakridge Drive, Suite 150
Fort Collins, CO 80525

www.nature.nps.gov

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