

Mosaics in Science FY2013 Accomplishments Report

Prepared by Lisa Norby
September 13, 2013

Natural Resource Stewardship and Science
Geologic Resources Division



The Mosaics in Science Internship Program, established in 2013 provides youth age 17 – 25 that are typically under-represented in natural resource, science fields with on-the-ground, science-based, work experience in the National Park System. This multidisciplinary program provides students with opportunities to work on inventory and monitoring, research, GIS, and interpretation and education projects. After the internships, a career workshop is held in Washington DC. During its inaugural year, 12 internships were filled in 10 parks across the Service. The program is administered by the NPS Geologic Resources Division in partnership with The Geological Society of America (GSA), and in close collaboration with the NPS Youth Programs Division.

Program Objectives:

- Encourage diverse youth (17-25 years old) to pursue studies in STEM fields,
- Introduce youth to science careers in the National Park Service,
- Provide meaningful and relevant science-based internships in parks, and
- Increase relevance, diversity, and inclusion in the NPS workplace.

In FY2013, the Geologic Resources Division Division negotiated a 5-year youth Cooperative Agreement with The Geological Society of America (#P13AC00336) to define the partnership for the Mosaics in Science and Geoscientist-in-the-Parks internship programs. The [cooperative agreement](#) lays out the roles and responsibilities of the NPS and GSA and includes the cost structure for both programs.

This year's internships lasted an average of ten weeks, with interns spending nine weeks in parks working on a variety of science projects followed by a one week career workshop in Washington DC. The internships were located across the Service and included a variety of projects ranging from a geohazards assessment at Grand Canyon NP, measuring shoreline change after Superstorm Sandy at Gateway NRA, creating a climate change video for Prince William Forest Park, inventorying cave openings at Mammoth Cave NP, and leading interpretive talks focusing on natural hazards at Mount Rainier NP (see Table 1). The career workshop held August 7-9, 2013 focused on exploring science careers; diversity and inclusion; and how to apply for and obtain a job in the federal government. During the workshop, each intern presented the results of his/her work. In addition to the meeting portion of the workshop, the interns had a VIP tour of the National Mall and visited Prince William Forest Park where two of the interns worked during the summer.

Roles and Responsibilities

The NPS' role in the program is two-fold: national program management is done by the NPS Geologic Resources Division and project oversight is done at the NPS unit level. Program management includes working with parks to identify projects and select interns, preparing contracting documents (cooperative agreement and annual task agreements), developing and maintaining the [program website](#), organizing the career workshop with GSA, and troubleshooting issues that may arise with the interns. Parks define the projects, review applications and select qualified candidates; supervise the project work; and provide a quality internship experience through mentoring and coaching.

The GSA's responsibilities include developing and maintaining an [on-line system](#) for parks to post position descriptions and for students to apply for positions; arranging travel for interns; paying intern stipends, travel allowances, and housing costs; and working with interns to resolve issues that may occur. GSA is also integral in the planning and implementation of the career workshop in Washington DC.

Recruitment of qualified interns is crucial and is the responsibility of all program partners, including the NPS Geologic Resource and Youth Programs Divisions and The Geological Society of America. A robust recruiting approach is in-place at GSA that reaches out to minority serving organizations and academic institutions to fill the Mosaics internships. In order to apply for an internship, the applicant must be a member of a minority serving organization or be recommended by a school advisor or professor.

Table 1 summarizes the 2013 Mosaics in Science internship park placements and their key projects. Tables 2 – 6 provide an overview of the FY13 Mosaics in Science participant's diversity, gender, educational level, and types of projects and disciplines in the internships.

Table 1: FY 2013 Mosaics in Science internship parks, positions, participants, and key projects.

PARK	POSITION / PARTICIPANT	KEY PROJECTS
1. Catoctin Mountain Park (Maryland)	GPS / GIS Technician (Kristan Culbert)	Inventoried park streams and wetlands
2. Chesapeake & Ohio Canal National Historical Park (MD, VA,, WV, Washington DC, WV)	Hydrogeologist / Wetlands Scientist (Ivan Carabajal)	Monitored park wetlands, catalogued new fossil localities and documented the condition of the sites
3. Florissant Fossil Beds National Monument (CO)	Paleontology / Museum Intern (Selva Marroquin)	Monitored the condition of park fossil sites using photo monitoring
4. Gateway National Recreation Area (NJ, NY)	Geology / GIS Specialist (Carlos Carvaljal)	Measured beach profiles to detect shoreline change after Superstorm Sandy
5. Grand Canyon National Park (AZ)	Geologist - Geohazards (Kaytan Kelkar)	Compiled mass movement event data (e.g., rockfalls, landslides) and identified potential geohazards sites
6. Mammoth Cave National Park (KY)	Karst Geoscience Research Assistant (Jay Kim)	Updated park's lesser caves inventory and placed survey markers at cave openings; biologic species counts to assess cave ecology health; assisted in updating park's fire management plan; assessed trail erosion
7. Mount Rainier National Park (Washington DC)	Interpretation Specialist (Marissa Reis)	Developed and presented park geology interpretive programs
8. National Capital Parks-East (MD, Washington DC)	Resource Assistant (Giessell Aguilar)	Prepared environmental assessment to develop recreational facilities in Oxen Cove Park, participated in bird census counts, and other resource monitoring activities
9. National Capital Parks-East (MD, Washington DC)	Resource Assistant (Rebecca Fraker)	Prepared environmental assessment to develop recreational facilities in Oxen Cove Park, participated in bird census counts, and other resource monitoring activities
10. Prince William Forest Park (VA)	Digital Science Interpretation Intern (Leyla Farshidpour)	Created climate change video describing ways for park staff and visitors to mitigate climate change effects
11. Prince William Forest Park (VA)	GIS Tech / Natural Resource Science Intern (Javar Henry)	Inventoried historic roads, beaver dams; monitored water quality in streams, invasive species removal, sampled for micro-invertebrates, conducted bird and vegetation surveys
12. Rock Creek Park (VA, MD, Washington DC)	Biologic Inventory and Monitoring Assistant (Zenovia Mitchell)	Inventoried and monitored invasive (non-native) plants; removed invasive species

Table 2 – Ethnicity of FY13 Mosaics in Science participants

ETHNICITY*	# OF POSITIONS
African American	3
Asian	3
Caucasian	1
Hispanic	5

*In addition to the EEO classifications, one participant identified herself as a first generation college graduate and another as GLBT.

Table 3 – Gender of FY13 Mosaics in Science participants.

GENDER	# OF POSITIONS
Female	7
Male	5

Table 4 – Educational level of FY13 Mosaics in Science participants.

EDUCATION LEVEL *	# OF POSITIONS
Undergraduate Student	2
BS/BA	10

*One program participant recently graduated HS and will be starting as an undergraduate in the fall of 2013.

Table 5 – Position categories represented in FY13 Mosaics in Science internships.

CATEGORY	# OF POSITIONS
Interpretation/Education	2
Inventory and Monitoring	6
Multi-faceted	3
Research	1

Table 6 – Disciplines represented in FY13 Mosaics in Science internships

CATEGORY	# OF POSITIONS
Biology – Exotic Plant Mgmt	1
Cave / Karst	1
Climate Change	1
Geology - Coastal	1
Geology - Geohazards	1
Geology - General	1
Geology - Paleontology	1
Hydrology - General	2
Multi-disciplinary	3

Program Evaluation

During the career workshop, there was a session in which participants provided program coordinators with direct verbal feedback about the program and their project experience. This direct feedback is shown below. A written evaluation form is being developed that will address key measures requested by the NPS and GSA. The evaluation form will be completed and distributed to FY13 park supervisors and interns in October 2013. Every supervisor and intern will be required to fill out the evaluation form, and the information will be collated and provided to the NPS Youth Programs and Geologic Resources Divisions.

Projects

- Satisfaction with the projects was generally good, however a few interns desired a higher level of scientific rigor in their projects.
- A few interns desired more direction and guidance, structure, and specificity in projects.
- Some projects did not have standard operating procedures, which was a challenge, but also an opportunity because the intern got to develop and document the standards.
- Job descriptions need to be specific about project qualifications (e.g., one intern needing to be skilled at swimming or boating and it was not specified in the job description).

Structure and Environment

- Interns liked having opportunities to build connections within their park: with other interns, other scientists, staff in other areas, and partner groups.
- The interns valued opportunities to work in various other program areas within the park (geoscience, biology, ecology, recreation, interpretation, etc.) and felt variety is good.
- Interns had a specific interest in connecting interpretation to science, although sometimes it was difficult to build connections between the interpretation and science groups.
- Working in a visitor center made it hard to access the park's scientific resources.
- Interns want opportunities to work in groups but also to work independently. Being paired with other interns/peers is beneficial.
- Some parks had good, tight-knit groups that made interns feel like family and like an employee, not just an intern. In large parks it could be difficult to get to know other staff and interns.
- It is important to recruit good and devoted mentors to assist with the intern's professional development.
- It is good to have flexible staff and supervisors who can assign alternative projects if issues arise with primary projects.
- Interns enjoyed working with partner groups, such as the Cave Research Foundation at Mammoth Cave NP.

Training

- Interns highly valued the training they received, but some thought that it may have encroached on time devoted to their project, since the internships were only 9-10 weeks long.
- Enjoyed getting good training at the park site such as GIS, interpretation, and wildfire fighting; and interns liked getting their firefighting "red card".
- Enjoyed opportunities for professional development (e.g., free GIS courses and access to GIS software).

Career Development

- Interns see their participation in the 2013 Mosaics program as beneficial, but expressed concern about "what comes next"; such as how can they use their participation in Mosaics as a stepping stone to a career with NPS.
- Need to foster longer-term relationships between interns and parks, NPS, and GSA.
- The NPS needs to interns build connections to other NPS and DOI programs and opportunities, to form a sort of "pipeline" through different stages of educational and career development.
- Provide training in the federal hiring and selection processes (one intern said, "it seems SO hard to get a NPS job!").

Recruiting Interns

- Interns suggest the Mosaics in Science Program could use more exposure and the NPS/GSA should be more aggressive about recruiting qualified applicants.
- Go directly to the historically black colleges and universities (HBCUs) to develop relationships and recruit applicants ("like Goldman-Sachs does").
- Increase the NPS presence at professional society meetings to promote the program (e.g., GSA, AGU, SACNAS, AISES).

Program Structure

- Good and comfortable housing is very important to the interns.
- Recommend arranging reasonable cost housing for Washington DC interns in order to minimize unnecessary program costs. (Note: the apartment rental costs were very expensive for two interns in FY13.)
- Nine to ten weeks was too short for the internship, especially after several weeks of training. It was hard to get into a “rhythm” in the internship.

Program Funding and Expenditures

In FY13, \$150,000 was provided by the Youth Programs Division to fund the Mosaics in Science Program. This funding enabled the NPS to have twelve interns work in parks for nine weeks and attend the one week Career Workshop at the end of the summer. All intern travel costs were paid for with program funding. The final FY13 program costs are being compiled by the program partner, The Geological Society of America and will be available in late September 2013.

The long-term goal of the program is to increase the diversity and inclusion of the NPS workforce. Nationally there is a critical shortage of diversity in the natural resource, science fields. This program provides opportunities for youth to gain on-the-ground work experience in the NPS which in turn will provide NPS managers with a group of talented young scientists to hire for important science positions in the agency. Increasing the number of internships will enable the NPS to provide a broader range of work experiences with the intent of increasing the diversity of the workforce over time. Additional program funding will enable the Mosaics in Science Program to achieve this goal.

Volunteer Hours

Mosaics in Science Program participants worked 4,992 hours in NPS units in in FY2013. Under the NPS Volunteer in Parks Act (16 USC Sec. 18g) Mosaics participants are considered volunteers. Their work was a significant contribution to the park’s science and resource management needs and resulted in the completion of numerous projects that could not have been done without the intern’s assistance.

Success Stories

A few early Mosaics in Science success stories have been reported:

1. Ivan Carabajal was selected by CHOH to fill a Geoscientists-In-The-Parks (GIP)/GeoCorps Guest Scientist position to carry out an eight-month long paleontology project.
2. Marissa Reis was hired as a seasonal Interpreter by MUWO.
3. Four Mosaics in Science participants had abstracts accepted to present their work at the 2013 Geological Society of America (GSA) Annual Meeting in Denver, Colorado.

For more information on the Mosaics in Science Program, see:

<http://nature.nps.gov/geology/mosaics/index.cfm> (NPS internet website), and
http://rock.geosociety.org/g_corps/mosaic/mosaic.htm (partner website).