



*Friends of Ironwood Forest*

*Fall 2026*

## ***Historic Research Site Discovered in Ironwood Forest NM***



*A monolith weighing lysimeter under construction in 1974 at the International Biological Programme Silverbell research site – recently located within Ironwood Forest National Monument.*

*Lysimeters measure evaporative water loss that occurs both directly from the soil and from vegetation that pulls water from the soil – a process called “evapotranspiration.” This one was designed to detect changes equivalent to 1 mm (about 1/25th of an inch) of water over its surface area.*

*The lysimeter was 4 m (13 feet) in diameter and 1 m (39 inches) deep. It contained the undisturbed soil surrounding a 6-foot creosote bush and weighed about 48,000 pounds.*

*Photo: Young et al. 1976. Measurement of evapotranspiration with a monolith lysimeter. p.33, fig.1; In: Reports of 1974 Progress, Volume 3: Process Studies, Abiotic Section. USIBP Desert Biome, Utah State University, Logan, UT.*



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# ***Historic Research Site Discovered in Ironwood Forest NM***

*Mike Cardwell, Chris Flanagan and Mary Price*

## **A Discovery in Ironwood**

While enjoying a hike in IFNM on Christmas day, 2025, Friends members Mike Cardwell and Denise Garland came across a previously unknown, rusted barbed wire fence in disarray. It looked like a candidate for fence removal, so they investigated. They soon encountered small mammal traps, a concrete structure, the foundation of a tower, and other scattered artifacts suggesting a long-abandoned research site.

Mike queried Friends president Christine Flanagan, who polled her contacts from graduate school at UA's Ecology and Evolutionary Biology (EEB) Program. In a quick reply, Mary Price said she recognized the homemade traps as those used by UA mammalogist E. L. Cockrum for studies that were part of the U.S. International Biological Programme (US/IBP) Desert Biome program during the early 1970s. Mary recalled that there were two "validation sites": one in the Santa Rita Experimental Range where she used the Cockrum traps for her doctoral research, and another known as the "Silverbell" site which she never visited. Peter Warren also responded, saying the concrete structure in the wash was a flume constructed by hydrologists to study water flow.



*Abandoned mammal traps as found on December 25, 2025.*

FIF notified BLM's Tucson Field Office (TFO) of our find and learned that they were unaware of the nearly 60-year-old site. The TFO's archaeologist Ralph "R.E." Burrillo was assigned to join the investigation. During the next few months, the full story of the IBP Silverbell "Validation Site" slowly came into focus.

## **What was IBP?**

The IBP arose during the post-World War II era of expanding governmental support for science. Its inspiration was the International Geophysical Year (IGY) of 1957-58, a successful collaborative program that involved 67 countries and over 60,000 scientists in the study of the planet's physical systems. IGY produced many notable advances, including establishment of the still ongoing and

critically important measurements of atmospheric carbon dioxide (CO<sub>2</sub>) on Hawaii's Mauna Loa volcano. Impressed by the IGY's success, a group of environmental scientists in Europe proposed the International Biological Programme (IBP) to tackle the poorly understood flow of energy/carbon through Earth's ecological systems. IBP spanned a decade (1964-1974), involving over 50 countries and 1800 scientists in the U.S. alone.

The United States joined IBP in 1968 when Congress funded a new ecosystems studies program at the National Science Foundation. The US/IBP program focused on developing models of energy flow in five major North American ecosystems (biomes)—deciduous forest, coniferous forest, grassland, tundra, and desert. The models would be tested at “validation” sites and compared with equivalent sites in other participating countries. For its time this was an incredibly complex and ambitious undertaking.

### **A Brief History: The Silverbell IBP Site**

The *Desert Biome Research Design*, published in July 1970, was the blueprint for The Desert Biome program. Administered by Utah State University, it established validation sites in all four North American deserts – Mojave, Great Basin, Chihuahuan and Sonoran. At each site, teams of ecologists developed standardized methods to characterize the physical environment, the living components of the system, and processes. For each of the desert ecosystems, teams developed site-specific computer models of energy and materials flow through the system. All

data and reports were archived at Utah State University and are still available in their digital library at <https://digitalcommons.usu.edu/dbiome>.

There were two Sonoran Desert sites: Silverbell and another in the Santa Rita foothills. It required detective work to match our site to descriptions in the reports. The IBP Tucson Validation Site was first proposed for a location in the Tucson Mountains but was later established in the spring of 1970 along Avra Valley Road on an alluvial fan of the Silverbell Mountains. Then, by mid-October, activity on mining claims staked that same year at the site rendered it unsuitable for IBP purposes. A new (third) site suitable for the research design was found 10 km to the northwest and secured with BLM. The research finally got underway by early 1971 at the Tucson Validation Site, which was called the Silverbell site in reports from then on. This is the site we discovered.



*The device found at the study site was soon identified as a Parshall flume – a standardized device hydrologists use to measure volumetric water flow.*

Continued on page 17

# ***Update: New Threats to Ironwood Forest National Monument***

*Christine Flanagan  
President, Friends of Ironwood Forest*

Our previous newsletter detailed pending threats to Ironwood Forest National Monument. If you didn't see that article, [here is a link](#). But things are happening rapidly, so here is the latest news.

## Data Center on IFNM Border

At the May meeting of the Pinal County Board of Supervisors, an overflow crowd queued up to speak about Vermaland's La Osa Data Center project sited north of Sasco Road near Redrock. The massive project was planned for fifty-nine buildings on 3,385 acres of private land. The meeting ran long, and when the representative for La Osa finally took the podium, he announced that the project was going to be scaled back to just eleven buildings. Further deliberation was then postponed to the August board meeting. FIF joined with the Coalition for Sonoran Desert Protection to file a letter asking the developer and Pinal County to address two principal objections.

First, the area they set aside for wildlife movement runs through the center of the development. We'd like to see the area moved further east, so it better aligns with the known, already established, and mapped wildlife linkage (Ironwood to Picacho Linkage). Furthermore, long term linkage is not assured because it crosses

Arizona Trust Land property, and we know that the status of those lands is subject to change.

Second, the project boundary sits against the IFNM boundary and the proposed development plans only a 150 ft setback of buildings from the boundary. Given the noise, lighting, and human activity associated with data centers, this is too small to comfortably accommodate wildlife movement in the area.

We additionally asked for clarification of La Osa's statement that renewable (solar) energy would eventually power the project, but no area appeared in the master plan to accommodate a massive solar field, further impacting wildlife movement. Remember that wildlife movement into and out of the monument was an overarching reason for its establishment. While eleven buildings are better than fifty-nine, we know that once established, the project will likely grow as the demand for data center capacity increases. Pinal County Planning and Zoning has already approved rezoning the land for the project as it was initially proposed but it has not yet received approval from the Board of Supervisors. Stay tuned for more news after the August 26 meeting.

## Grand Staircase & Bears Ears NMs stripped of protection

Earlier this year the Utah Delegation, led by Senator Mike Lee, was seeking to use the Congressional Review Act to overturn the Resource Management Plan (RMP) for Grand Staircase-Escalante National Monument. This national monument is supported by 74% of Utahans and the effort to overturn the RMP was opposed by 150 scientists and more than 125 conservation organizations. When it became clear that the votes were not there for passage in the Senate, Lee let the effort expire on the June 11 deadline.

Then, he and the Department of Interior upped the ante: On July 13, President Trump signed two proclamations, with the Utah delegation looking on, to reduce the protected lands of Grand Staircase Escalante and Bears Ears National Monuments by over 90%. Both monuments, originally well over a million acres each, are now to be about 100,000 acres. The land and many sites of cultural importance to the five

indigenous tribes who have lived for centuries in the area will revert to the former status of being BLM land with fewer restrictions and open to mining, drilling, and other extractive activities. Note that the proclamations go into effect on September 11, a fitting day for such a catastrophic move.

The Conservation Lands Foundation and other national conservation organizations will be challenging the proclamations in court. FIF and other friends organizations associated with BLM's Conservation Lands in the West have been asked to join the battle. To learn more about what you can do to protect these and other public lands, go to [conservationlands.org](https://conservationlands.org) to see all the ways you can protest changes made by this administration.

This is not just about two monuments in Utah—these proclamations prove that no monument is safe from the President's pen. The [Antiquities Act](#) was established in 1906 by Congress to empower presidents to protect historic landmarks, structures,



*Monarch Ruins, one of many historic sites within Bears Ears National Monument. The monument was created by President Barack Obama in 2016 to protect sacred tribal lands, rich cultural resources, and ancient ancestral Puebloan artifacts. Photo: Carmen Bria, Friends of Ironwood Forest*

and other objects of scientific or historical interest on federal land by setting them aside as national monuments. Notably, President Trump's proclamations asserted that language in the Act had been egregiously misconstrued to expand protection far beyond what was necessary to fulfill the Act's intent. Local groups need to clearly understand: Those who work, usually for years, to support the establishment of a national monument and propose its boundaries are being told that what they want doesn't matter. Opening these areas to extraction will restrict public access as leases are granted and increase the likelihood of irreparable harm and habitat loss.

#### ASARCO seeks to remove 11,000 acres from IFNM protection

Officially, we have heard nothing. Unofficially, we have been told that IFNM is on the list of monuments under review by the Department of Interior. ASARCO sought unsuccessfully to add 11,000 acres of IFNM to their Silverbell Mine in 2017 and we believe that effort remains active. We consider President Trump's latest proclamations a measure of his willingness to reduce protected public lands in favor of corporate and political interests. The opinions of Arizona's federal elected officials are mixed: Senators Gallego and Kelly, and Representative Grijalva firmly support public lands and IFNM. Representatives Paul Gosar, Eli Crane, and Andy Biggs are in favor of nullifying IFNM's proclamation and have a bill pending in the House ([H.R. 5393](#)) to do so. Representative Juan Ciscomani has indicated he is sympathetic to the

#### ***Already at Bears Ears NM***

While leasing for oil, gas, and mineral extraction has not yet begun, personnel at NPS visitor centers around Bears Ears have already been issued new maps. They show disjunct sections of the monument with tiny dots of protected land around a few scattered archeological sites amidst vast acres of land that will open to extraction leases on September 11.

The Bears Ears website still clearly states that BLM and USFS manage the Monument with the Bears Ears Commission, which represented five Tribes who regard the Monument as ancestral lands. However, the Bears Ears Commission has now been terminated.

Hikers to hallowed sites in Bears Ears are already passing through thousands of acres of unprotected lands. Take note: "no trespassing" signs may soon follow the land lease auctions.

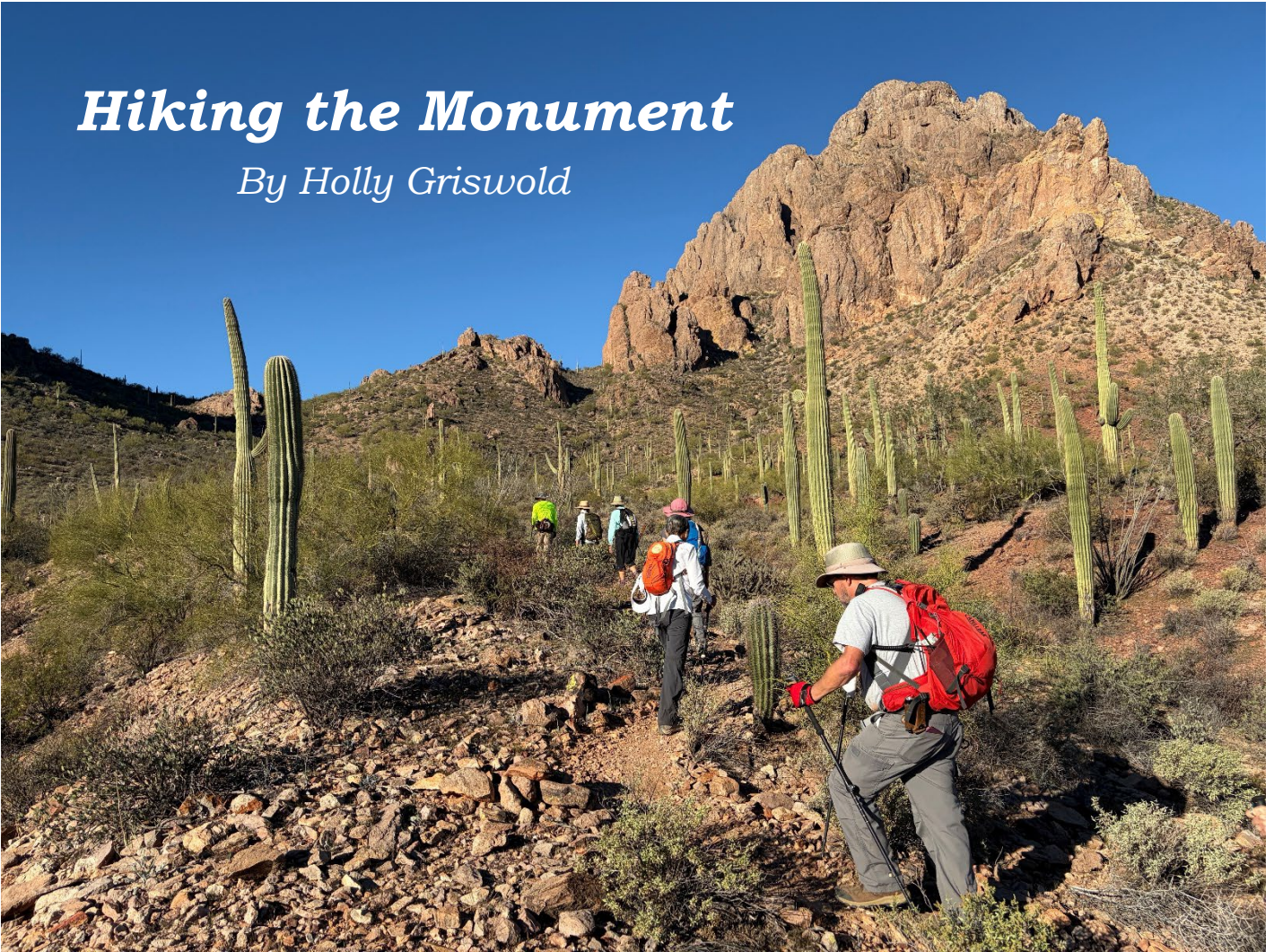
concerns of businesses who would feel an impact if IFNM were reduced. Given the lack of unanimity, it is unclear what course the administration may take. FIF is watching this situation closely.

#### I-11 route in southern Arizona

The I-11 environmental impact study is still in review at ADOT. Selection of a route, followed by a public comment period, are expected this fall. Rumor suggests that the Avra Valley route will again be selected. When news breaks, you can expect an e-blast from FIF

# Hiking the Monument

*By Holly Griswold*



Exploring on foot is a great way to get to know The Ironwood, whether you simply wander or prefer a trail to lead you to a special view or historical site. You can wander anywhere on The Ironwood, but for those preferring a clear path four hikes are described below. An Avenza map showing hiking routes can be downloaded at [https://www.blm.gov/sites/default/files/docs/2023-08/BLM\\_AZ\\_TFO\\_IronwoodForestNationalMonumentMap\\_508\\_NCL1004-01-01\\_0.pdf](https://www.blm.gov/sites/default/files/docs/2023-08/BLM_AZ_TFO_IronwoodForestNationalMonumentMap_508_NCL1004-01-01_0.pdf).

You should know before you go that The Ironwood is intentionally

largely undeveloped. There are no visitor centers. You are unlikely to encounter a BLM staff member to direct you. While there are trailhead signs, at the present time there are no trail maps posted at the trailheads. There are no potable water sources. There are venomous reptiles. Cell phone coverage is spotty. It is often hot and dry, which can cause visitors to become dehydrated or suffer heat stroke. Carry more water than you think you need. There are no garbage cans, so what you carry in, please carry out. Did I say self-sufficiency? That is how it is in The Ironwood. You

come here to walk or wander while relying on your own preparation and self-reliance, just like the well-adapted and tough critters who call this place home. General information about hiking on BLM lands can be found at <https://www.blm.gov/programs/recreation/hiking>.

The monument currently features four hiking routes. Along the way, the trails have little delineation of the route, save for the boots that walked here before you, and some erosion control and shrub trimming done annually. All hikes are out-and-backs.

Most trails are not named on the BLM Avenza map. I have used local names here:

1. Waterman Saddle hike – uses abandoned 6628 road to ascend up to a pass near Waterman Peak. Bighorns are often sighted here. Length: just under 2 miles round trip. Moderate difficulty. Spend some time at the Restoration Site just below the trailhead to see how destroyed desert is being rehabilitated to functioning habitat.
2. Elephant Tree hike – Uses an abandoned road to ascend deep into the heart of the Waterman Mountains. An interesting water collection station for wildlife is passed on the way up. There are artifacts of old mining activity, as well as one of the northernmost known elephant trees (*Bursera microphylla*). The drive in on 6626 Waterman Mountain Road requires a high clearance vehicle. The hike climbs gradually up the eroded road, through rocks and small boulders. Length: 4 miles round trip. Moderate difficulty.
3. Wolcott Pass hike – Takes you up to a saddle between Ragged Top and Wolcott peaks. The route is marked with cairns and clearing of rocks. There are great views all around, especially the wild land between the Silverbells and Ragged Top. To reach the trailhead, drive in on Silverbell Road, and turn up the primitive road 6640G – high clearance vehicle required – to its end, or you can walk up, in about a mile. At the Ragged Top trailhead sign, pass through the fence and head for the obvious pass. Hiking off trail and up Ragged Top is prohibited during the posted bighorn lambing season (January 1–April 30). Length: 2 miles round trip. Moderate difficulty.
4. Wolcott View hike – Starts from just east of the 6640G “Ragged Top Road”, on the east side of the cattleguard. Park on the shoulder of Silverbell Road. The first 200 feet are on Arizona State Trust Land. An Arizona State Land Department Recreation Permit is required to cross this section. There is trail signage (right) once you cross back into Monument land. This walk features splendid vistas of Wolcott and Ragged Top peaks amidst pink eroded rock and green saguaros. You will walk on an old ranch road. Halfway up you will slip through an old fence. The hike finishes at the Ragged Top Trailhead. Length: 2



miles round trip. Difficulty is easy-to-moderate. These hikes 3 and 4 can easily be combined into a longer outing of about 4 miles.

These descriptions reflect the current conditions. If you see trail spots that need attention, let us know. Your reports will help direct stewardship activities. As our monument becomes more popular and visitation increases, wayfinding and interpretive signage may be upgraded. This will depend on resource and staff availability at our local BLM Tucson Field Office.

*Next time: Bicycling and horse riding in the Monument*



*Just a sampling of artifacts left by people and cultures who lived in the Ironwood as much as 5,000 years ago. Petroglyphs like these, as well as evidence of residential and agricultural activities, can be found in several areas within Ironwood Forest National Monument.*

### The Board of Directors Friends of Ironwood Forest

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Harold Maxwell  
Molly Wheelwright



# *The Effects of Grazing in Ironwood Forest*

*A Friends Editorial*

You can think of this as the cowpie news. As reported in our July eblast, the BLM Tucson Field Office recently published their Land Health Evaluation for the 12 grazing allotments in IFNM (to read the report, download Ironwood Complex LHE 2026\_(FM\_SIGNED).pdf [here](#)). The evaluation was thorough, based on data gathered in the field, and well written. It is distressing, but not surprising, that 9 of the 12 allotments failed one or more of the land health standards that BLM followed in its evaluation. Changes will be required.

Ironwood Forest National Monument was named to protect its regionally significant and biologically diverse complex of Sonoran Desert habitats. Its relatively young and dynamic ecosystems, only four to five thousand years old, have adapted to extremes of aridity, heat, and high season-to-season and year-to-year variability. But not to the introduction of cattle. Our system of permitted grazing allotments brings physical disturbance and stresses on soils, landforms, and plants that diminish critical habitat and impact native wildlife. Particularly vulnerable are the

cryptobiotic soil crusts, the basis of soil productivity, that are destroyed by trampling. These impacts are exacerbated by long-term drought in the southwest, incursion of invasive plants that encourage the spread of wildfire, and users of recreational off-road vehicles.

FIF filed a letter of comment with BLM TFO strongly encouraging them to follow up with owners whose allotments failed the standards and to pursue specific actions that would immediately begin to mitigate the impact of grazing. Monitoring allotments for compliance with rules, assessing the effects of changes, and giving owners timely feedback could potentially make a big difference. These general measures should be augmented by specific, focused efforts that protect the most fragile habitat and wildlife in the monument. Among the many species that merit attention we mentioned two: The Sonoran Desert Tortoise populations are critically dependent on seasonal forage and suffer direct impact from competition by grazing cattle. In critical areas, an evaluation of forage and issuance of permits for seasonal

grazing should be conducted to assure the viability of tortoise populations. A second focus on saguaro cactus is needed. Grazing is deleterious to very young saguaros and recruitment to saguaro populations, currently not monitored, is a critical factor to the future health of habitat and wildlife within the monument. Grazing critically impacts the growth and survivorship of palo verde and ironwood trees, both important nurse trees for young saguaros. Saguaro cactus is a named object of the monument, a keystone species, and provides prime nesting habitat for the threatened Cactus Ferruginous Pygmy-Owl. Protocols to document saguaro recruitment need to be implemented going forward. The objects for which the monument was dedicated need better protection and stewardship if they are to endure for the use and enjoyment of future generations.

The most effective means of preserving the health of landscapes in

Ironwood Forest National Monument is reduction or cessation of grazing. Reduction of grazing based on measures of productivity of forage is a fair and defensible approach and is consistent with current law. Voluntary retirement of allotments with compensation should also be made available and encouraged. *We note that rules governing grazing allotments were originally established to maintain and assure the long-term health of public lands.* New grazing rules have been recently adopted. You can read BLM's announcement [here](#). Unfortunately, despite these positive comments, the reality is that they were designed by ranching lobbyists to benefit big ranchers and offer **less protection** to the land and **fewer avenues** for public input. Grazing rules designed to protect public lands would benefit the public, the ranchers, and future generations, including future ranchers. It is in everyone's interest for the fragile desert of IFNM to thrive.

### *Our Mission*

Friends of Ironwood Forest is a local non-profit organization that works for the permanent protection of the biological, geological, archaeological, and historical resources and values for which Ironwood Forest National Monument was established.

FIF provides critical volunteer labor for projects on the monument, works with the Bureau of Land Management and many other partners, and strives to increase community awareness through education, public outreach, and advocacy.

# ***Friends bid farewell, then welcome a new managing director***

## **Farewell to Lee Pagni**



After eight years as a contractor facilitating the Friends' day-to-day operations, supporting the Board, and leading fundraising and other essential efforts, Lee

Pagni notified the Board early this year of his intent to move on. Lee, who had recently moved back to California, cited his belief that the Friends are best served by someone who is physically present in the community, can build relationships, and is able to respond quickly to local opportunities and challenges.

In Lee's words, "Serving Friends of Ironwood Forest has been deeply meaningful to me. I continue to love the board, the monument, and the community that supports us."

Friends President Christine Flanagan immediately began the process of finding a suitable replacement for our only paid staff member – not an easy task, given the way the Board had come to depend on Lee. Lee was instrumental in developing an up-to-date job description that was included in the announcement that was posted widely in March. The officers individually scored applicants and by mid-April, interviews were conducted with three finalists by a small committee who subsequently

recommended a candidate to the board. A job offer was unanimously approved on 2 May, and Nick Arcobaleno became the Friends' new managing director on 6 May 2026. Many thanks go to all who contributed, especially Holly Griswold and Jackie Craig who served with Chris on the hiring committee.

## **Welcome Nick Arcobaleno**



Nick is a Tucson resident who describes himself as an educator by training and a program administrator by practice. He loves the Sonoran Desert and says that he has been interested in the

Friends of Ironwood Forest since he interviewed then-officers Gaile James and Bill Thornton in 2020 as part of a larger research initiative.

Nick has a BS degree in Environmental Science and an MS in Outdoor Education Leadership. Over the past decade, Nick has gained broad experience in a variety of leadership and administrative roles with non-profit conservation and environmental organizations, and for-profit companies. Considering his interests, experience, and training, he is thrilled to become part of the Friends organization and help us move forward into our "next phase of organizational development" in his words.

Welcome aboard, Nick!



## ***From the President***

*By Christine Flanagan*

August is half gone. August 1st marks the one-year anniversary of my tenure as FIF president. A lot has happened in just a year! In addition to the threats facing the monument that became all too real this year, we had to replace our managing director this spring. Lee's shoes will be hard to fill, but so far Nick is showing that he merits the confidence we placed in him. Lee shepherded FIF through 8 years of development, and along with Tom Hannagan and the support of the Conservation Lands Foundation, put the Friends on firm financial and administrative footing. Nick has the skills and energy to continue that climb toward professionalism. We are looking at new budgeting, financial reporting, and registration procedures, all scheduled to come online in the next 3 months.

I hope you will join us for one or more of our programs over the coming year. Watch for announcements of dates – you will get a notice if you have signed up to receive the newsletter. The first is coming right up – our walk to see prime Sonoran Upland habitat and how it is responding to the monsoon rains is on Sept. 26.

This issue of the newsletter showcases our work on advocacy, preservation, and stewardship. We never forget that all of this is possible through your support. Thank you for standing with us for the protection and stewardship of our monument. Ironwood was created because it had a groundswell of support 25 years ago. It is gratifying to see that the support is still here and bolstered by new voices.

I'll see you in Ironwood

Chris

### **Your Financial Contributions at Work**

We rely on the financial support of people like you to help us with our mission to protect the natural and cultural resources of Ironwood Forest National Monument. We also work to increase awareness of the Monument and improve visitor experience there.

Please consider donating to support our work. We couldn't do this without you. You can donate online at: <https://ironwoodforest.org/donate>



## ***Upcoming Events***

*Mark your calendars!*

**August 26**     **Pinal County Board of Supervisors meeting** 9:30AM at BoS Hearing Room, 135 N. Pinal Street, Florence, AZ.

They are expected to continue their consideration of Vermaland's proposal to build the La Osa Data Center and future solar field along Sasco Road, on the northern boundary of Ironwood Forest National Monument.

**September 26**     **National Public Lands Day** – Join us for a sunrise hike in Ironwood Forest National Monument that will celebrate some of the unique features for which IFNM was named. The hike will emphasize the ecology of the Sonoran Desert upland habitat with emphasis on desert responses to monsoon rains. Hike is suitable for ages 10 and up but limited to 20 participants. Group will meet at Marana Airport at 6:45AM, carpool to the hike site, and return by 1:00PM. Bring water, snacks, hat, and hiking shoes. Online registration required on the Friends of Ironwood Forest website

**December 12**     **IFNM Friends' "temperature friendly" Public Lands Day** celebration. Current plans include a fence removal project (in cooperation with Desert Fence Busters); more details to follow.

## ***FIF Partners***

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Archaeology Southwest                   | Mountain Mamas                          |
| Arizona Desert Bighorn Sheep Society    | National Park Service, Saguaro NP       |
| Arizona Native Plant Society            | National Parks Conservation Association |
| Arizona Game and Fish Department        | Old Pueblo Archaeology Center           |
| Arizona-Sonora Desert Museum            | Overland Expo Foundation                |
| Arizona Trail Association               | Pima Association of Governments         |
| Arizona Wildlife Federation             | Pima Community College                  |
| Avra Valley Coalition                   | Pima County                             |
| BKW Farms                               | Sierra Club                             |
| Bureau of Land Management               | Slow Body Brewery                       |
| Center for Biological Diversity         | Sky Island Alliance                     |
| City of Tucson                          | Tohono O'odham Community College        |
| Coalition for Sonoran Desert Protection | Tohono O'odham Nation                   |
| Conservation Lands Foundation           | Tortolita Alliance                      |
| Dark Sky International                  | Town of Marana                          |
| Desert Fence Busters                    | Town of Marana Chamber of Commerce      |
| Discover Marana                         | Tucson Bird Alliance                    |
| Environment Arizona                     | Tucson Cactus and Succulent Society     |
| Friends of Buenos Aires NWR             | Tucson Electric Power                   |
| Friends of Saguaro National Park        | Tucson Herpetological Society           |
| Highlands Hiking Club                   | University of Arizona                   |
| Historic Y                              | Western Watersheds Project              |
| Marana Heritage Conservancy             | Wild Arizona                            |
| Marana Parks and Recreation             | The Wilderness Society                  |

## The Ironwood Gallery

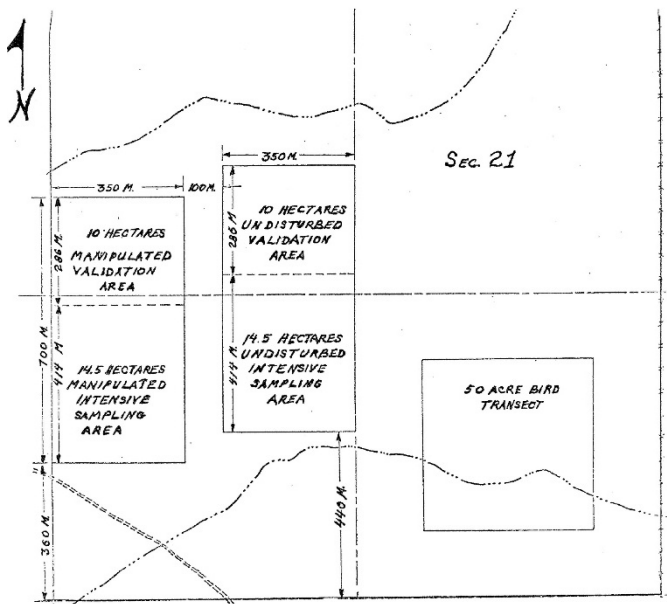
*Send us your favorite photographs of IFNM*



**Gila Woodpecker**

*Photo by Frank Staub*

Continued from page 3 –



A site map of the Silverbell Validation Site, circa 1972.

### What Occurred at the Silverbell Site?

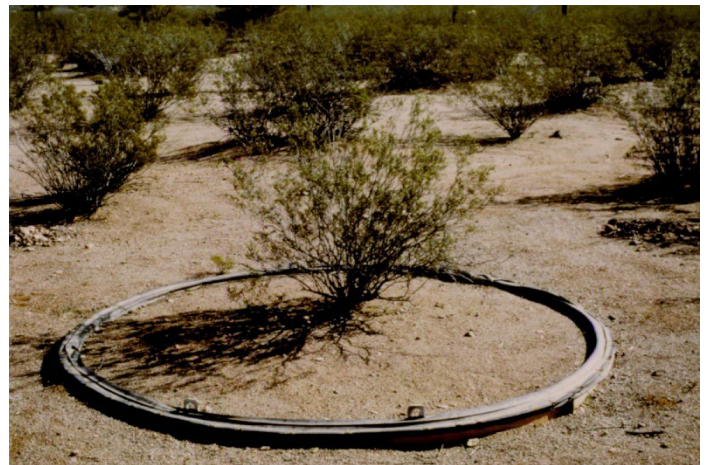
Extensive records about the Silverbell site are available in detailed reports found in the USU repository. Data were collected and reports were generated from 1971 until funding ran out in 1978. Maps of soil types, vegetation cover, topography, and sample sites give a clear picture of the research that was conducted. Details on the published maps coincide with the locations of constructed artifacts still present at the site. In addition to measurements of physical attributes of the site and weather, resident populations of insects, birds and small mammals were sampled, as well as plant diversity, productivity and seed production. As a result, a detailed picture emerged of how energy and nutrients were transformed, partitioned, and cycled through the biomass of flora, fauna, and soils of the Sonoran Desert at the Silverbell site in response to seasonal and year-to-year variations in

temperature, rainfall, and solar insolation.

### Significance of the Site

The IBP Silverbell site has been evaluated for inclusion on the National Register of Historic Places. In consultation with the Arizona State Historic Preservation Office, the determination was made that while the story of the IBP and the role it played is of immense historical importance, the Silverbell site itself and its artifacts do not warrant elevated protection. The tools left behind aren't historically distinctive – their design and materials were commonplace, and some are still in use today.

### Future Stewardship of the Site



The Silverbell site lysimeter installed and recording data, circa 1978. Photo: MS thesis of Suzanne Shields 1982.

For now, BLM TFO has determined that the artifacts on the site will be left in place but the barbed-wire fence that is present on the site can be removed. Much of the fence is on the ground and a hazard to wildlife. Removal is being organized by Tom Hannagan as a joint project of the Friends and Desert Fence Busters. It is scheduled for December 12



*The base of the antenna tower used to transmit data from the meteorological station at the site to a receiver on Mount Lemmon.*

to coincide with FIF's observance of National Public Lands Day. Use of vehicles will be limited to minimize disturbance. Teams will hike to assigned sections and hand-roll the (mostly downed) wire. Removal will likely be completed in one day.

Otherwise, the IBP site will remain intact, presumably much like it was left when the research was completed and the valuable instruments were removed. The site has been carefully mapped and catalogued, and it will be monitored by BLM TFO.

### **Interpreting the Site for the Public**

The story of the International Biological Programme and Biome studies would interest monument visitors. The IBP was at the scientific frontier; new questions required new methods of study and innovative tools. It forced change in the technology used in ecology and many other disciplines. Telemetry, aerial photogrammetry, and an explosion of chemical and radionuclide tracing methods are just a few of today's

tools that find their origins in the IBP work. The Friends will work with BLM TFO to introduce visitors to the site while safeguarding its integrity. An interpretive sign, possibly at the nearby Silverbell group site, could present the story. A lecture at next year's Meet the Monument could feature research scientists who worked at the site or were involved in IBP Desert Biome studies.

### **Role of the University of Arizona**

By virtue of its considerable arid-lands expertise, The University of Arizona (UA) administered the Sonoran Desert Biome program. John Thames in Renewable Natural Resources was the coordinator, and UA scientists across several other departments and their graduate students comprised most of the teams at the two sites.

Mary Price was a student of mammalogist E. L. Cockrum during the IBP years (1971-1974), although her research was not part of IBP. She recalls those years as a particularly exciting time to be an ecology graduate student at UA: "IBP fostered a team spirit, and a sense of excitement and curiosity about the desert as a whole that infected our entire graduate student cohort. We felt we were part of something much bigger than ourselves."

### **The IBP Legacy**

Before IBP, most ecological studies were done by small, independent teams that focused on a narrow question. IBP inaugurated a new, "Big Science" paradigm, in which teams with a diversity of taxonomic, theoretical, and technical skills worked together to understand how local ecosystems operate, and how systems vary among places.

Not only did the Desert Biome program train a generation of talented scientists in collaborative, place-based research, NSF still funds two initiatives that can be regarded as evolving directly from the IBP efforts: the Long-Term Ecological Research (LTER) program, a network of 27 permanently protected research sites including some IBP sites; and the National Ecological Observatory Network (NEON) of which the Santa Rita Experimental Range is part. The result is continual improvement in understanding of the ecology of our deserts and other biomes. Another legacy of the IBP Desert Biome program is the site-specific data from the early 1970s. These data are a baseline for understanding how our deserts are responding to a changing climate.

### **IBP Site Enhances IFNM Significance**

The IBP site in Ironwood Forest National Monument adds to our monument's significance. Study at this place led to broad understanding of how a desert functions, and suggested ways of comparing desert systems across the globe. Then, and now, federal public lands, held in trust for future generations, provide research opportunities that are hard to find on state, county, or private lands.

There is scientific value in keeping the Silverbell site as undisturbed as

possible. Researchers today and in the future would be able to repeat some of the measures, albeit with more sophisticated methods, at the exact locations sampled more than 50 years ago. These may provide comparisons that will shed light on the impacts on deserts around the world of long-term drought and increasing temperatures. There is ample evidence that our climate is changing. Areas of our planet, now fertile with adequate water for agriculture, will become hotter, drier, and less able to support human populations. As time goes on, we will need to understand more about the process of desertification in a changing climate by continuing to build on concepts studied at the IBP Desert Biome Silverbell Validation Site.

**Additional background and information about the IBP and the Silverbell site can be found [here](#).**

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