Field Institute Insider

January 2016

Scientific Newsletter of the McDowell Sonoran Conservancy

Feature Article

Field Institute celebrates its five-year anniversary

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Our first-ever research symposium

Face-to-face with MSFI Certified Citizen Scientists

What the future holds for the Field Institute

Melanie Tluczek talks about her passion

Butterflies in the Preserve

Citizen scientists publish their findings
The Field Institute celebrates its fifth anniversary in this issue of the Insider.

January 2011 marks the formal launch of the Field Institute into what has been a thrilling, inspiring, and high-speed journey from a small research program to a maturing research center. I am honored to have been part of this journey for the past three years, and have watched the Field Institute blossom and branch out into a multitude of directions. In this issue we take you through MSFI history, introduce you to some of our people, celebrate the successes of the Field Institute, and look to the future. To all of you who have contributed to this journey, thank you. There is no end to what we can do together. Here’s to the next five years, and beyond! 🦋

From Melanie Tluczek
McDowell Sonoran Field Institute Manager

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About Us

The McDowell Sonoran Conservancy champions the sustainability of the McDowell Sonoran Preserve for the benefit of this and future generations. As stewards, we connect the community to the Preserve through education, research, advocacy, partnerships and safe, respectful access.

The McDowell Sonoran Field Institute (MSFI) is the research center of the McDowell Sonoran Conservancy. Our mission is to study the environment of the McDowell Sonoran Preserve as well as the human history and human impacts on the Preserve. We do this by partnering with scientists and actively involving volunteers in research as citizen scientists. We use research results for long-term resource management, education, and to contribute to the broader scientific knowledge of natural areas.

McDowell Sonoran
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A Brief History in Time

By Melanie Tluczek, Field Institute manager

As the McDowell Sonoran Conservancy gets ready to celebrate a momentous 25-year anniversary, the Field Institute is preparing to celebrate its own significant milestone—its fifth year as the Conservancy’s research center. We have accomplished a lot in five short years, and now is an excellent time to retrace our steps and recognize the events and ideas that shaped the Field Institute.

The Field Institute concept reaches back to 2005, when Conservancy master steward Dan Gruber proposed the original idea to then-executive director Carla. The inspiration was the Grand Canyon Field Institute, which is a partner to the Grand Canyon Park, and the initial focus was on education and ecotourism. This idea was tabled, because at the time the focus of the Conservancy, then the McDowell Sonoran Land Trust, was on land acquisition and advocacy.

In 2007, Dan met geologist Brian Gootee on a geology hike, and presented him with a rock that had been misidentified in a previous geologic map. Together they began a research investigation that involved a small group of stewards collecting geologic data to rectify the misidentification. This effort culminated with a scientific paper and was the first Conservancy project conducted by volunteers with scientific oversight by principal investigators. This geology project set the precedent for the structure of future Field Institute research projects.
At that time the Preserve was poised for rapid growth, but very little was known about the plants and animals that inhabited it. A group of forward-thinking individuals recognized the importance of research for supporting Preserve management. The Field Institute idea was rekindled, but with a shift from education and ecotourism to original research, accomplished largely through volunteers. In 2010, the Conservancy received substantial grants from an anonymous donor and the Nina Mason Pulliam Charitable Trust to conduct a three-year survey of the flora and fauna of the Preserve. This would provide baseline information for conservation and management for years to come, and serve to establish the Field Institute as the research center of the Conservancy.

2011 began with the launch of the Field Institute and the flora and fauna surveys. The Field Institute continued to gather momentum and added several studies in 2012. The Field Institute Insider, a scientific newsletter, was developed in 2012 in order to bring the scientific results to a broader public audience.

In 2013 the volunteer base and interest from research partners continued to grow, and a committee convened to formalize the structure and focus of the Field Institute. A multi-tiered structure was adopted, based on the Conservancy stewardship model where volunteers lead and train other volunteers in order to leverage staff and scientists’ time. In November the flora and fauna surveys were completed and work on the Ecological Resource Plan began.

Early in 2014 the Conservancy published and distributed the full report on the flora and fauna of Scottsdale’s McDowell Sonoran Preserve, the first Field Institute Science Advisory Committee met, and several papers were published (see page 12). The Field Institute also received funding from the Bob and Renee Parsons Foundation to hire a senior-level director to expand the Field Institute vision. In that same year, Arizona Forward announced the Field Institute as winner of the 2014 Crescordia Award for environmental education and communication.

In 2015 the reptile and amphibian survey was accepted into the peer-reviewed journal Herpetological Review, making it our fourth peer-reviewed publication, and we held the first McDowell Sonoran Preserve Research Symposium at Scottsdale Community College.

Over the past five years, the Field Institute has completed 13 separate projects; published four scientific papers, two major reports, and a historical compendium; initiated nine ongoing projects; spearheaded the Ecological Resource Plan; and developed an award-winning citizen science model that is emulated by other nonprofits. None of this would have been possible without the foresight, creativity, and dedication of numerous people along the way, and it remains possible because of the incredible support from citizen scientists, Conservancy stewards and leadership, scientific partners, students, the City of Scottsdale staff, and the conservation community.
The Field Institute Holds Its First Research Symposium

By Steve Dodd, Certified Citizen Scientist and McDowell Sonoran Conservancy master steward

Scottdale’s McDowell Sonoran Preserve Research Symposium was proclaimed a success by both organizers and more than 150 people who attended the two-day event hosted by the McDowell Sonoran Field Institute and the Center for Native and Urban Wildlife (CNUW) at Scottsdale Community College (SCC).

The symposium, held in late October 2015, featured speakers, poster presentations, tours of CNUW facilities, workshops, and guided hikes in the Preserve. Topics included research conducted on flora, fauna, geology, and human history of the Preserve; and a discussion about the future of conservation in the Phoenix area by a panel of representatives from the City of Scottsdale, City of Phoenix, the Sonoran Institute, and Maricopa County Parks. Keynote speakers were Virginia Korte, CNUW’s first director and a current Scottsdale City Council member, and Dr. Sharon Hall, associate professor and senior sustainability scientist at Arizona State University.

“The research symposium was a great opportunity to showcase the research by the McDowell Sonoran Field Institute and its partners, and to initiate a conversation about valley-wide preservation and conservation efforts,” said Dr. Helen Rowe, director of the Field Institute, the McDowell Sonoran Conservancy’s research center. “As we think more regionally, we’ll be more effective in what we do for the Preserve.”

Dr. John Weser of Scottsdale Community College echoed those thoughts and also noted the benefit that the symposium provided for SCC students. “This gave our undergraduate students a rare opportunity to attend a superb scientific research symposium, see, hear and learn about research going on locally, and personally interact with those researchers,” explained Dr. Weser, a professor of biology and executive director of CNUW.

The Field institute and Scottsdale Community College organizers are currently compiling proceedings of the symposium, which will be published and made available to other researchers and the public.
The Face of Citizen Science at the Field Institute

By Carmel Robbins, McDowell Sonoran Conservancy steward

Citizen science has existed for centuries and was often the pursuit of gentleman scientists, including such notable amateurs as Sir Isaac Newton, Benjamin Franklin, and Charles Darwin. Closer to home, six McDowell Sonoran Conservancy (MSC) stewards, who have completed the field work and education components of the Citizen Science Program to become Field Institute Certified Citizen Scientists, shared their insight and experience participating in and leading science research projects.

Ten-year MSC steward Barb Pringle’s scientific efforts predate the Citizen Science Program, working to identify invasive plants and mitigate their impact on native flora. When the Field Institute started in 2011, Barb immediately volunteered for the flora identification project. More recently, she has participated in trail counts, human impact studies, invasive plants mapping, and butterfly identification. For Barb, payback far exceeds effort as her growing knowledge of native plants has enabled her to create her own natural Sonoran backyard to attract birds and butterflies and share her knowledge with family and friends.

Retired U.S. Navy officer Ralph Lipfert’s interest in research was piqued when he learned of the quartz locations project while hiking in Scottsdale’s McDowell Sonoran Preserve. He registered for the next available New Steward Orientation class in time to participate. A sailor who professes to have little prior experience as an outdoor person or knowledge of ecological issues, Ralph currently coordinates the ground-dwelling arthropod project. Additionally Ralph has been involved in the human impact study, Brown’s Ranch mapping and historical documentation, and digitizing recently acquired geological maps of the Preserve.

Debbie Langenfeld, Citizen Science Program fauna lead, has a lifelong love affair with nature and the wilderness. When a pathfinder at Tom’s Thumb Trailhead helped her identify a mysterious black bird as a phainopepla, she reciprocated by signing up the same day to become an MSC steward. With a background in science and technology, Debbie was a natural for the Citizen Science Program, working on the trail impact study and coordinating the human trail count before accepting the position of fauna lead, a position she claims to have had her eye on since joining MSC.
Prior to joining MSC in 2014, Leona Weinstein volunteered with the City of Scottsdale doing trail maintenance at Pinnacle Peak. She naturally gravitated to MSC’s Construction and Maintenance Program and discovered that many fellow stewards were also active in the Citizen Science Program. Leona quickly found her place within the program and recently assumed the role of human impact studies lead. Leona’s advice to prospective citizen scientists—don’t let lack of a scientific background hold you back from joining the program, just be curious about things.

Joni Millavec has been an MSC steward for 11 years, working in numerous programs including Construction and Maintenance, a program she chaired for several years. Joni’s first research project pre-Citizen Science Program was a multiyear study led by Certified Citizen Scientist and MSC master steward Dan Gruber, which resulted in the discovery of limestone in the Preserve. This unique find led to a paper published by the Arizona Geological Survey in 2010 (see page 12), and Joni was hooked on citizen science from then on.

For Citizen Science Program chair Lisa Miller, it’s all about learning and working with like-minded individuals. In addition to teaching the Flora and Fauna class, Lisa is a certified K-8 teacher who considered teaching science to enquiring young minds before choosing to make the natural environment her classroom. Lisa enjoys the professionalism of the Citizen Science Program and being at the leading edge of advances in knowledge.

The Citizen Science Program offers an exceptional learning experience, varied and unique projects, the opportunity to assume a leadership role in a supportive environment, and working with experts who generously share their knowledge. The last word goes to Lisa Miller who comments that it is gratifying to speak with people who share your passion and interests. After all, how many opportunities do you get to have an animated discussion about mountain lion scat!
The Future of the McDowell Sonoran Field Institute

By Helen Rowe, Field Institute director

It has been a truly exciting time to join the McDowell Sonoran Conservancy and the McDowell Sonoran Field Institute (MSFI). The goal of MSFI is to conduct ecological and social research to educate, inform long-term resource management of Scottsdale’s McDowell Sonoran Preserve, and contribute to the broader scientific knowledge of natural resource management. The completed Ecological Resource Plan (ERP) and flora and fauna study as published in The Flora and Fauna of Scottsdale’s McDowell Sonoran Preserve lay a solid foundation for an expanded research and monitoring program. This groundwork also allows us to reach outward and work with our partners on the task of regional conservation planning. Critical to achieving these goals is our Citizen Science Program; our MSFI Certified Citizen Scientists can expect new projects with associated opportunities for field and office work, learning, and leadership.

In the process of building the research and monitoring program, I have developed a research matrix listing research recommendations from the ERP and our Science Advisory Committee and created a comprehensive list of relevant research projects and ideas. This matrix provides a mechanism to sort and prioritize all possible research projects according to ERP objectives and expected outcomes. The ERP objectives include assessing the diversity of our flora and fauna and the influence of urbanization; assessing nonnative species and human impacts; monitoring sensitive species, riparian areas/washes, and water.
resources; and identifying the extent, effects, and restoration of degraded lands. Thus, priority research over the next few years (Phase I) will include projects that will allow us to detect changes in plant and animal diversity over time, including sensitive and nonnative species, and ecological restoration research. We will have many new opportunities for stewards to become involved!

However, if we are to protect the biological diversity of the Preserve we must also work in a regional context. Wildlife species as well as plant species in the Preserve rely on connectivity and the conservation of the wider ecosystem for their continued health and persistence. Therefore, we are working with our partners to develop regional conservation plans that will ultimately include the identification of regional wildlife corridors and additional high-priority conservation lands in need of protection. In working with partners, we can also leverage research and monitoring efforts. For example, we can improve our ability to see the effects of urbanization or climate change over time if many mountain parks and preserves adopt the same long-term monitoring protocols.

Finally, key to our research model at the Field Institute is our partnerships with academic partners. Faculty and students help to provide scientific expertise across the range of disciplines needed to address the objectives of the ERP. The new set of research priorities will provide a clear basis for attracting new academic partners, especially combined with our extremely capable team of citizen scientists. Also, we continue to build our relationship and synergies with the Arizona State University-based National Science Foundation-funded Central Arizona-Phoenix Long-Term Ecological Research (CAP LTER) Project.

CAP LTER has been conducting social and ecological research for over 15 years, including monitoring birds, arthropods, and the effects of air pollution on plant communities in the Phoenix area mountain parks. The Field Institute has partnered with CAP LTER since 2011 in collecting ground-dwelling arthropods as part of a long-term study on the ecological health the Preserve. Thus, CAP LTER data provides highly valuable information with implications for the Preserve in the context of the greater region.

As we move forward, I hope that enthusiasm for citizen science projects and leadership will continue to grow. We will have greater needs for good leaders and assistance both in the office and out in the field.
Behind the Scenes with Melanie Tluczek, Manager of the Field Institute

By Amina D’Ambrozio, McDowell Sonoran Conservancy steward

Anyone involved with the Field Institute has likely met Melanie Tluczek. Her warmth and welcoming demeanor are inviting. Her passionate energy and authenticity shine like the Arizona sun. These qualities are exactly what are needed in a leader when part of her goal is to attract and retain volunteers. As manager of the Field Institute, Melanie oversees the Citizen Scientist Program and its numerous research projects, and helps shape the direction of the Field Institute.

According to Melanie, Lesley Forst was the research coordinator who started developing the Field Institute in 2010. Lesley recruited many of its principal investigators (PIs) and created the Citizen Science Program, although that name wasn’t used at that time. Melanie praised Lesley’s early efforts that sold PIs and stewards on the idea of doing research. The combined efforts and vision of Melanie and Lesley, along with others, have positioned the Field Institute as a model in land and resource management. Today, PIs and citizen scientists work hand-in-hand engineering and executing the research efforts of the Field Institute.

At the ripe young age of five, the Field Institute is in a great place. Melanie noted a few important things that have resulted in success for the Field Institute—its partnerships, a stable and consistent steward population, and a strong foundation in the stewardship model. First, through the cooperation between the Field Institute, City of Scottsdale, and scientific partners, management of the Preserve is science-based. When decisions are made based on science, better information is used, efficiency is improved, and decision makers are able to respond to ecological changes quickly. Second, the Preserve has attracted extraordinary individuals who serve as McDowell Sonoran Conservancy stewards, some taking on leadership as well as principal investigator roles. This, along with minimal turnover of these dedicated volunteers, has been instrumental in providing the stable, reliable, and consistent population needed not
only to design research but to also implement the research projects. Third, is a solid stewardship model. The McDowell Sonoran Conservancy’s stewardship model encourages participation opportunities in nearly all roles in the Field Institute from scientists and science enthusiasts to writers and photographers. This well thought out model includes providing essential training to ensure stewards are well prepared with basic knowledge and understanding for whatever tasks that lie ahead.

Melanie is a long way from where she grew up in Minnesota. While studying cultural anthropology at Arizona State University (ASU) she took a wildlife biology course and immediately knew this was something she wanted to do. She ended up getting a master’s degree in Wildlife and Restoration Ecology at ASU. She also met her husband, Ken, a musician here in Arizona. Melanie and Ken are parents to a delightful five-year-old, Amelia. Amelia's name is no mistake. Like her namesake, Amelia Earhart, she is learning that with hard work and effort, she is capable of doing anything. Melanie and Amelia enjoy hiking together and whipping up delicious treats in the kitchen. Some of their favorites these days include double-chocolate mug cakes, healthy stir-fry dishes, and sweet potato fries.

As the Field Institute continues to grow, the future of the Preserve looks bright. With the recent addition of the Field Institute’s new director, Helen Rowe, Melanie will soon be able to focus on some of the things that she enjoys most, including designing field studies, structuring and performing fieldwork with volunteers, and getting her hands dirty. Her genuine enthusiasm and elegant poise will continue to serve her well. I have witnessed her ability to refocus a drifting group conversation, take command and add clarity to a discussion on a complicated topic, and direct a two-day symposium without missing a beat.

To a phenomenal woman who gets the job done with grace, gritty elegance, and humility, I say... Thank you!
Butterflies
Those Beautiful Prognosticators

By Barbara Powell, McDowell Sonoran Conservancy steward

Butterflies and moths have been around for approximately 50 million years, probably evolving some 150 million years ago. While their iconic beauty has compelled many to admire them, they also have been studied scientifically for the past 300 years. This rich compilation of archival data about Lepidoptera provides an inheritance of scientific study unmatched by any other insect group, and has proven crucial to research on climate change. Hence, counting butterflies has been described as taking nature’s pulse, lending insight into the effects of climate change on wildlife.

For the second consecutive year, the Field Institute has participated in an annual butterfly-count project conducted in coordination with the North American Butterfly Association annual counts. It links our local data to the NABA’s nationwide effort. Field Institute Manager Melanie Tluczek explains that “the objective of the butterfly count is to develop a long-term data set of butterfly diversity and abundance across Scottsdale’s McDowell Sonoran Preserve.” Producing an annual butterfly count helps track changes in butterfly populations and diversity over time, serving as an indicator of the Preserve’s health and possibly negative changes and contributing to NABA’s national data bank.

Six sites within the Preserve were identified for the butterfly count. In keeping with the McDowell Sonoran Conservancy volunteer model, stewards assisted lead investigators in the field. In anticipation of the count, biologist and principal investigator Dr. Ron Rutowski of Arizona State University (ASU), gave stewards workshop-practice in identifying butterflies, using our new “Fall Butterfly Count” brochure.

On Saturday, October 3, 2015, at 8:00 a.m., the count got underway and wrapped up at noon the same day. Six Preserve sites were surveyed including Old Paint Wash and Brown’s Peak in the north, 128th Street Tank, Tom’s Thumb Canyon, and Marcus Landslide Trail in the central area, and Dixie Mine in the south.

Butterfly count coordinator Brian Rea gathered five teams of counters to cover the six sites (Tom’s Thumb Canyon and 128th Street Tank were combined). In total, the teams included 19 stewards, plus students...
from ASU-Polytechnic campus and Scottsdale Community College, for a total of 43 butterfly counters. Even hardy hiker Brian Rea admitted that he would be “slowing down my [pace] to better see the many beautiful butterflies that we are lucky enough to have in the Preserve.”

Together, 2015 butterfly counters found 21 different species of butterflies, and counted 190 individual butterflies throughout the six Preserve sites. It came as no surprise that the sleepy orange won out, with the Mormon metalmark, Empress Leilia, and American snout close behind.

Interestingly, these results vary greatly from 2014 results, which yielded a larger count. Melanie explains that rainfall patterns and plant phenology account for the dramatic difference, stating that “we simply didn’t have the post-monsoon blooms this year that we did last year.” Brian Rea adds that “an unseasonably warm October may have caused our count to be much lower than last year, when we had 998 total individuals counted as compared to only 190 individuals counted this year.

In the coming years, the Field Institute, with the help of its volunteers, will continue to develop data about butterfly populations in the Preserve. The 2016 butterfly count is already on the books for next fall!

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Comparison of the eight most abundant butterfly species counted during the 2014 and 2015 butterfly counts in Scottsdale’s McDowell Sonoran Preserve.

<table>
<thead>
<tr>
<th>Butterfly Sample</th>
<th>2015 Count</th>
<th>2014 Count</th>
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<tbody>
<tr>
<td>Sleepy orange</td>
<td>52</td>
<td>237</td>
</tr>
<tr>
<td>Mormon metalmark</td>
<td>39</td>
<td>24</td>
</tr>
<tr>
<td>Empress Leilia</td>
<td>25</td>
<td>37</td>
</tr>
<tr>
<td>American snout</td>
<td>22</td>
<td>115</td>
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<tr>
<td>Cloudless sulphur</td>
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<td>165</td>
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<tr>
<td>Queen</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Reakirt’s blue</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Ceraunus blue</td>
<td>5</td>
<td>24</td>
</tr>
</tbody>
</table>

Photos by M. Jensen
One of the important goals of the Field Institute is to publish scientific research that helps to better understand the ecological, geological, and historical features of Scottsdale’s McDowell Sonoran Preserve, and, by extension, the Sonoran Desert community as a whole.

Publication authors include such names familiar to McDowell Sonoran Conservancy stewards as master steward and Certified Citizen Scientist Dan Gruber, botanist Steve Jones (Field Institute’s principal investigator for flora) and, from the Arizona Geological Survey, geologist Brian Gooitee (Field Institute’s principal investigator for geology). Somewhat unusual, though, is that the Field Institute’s published research involves hundreds of hours of volunteer participation by stewards who have been trained by the Field Institute as Certified Citizen Scientists. This allows the gathering of much more information, and with much more efficiency, than is typically possible.

Contributions by Field Institute Certified Citizen Scientists include fieldwork, data entry, photography, mapping, and organization. Their work is scientifically rigorous, as it must meet the standards required of published research. Yet it has its unique rewards, such as the opportunity to do fieldwork away from the trails in parts of the Preserve off-limits to most visitors. Such fieldwork, of course, is performed only under permit from the City of Scottsdale.

Recent scientific articles and other publications that Field Institute Certified Citizen Scientists have been involved with include peer-reviewed articles and original research. These publications are described on the next page.

This study refined our understanding of the geology of the Lost Dog area and helped provide a likely explanation for why archaic people used a particular tool-making site near what is now the Lost Dog Overlook. It came about because citizen scientists were curious about the rocks in the quarry area.


Based on the same fieldwork as the Field Institute’s 2014 flora and fauna publication (see below), this peer-reviewed article was created specifically for a scientific audience.


A common geological occurrence in the Preserve is the milky-white quartz whose beauty so strongly draws the eyes of visitors. Yet while the quartz is easily observed from many Preserve trails, how and when it formed is a mystery this paper contributes to solving.


As with much of the other fieldwork done so far in the Preserve, this herpetofaunal (amphibians and reptiles) survey creates a baseline that will be invaluable for evaluating future studies. Focusing primarily on washes, concentrations of granite boulders, and areas with diverse flora, the survey gave citizen scientists a unique opportunity to observe the Preserve at night, which is not normally permitted, but is the time when herpetofauna are most active.

The following pieces were published by the McDowell Sonoran Conservancy, with review by the Field Institute Science Advisory Committee.


This collection contains digitized images of all known references, articles, maps, and military reports relating to the Stoneman Military Road, constructed in 1870 as a conduit for movement of troops, supplies, military materiel, and couriers between Fort Whipple and Camp McDowell. It also includes a report summarizing findings of a field survey conducted in the McDowell Sonoran Preserve.


Developed for broad dissemination among the environmental management and lay audience, this first major flora and fauna survey of the Preserve, in which 730 plant and animal species were recorded, forms a baseline that will help to track and maintain Preserve resources.


A joint effort between the Field Institute and the City of Scottsdale, ERP provides a foundation for science-based management of the Preserve’s ecological resources. As with virtually all Field Institute-involved studies, the work is ongoing and will offer many more opportunities for participation by stewards who have been trained by the Field Institute as citizen scientists.
The Mormon metalmark was the second most abundant butterfly species documented in the October 2015 butterfly count, conducted by the Field Institute in association with the North American Butterfly Association’s annual count. While many butterfly species in Scottsdale’s McDowell Sonoran Preserve declined in abundance in 2015, the Mormon metalmark increased its numbers over 2014. An isolated occurrence or an indicator of growth? Only time will tell. The Field Institute will continue its annual butterfly count into the foreseeable future.