



# *Ironwood Essence*

*Friends of Ironwood Forest*

*Fall 2023*

## **The Importance of Wildlife Corridors**

*by Jessica Moreno*



*Photo by Betty Dickens*

The freedom to roam for wildlife requires a natural network of pathways—like the hub and spokes of a wheel—that for millennia wild animals have used to move across desert basins and among surrounding mountain ranges.

Today, these “wildlife corridors,” which animals still use to find food, mates, and new homes, are disappearing due to urban development.

It is not enough to protect large chunks of lands as Wilderness, Monuments, and

National Parks without the connected open space that ties them all together.

Wildlife corridors in the Sonoran Desert were first identified in 1986 by Professor Bill Shaw at the University of Arizona. Called the “Bunny Map” because of the rabbit-shaped graphics, my copy is now stained and creased, as if it had been dropped in a muddy arroyo and walked upon instead of framed and hung on the wall. The Catalina Foothills crown its upper portion where a skirt of hand-drawn symbols and folds

represent desert washes and wildlife trackways. It is the first map of wildlife habitat in Pima County that, unlike its predecessors, considered the importance of ecosystems like mesquite bosques and wetlands together with species such as nesting hawks, javelina, and saguaros.

Shaw et al's *Critical and Sensitive Wildlife Habitats in Eastern Pima County Study*, a.k.a. "The Bunny Map," also marked the first local effort to incorporate considerations for wild-life habitats and biology into urban and suburban land-use planning.

A significant finding was that natural open space occupied by far the most acreage in eastern Pima county. Riparian areas made up only 6% of the land, an alarmingly low percentage since riparian vegetation communities associated with watercourses are among the most valuable wildlife habitats. "We are making wildlife management decisions when we make land use decisions," said Shaw.

After the Bunny Map was published, the interest of local residents spiked. The Sonoran Desert Conservation Plan may have been sparked by the cactus ferruginous pygmy owl and stoked by resentment over the declining quality of life, noted Maeveen Marie Behan, the conservationist the Conservation Lands System is now named for, "But it was also marked by this sense of wonder, as all the biological studies and meetings started to show us who we are as a community, and what kind of world we wanted to live in."

The City of Tucson used the Bunny Map as a guide to create special zoning for open space and to protect arroyos. It became the precursor to the Sonoran Desert Conservation Plan, Pima County's Maeveen Marie Behan Conservation Lands System, and the forging of the Coalition for Sonoran Desert Protection. Amidst our efforts to establish Ironwood Forest National Monument, we sought to understand and to protect the lifelines that connected this open space to its neighbors.

Ultimately, the recognition of Tucson's wildlife corridors led to the construction of wildlife crossings over roads and the reintroduction of bighorn sheep in the Catalina Mountains.

For those of us who live here, it was the beginning of a new way of living in the desert and working together as a community: a challenging journey to try to balance conservation and growth. For me, it was also the beginning of a journey to understand how, and where, wildlife move.

I had my first encounter with a black bear in the Catalina Mountains as a teenager, ten years after the Bunny Map brought the concept of local wildlife pathways to public notice. My sisters and I woke in our rain-lashed tent after a stormy night to the smell of wet pine needles and something much sharper and nose-wrinkling. Bear pee.

It coated the inside of our muddy white Toyota Camry, the rear passenger window



CSDP wildlife camera

broken where the bear bent the door frame to gain access to the trunk and our food. The back seat was torn to springs and foam. I remember the deep puncture marks his incisors left on the red lid of our ice chest, which my parents still use to this day.

Bears tend to be introverts, shy and mostly solitary creatures, but they are intelligent. In an ideal world, they eat wild berries, acorns and other nuts, grubs, insects, roots, and cactus fruit. Occasionally, they get extra protein from carrion or small rodents. In a less-than-ideal world, they learn about hummus and ice cream.

I never knew the fate of our stormy visitor, but it was likely tragic. Fed bears become dangerous and aggressive, for which there are few solutions that benefit the bear. The ability to find natural food sources—the ability to move—can be their saving grace.

Bears may travel as much as a hundred miles. Although usually found in higher pine and oak elevations in our Sky Islands, they regularly use wildlife corridors to travel between them to find food and mates or to flee fire and drought. It is not uncommon for bears to drop into the lower desert foothills to eat prickly pear fruit. Here, September and April are the months when they are on the move the most, foraging before and after hibernation.

A few years ago, I tracked a bear as it traveled south down a dry sandy tributary of Ciénega Creek. Datapoint recorded, I followed its trail, bemusedly crossing my feet as I walked to leave my own footprints, big toes on the outside, like a black bear's.

Recently several bears had been killed nearby on I-10, which spurred my interest in improving their chances at crossing the highway. By placing fencing to funnel wildlife to the existing underpasses, and widening some of the old drainage culverts, we could keep the corridor safe for wildlife and motorists. For bears, this not only means fewer vehicle crashes, but it also means a stronger gene pool to keep our black bear population healthy on a landscape scale.

For black bears in the Catalinas, there are only two movement corridors that connect to sister Sky Island ranges. The first winds south through the Rincon Mountains and across I-10 to Cienega Creek, the Whetstones, Santa Ritas, and ultimately Mexico. The second turns southeast through Redington Pass and to the Galiuro Mountains across the Lower San Pedro River Valley, reaching northward to the Gila River and White Mountains.

These corridors bridge two different genetic populations found in Arizona—the Mexico bears and the White Mountain bears.

In the Catalinas, Romeo and Juliet romances unfold.

In the western foothills of the Catalina Mountains, another love story takes place. Two Sonoran desert tortoises rub noses in foreplay, seemingly unaware of the tiny backpacks they carry: small gray tracking devices held on by putty. The trackers are helping Arizona Game and Fish biologists monitor the success of the first wildlife bridge constructed in southern Arizona.



*CSDP file photo*

The Coalition for Sonoran Desert Protection is assisting by placing wildlife cameras throughout the corridor. The project has recorded many species, from badgers and white-nose coati to bighorn sheep, while engaging residents and local elementary school students in the effort.

The wildlife bridge and a paired wildlife underpass are important investments to connect the Catalinas with open space on the other side of Oracle Road. They link the mountain range with the Tortolita Mountains and, potentially, the Tucson Mountains westward in a green belt circling Marana and Oro Valley. Where black bears are only rarely seen, here tortoises reign in the low desert among creosote and globemallow.

Tortoises have plant-based eating preferences like black bears. They also have few natural predators, roam hundreds of miles with compass-like determination, and hibernate in the cold months. Tortoises get most of their water from the plants they eat, carrying it in canteen-like bladders. When

handled, they risk losing an entire summer's water supply by peeing on you in a desperate act of self-defense.

Roads and development are perilous hazards for them. But with thoughtful planning and community support, we can solve these threats. Safe crossings and open space benefit more than fuzzy bunnies, tortoises, and bears – they also provide a beautiful, thriving, and resilient place for us to live.

The original Bunny Map has since evolved into more sophisticated maps with new technology and new knowledge of the world outside our door. The Wildlife Corridors Conservation Act of 2019 passed successfully and is funding the protection of corridors across the U.S. In Los Angeles, the largest wildlife crossing ever built is under construction and will span the ten-lane 101 Freeway for mountain lions and other wildlife.

Journalists have published excellent books on the work of wildlife corridor protection and our progress, including Ben Goldfarb's *Wildlife Crossings*, and Mary Ellen Hannibal's *Spine of the Continent*.

International scientific conferences on topics of Ecology and Transportation, Road Ecology, and Wildlife Connectivity are attracting experts worldwide to share ideas and knowledge each year.

And locally, we continue to repair broken landscapes by removing old barbwire fencing, purchasing conservation lands that connect critical habitat, defeating harmful development proposals, and building wildlife crossings across our roadways.

I grew up in a world that was learning and refining these ideas, as a child running barefoot in the sand down the same washes tortoises and black bears traveled.

Today, we're a community working together, looking to the horizon. Like the landscape, we are stronger when we are connected.

*Jessica Moreno is the Conservation Science Director at the Coalition for Sonoran Desert Protection.*

**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.*

**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>*



# ***From the President***

*by Tom Hannagan*

In this issue of the FIF newsletter, I would like to focus a bit on the actual organization of the Friends of Ironwood Forest (FIF).

We are a non-profit entity with a volunteer board, founded in 2007. Our success depends on the passion and dedication of those who attend to the complex details that keeps the Friends working.

First, we have three such board members that have either recently retired or are transitioning to that status. Gaile James, Bill Thornton, and Jim Avramis all stepped into a transitional stage of the FIF organization some years ago when it had to move from a funded executive director to surviving on its own.

It is no exaggeration to claim that their initiative kept FIF afloat during a critical time. Resources were low, and the need for board members and funding was acute.

As we move forward without these three individuals, we are grateful for their determination that allowed FIF to survive and continue its work.

We would point out, however, as the line in the Eagles song "Hotel California" goes, "You can check out any time you like, but you can never leave." As they move to emeritus status, we will continue to rely on Gaile, Bill, and Jim for the wealth of information they have amassed.

Secondly, the biannual FIF newsletter is the product of many contributors who share their expertise, information, and images with us. Additionally, the design, assembly, editing, and publishing is the work of two long-term FIF friends, Scott and Julie Roederer. Their volunteer service started in 2015,

meaning they have been involved at least as long as any of our remaining board members. Their dedicated and professional efforts are invaluable and deeply appreciated. The quality and appearance of the newsletter is proof of their talent and effort.

Finally, I thank all of you who support FIF with contributions of both funding and personal time. The advocacy for the Monument, our educational efforts, and activities in the field that support the fauna and flora of IFNM, depend upon your support.

The Board of the Friends of Ironwood Forest and our volunteers look back with justifiable pride on our past and current efforts to protect and preserve our National Monument.

Thank you.

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## **FIF Board Members**

January 2024

Tom Hannagan, President  
Mike Doyle, Vice President  
Dave Barker, Secretary/Treasurer  
Mike Cardwell  
Leona Lansing  
Harold Maxwell

## *New Members*

Pi Poletta  
Molly Wheelwright

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# ***The Latest on I-11 as Planned***

*by Gene McCormick*

The Coalition for Sonoran Desert Protection has been involved in commenting on the proposal for a new southern Arizona federal highway, Interstate 11, for a decade.

We first commented on the Corridor Justification Study in July 2013. As the project studies further progressed, the federal and state transportation agencies were seemingly bent on building a new freeway through the Sonoran Desert west of Tucson.

However, you responded en masse, and by the time the Tier 1 (of 2 tiers) Final Environmental Impact Statement (FEIS) was complete, thousands of Tucsonans had registered our adamant opposition to this proposal, which would have impacted multiple protected parks—from Saguaro National Park and Ironwood Forest National Monument to our beloved Tucson Mountain Park—and severed wildlife movement throughout Avra Valley.

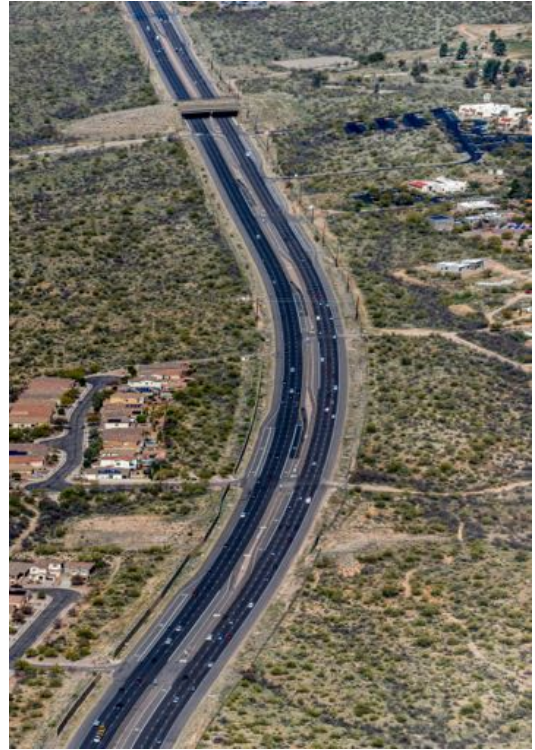
Because of this overwhelming response, the federal agency partially backed off of pushing the western route and instead included an I-10 “co-location” option, with both options going forward to a Tier 2 EIS.

Where is this now? The Coalition filed a lawsuit in April 2022, citing the failure of the federal transportation agency to fully consider the importance of the parks and the direct and indirect impacts this freeway would have on the critical and sensitive resources of these lands.

They also failed to follow the US Fish and Wildlife Coordination Act, which necessitates a sign-on from other agencies to bisect certain protected areas, in this case the Bureau of Reclamation Tucson Mitigation Corridor.

The Coalition’s lawsuit was filed in partnership with the Center for Biological Diversity, Tucson Audubon Society, and Friends of Ironwood Forest. The suit has been assigned to federal court judge John Hinderaker in Tucson.

The case has not been decided, as both parties filed for extensions of the deadlines



*Wildlife bridge on Oracle Road*

for responding to documents. Most recently, the judge has given the federal government (defendants) until October 19 to respond to our (plaintiffs) latest filing.

The federal government filed a motion to dismiss one of our legal claims. Following a January 2023 hearing, the judge denied their motion.

As to funding for Tier 2, the Arizona legislature passed a bill that provides funding for the next round of studies, but only for the section in Maricopa County. We will continue to update all of you as this progresses. Thank you all for all your work to prevent this project!

*Want to learn even more about the history of I-11? Head over to our comprehensive set of [webpages about I-11 here](#).*

Click to the right of the I-11 symbols below for more information:

I-11

I-11 [Interstate 11](#)

# Additional Background Information on I-11

For links to websites with more detailed information, click on this link:

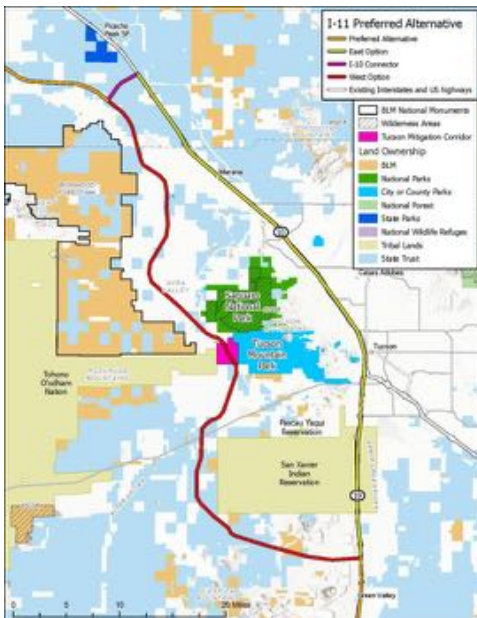
## [What is I-11?](#)

At present I-11 is an interstate highway that runs concurrently with US highway 93 for only 22.8 miles from Henderson, NV to the Arizona border. The Federal Highway Administration (FHWA) plans to extend I-11 from Reno, NV to Nogales, AZ.

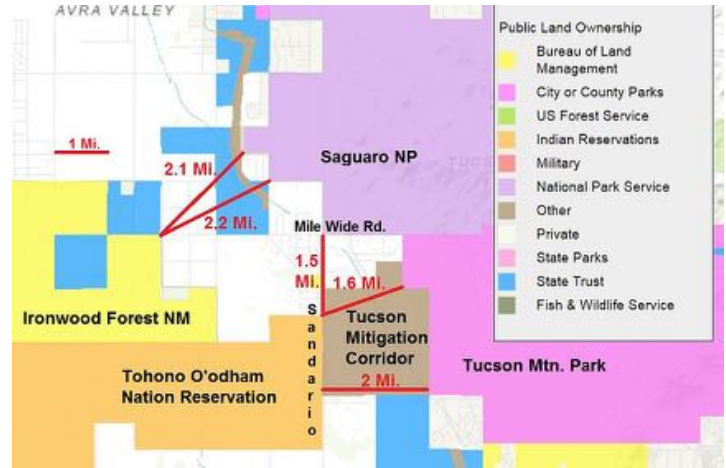
The FHWA planning has proceeded through the publication of a Final Environmental Impact Statement and issuance of a Record of Decision (ROD). The Arizona Department of Transportation (ADOT) has cooperated with FHWA in the planning process. Long range plans have considered I-11 to ultimately be a part of the Inter-mountain West Corridor extending north to the Canadian border.

### **Affected Public Lands Near Tucson**

The FHWA has proposed two options shown in the following map for the routing of I-11 in the vicinity of Tucson. The “East Option” (yellow) would follow the existing route of Interstate 10. The “West Option” (red) would construct a new highway through Avra Valley.



Of immediate concern to Friends of Ironwood Forest is the planned routing of the West Option through critical natural areas in close proximity to a number of designated public lands. This situation would be very severe in the vicinity of Mile Wide Road, as shown in the following figure.



This shows that the West Option in Avra Valley would pass within about a mile or less of:

- Ironwood Forest National Monument
- Tohono O'odham Nation
- Tucson Mountain District (West) of Saguaro National Park
- Tucson Mountain County Park

In addition, the West Option of I-11 would actually be constructed **within** the [Tucson Mitigation Corridor](#).

### **Some Impacts of the West Option**

The West Option would severely impact nearby public lands, not only threatening the biological, geological, and archeological objects protected in those lands, but also degrading the experience of visitors to those lands. In addition, the west option would destroy the rural character of the Altar and Avra Valleys treasured by many residents.

The West Option would sever critical migration corridors between important

wildlife habitat areas, such as between the Tucson Mountains and natural areas to the west, such as Ironwood Forest National Monument (IFNM).

The West Option would cost more to build than the east option and would place a freeway, with the threat of a toxic spill, next to the City of Tucson's major water supply.

The amount of additional noise caused by I-11 traffic would be about the same for the East and West Options. Of course the noise would be more noticeable or intrusive in the West Option since it comes from a different type of source than the existing noise. The existing noise along the east option is due to road traffic, while along the more rural west option it is due to other, more natural causes (snakes rattling, etc.).

### **Current Status**

FHWA and ADOT issued the [Final Tier 1 I-11 Environmental Impact Statement \(EIS\)](#) in July 2021, and many [comments](#) were received during the public review period.

FHWA and ADOT issued the [Record of Decision \(ROD\) and Final Preliminary Section 4\(f\) Evaluation](#) in November 2021.

Friends of Ironwood Forest joined the Coalition for Sonoran Desert Protection, the Tucson Audubon Society and the Center for Biological Diversity in a [lawsuit](#) filed April 21, 2022 in the U.S. District Court of Tucson against the Federal Highway Administration's (FHWA) approval of I-11.

In May 2023 the [U.S. District Court of Tucson](#) ruled that the [lawsuit could continue](#), despite a motion by FHWA to dismiss it.

### **Our Lawsuit**

Key contentions of the [lawsuit](#) are:

FHWA failed to comply with various regulations, including NEPA or Section 4(f) of the US Transportation Act.

FHWA issued a Record of Decision (ROD) on November 15, 2021 without selecting an alternative route (East or West). They elected to approve the highway while

deferring selection of an alternative route, i.e. put the cart before the horse (or kick the cart down the road).

FHWA ignored warnings from other government agencies concerning possible land-use conflicts, such as intrusion on the Tucson Mitigation Corridor.

FHWA cursorily rejected other transportation technologies or alternatives, such as rail or multimodal transportation modes, or other traffic management strategies that could alleviate transportation problems.

## ***FIF Partners***

Alliance of Arizona Nonprofits  
Archaeology Southwest  
Arizona Desert Big Horn Sheep Society  
Arizona Game and Fish Department  
Arizona Native Plant Society  
Arizona Wildlife Federation  
Bureau of Land Management  
Center for Biological Diversity  
City of Tucson  
Coalition for Sonoran Desert Protection  
Conservation Lands Foundation  
Dove Mountain Hiking Club  
Friends of Buenos Aires Nat. Wildlife Refuge  
Historic Y  
MET Foundation  
Mule Deer Foundation  
National Park Service, Saguaro NP  
National Parks Conservation Assn.  
Old Pueblo Archaeology Center  
Pima County  
Public Lands Foundation  
Saguaro National Park  
Sierra Club  
Sky Island Alliance  
The Rock Band  
The Wilderness Society  
Tohono O'odham Community College  
Tohono O'odham Nation  
Tortolita Alliance  
Town of Marana  
Town of Marana Chamber of Commerce  
Tucson Audubon Society  
Tucson Cactus and Succulent Society  
University of Arizona



# ***In Memory of Royce Ballinger***

Royce Ballinger, professor emeritus, distinguished academic and teacher, and emeritus Friends of Ironwood Forest Board of Directors member, died peacefully in his sleep Monday, November 20. He was 81.

Royce brought to the board a wealth of knowledge, a world of administrative experience, and an enthusiasm for the Monument that translated into an active and productive role on the board.

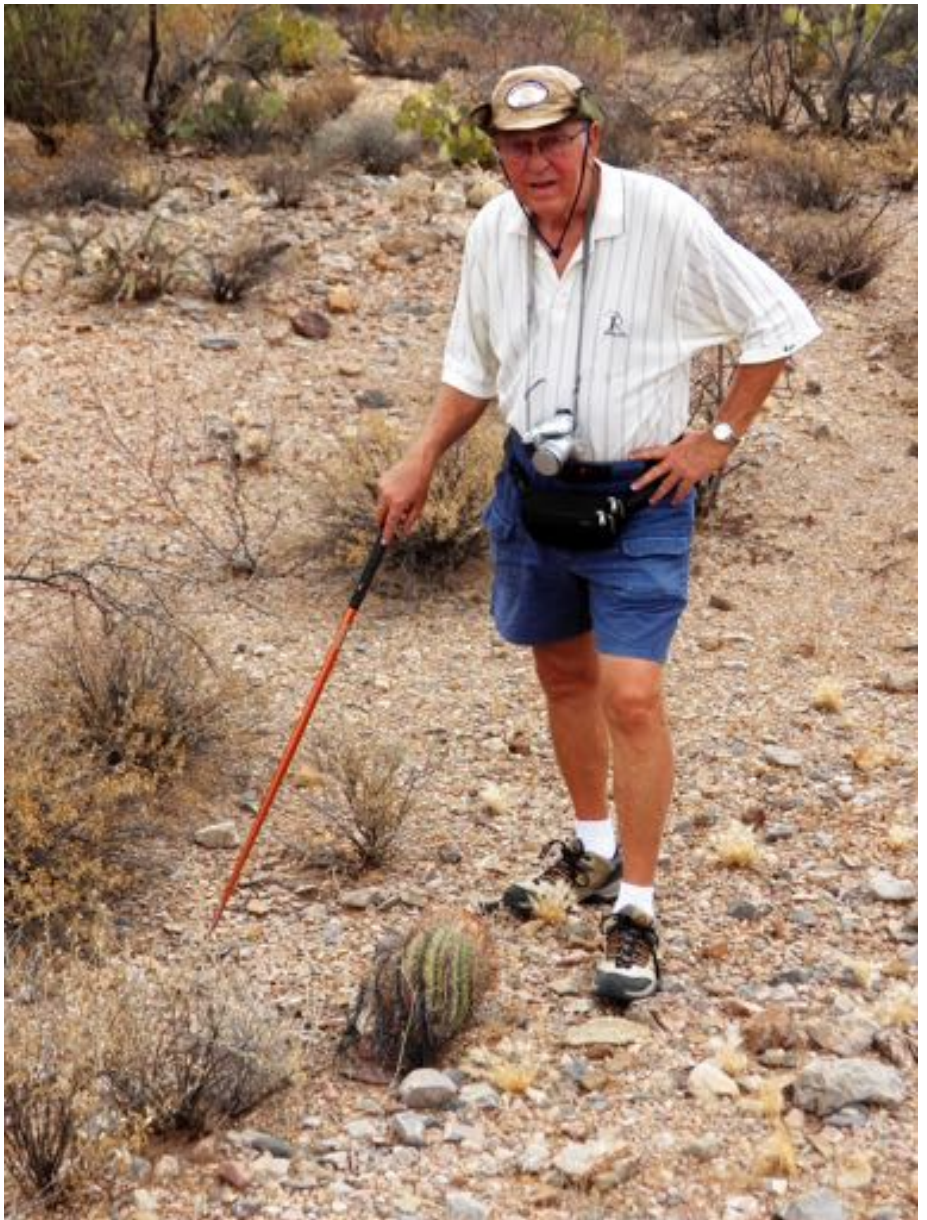
Royce served multiple terms on the board. When Meet the Monument (MTM) was introduced as an event in 2011, Royce was one of the first scientists to step forward and give a lecture on the flora and fauna of the Monument. He followed these lectures with guided walking tours of the surrounding desert, pointing out these features *in situ* to the general public.

Herpetology presentations by Royce and board member Young Cage in subsequent MTM events, where the audience had the chance to handle snakes and other crawlies the two had “picked up” on the desert floor earlier in the morning, were highlights of each gathering.

Royce was a prolific fundraiser, always available to represent the board at public and private funding and publicity events throughout the Tucson area. He donated the majority of the first printing of his book *Natural History of the Ironwood Forest National Monument: A Sonoran Desert*

*Primer*, which he authored with former board member Young Cage, to the board for use as a fund raising premium.

Born in the small town of Burkburnett in north central Texas, Royce acquired his first scientific experiences while in high school doing research and making recordings of caves in the area. As a young adult he earned four levels of higher education degrees.



*Photo by Gordon Hanson*

During his professional career he taught 35 different courses in the natural sciences, chaired and served on over 100 university, national and international panels and committees, belonged to multiple professional organizations including Southwestern Association of Naturalists, the Herpetologists League, and Ecological Society America, and wrote 130 technical publications and three books.

In retirement he became the avocational archaeologist he had always wanted to be, joining the Arizona Site Stewards Program and spending hundreds of hours in the

desert surrounding Tucson protecting and preserving sensitive archaeological sites.

Royce was a beloved member of the board and a true friend of the monument and the Sonoran Desert. We deeply appreciate his clarity and vision, which provided the guidance and stability the board needed as we matured in support of IFNM. We will remember Royce as his legacy lives on.

Royce is survived by five children, brother and sister-in-law, longtime partner Jean, and many friends throughout the world.



## The Ironwood Gallery

*Send us your favorite photographs of IFNM.*



*Ragged Top After Dark  
Photo by Jim Avramis*



*Panorama of Ironwood Forest NM*  
*Photo by Richard Tribble*

Member Richard Tribble recently  
published a book entitled *Those Pesky*  
*Pigs*. It is available at

[javelinastore.com](http://javelinastore.com)