



SPRING 2018

Friends of Ironwood Forest

Historic Titan II Site Open in IFNM

by Richard Kampa

The Bureau of Land Management and the U. S. Air Force dedicated the new Titan II Missile Interpretive Site on Nov. 16, 2016. The site is located off Johnston Mine Road in Ironwood Forest National Monument.



It was an inspiring event to showcase the new addition to the Monument, and many honorees attended, including some who had worked at the site while in operation during the Cold War.

Friends of Ironwood Forest was involved in this project almost from the beginning. They provided many hours clearing and remediating the site, as well as installing the signage and providing the refreshments for the ceremony.

The Titan II Missile sites were located in three areas in the U.S. as a deterrent to nuclear war during the cold war period—two states in the heartland and Arizona. These silos, numbering 18 across our state, were manned 24/7, and each was capable of launching a Titan missile in 58 seconds in case of an attack on the U.S.

Green Valley is home to the Titan Missile Museum, a silo preserved in its original condition for visitors to learn more about this period in history. The IFNM site provides another way to experience this history.

Visiting the site is easy. Take Exit 242 from I-10 (Avra Valley Rd.) Travel west about 19.5 miles to Johnston Mine Road and turn left. The road to the site is about a quarter-mile on the right. There is plenty of parking and easily accessible, flat walking areas.

The views of the Waterman Mountains are great, and if you're lucky, perhaps you'll see a desert big horn sheep or two!

Enjoy the experience!

Read Dick Kampa's reminiscences of working on the Titan II project on page 2.

Titan II: Cold War in the Hot Desert

By Richard Kampa

The history of the Titan II missile began in Arizona in the early '60s. Construction started at the site in Ironwood Forest National Monument in December 1960 and was completed in October 1962. However, the missile was not installed and made launch-ready until May 1963.

The site remained on alert until March 1984 and was one of a handful of sites that were mission-capable for 21 years. Along with 17 other Titan missile sites in Arizona, it was part of the 390th Strategic Missile Wing, with its base of operation at Davis-Monthan Air Force Base in Tucson.

It was manned 24 hours a day, 365 days a year, by a cadre of two commissioned officers and two enlisted crew members. It received support from a vast array of maintenance specialists who performed duties as mundane as painting the floors and as complicated as doing a full missile recycle with all associated tests.

The Titan II carried the largest payload of any missile in the Air Force inventory. When the 18 Titans were on alert, the area around Tucson was a nuclear power capable of producing 162 megatons of destruction equal to 162 million pounds of TNT.

Photos by Gene McCormick



had a 10-foot diameter. There were sections that you could actually lie in or stand up to work on its systems.

The Titan II not only served the purpose of being a nuclear deterrent but also was used to boost astronauts in the Gemini space programs. Some of its last duties after 25+ years of military service included putting payloads into space. After the government saw no more need for the missiles, they were retired to the boneyard in Tucson, and the remaining airframes were sold for scrap. Like most aircraft, it was not a glorious ending for something that was so important to the defense of the United States.

After shutdown, code named "Rivet Cap," 17 of the 390th silos were destroyed by first removing the 758-ton silo closure door and then imploding the top levels of the silo after all salvageable equipment was removed. Most of that was sold to private citizens, but some was kept in government hands to be used by other agencies.

The silo that sits in the boundaries of IFNM was designated 570-3. Thanks to your organization, the Bureau of Land Management, and the U. S. Air Force, this site has been preserved for future generations to visit and learn about the mission of the Titan II in Arizona.

The only site that remains intact is 571-7, now known as the Titan Missile Museum, located

Continued on page 3



The silo itself was built to take a first strike and be able to retaliate. Every launch-critical component was shock isolated by the means of huge springs. The missile stood 110 feet tall and

Continued from page 2

in Green Valley. With the 1-7 site and the 0-3 site, you can now take a look at what it was like before and after the site was decommissioned. I know all former personnel who worked on these sites are glad to know that the history of the Titan will be preserved for future generations.

It was my great honor to be able to represent these warriors at the dedication of the Titan II Interpretive Site.

A personal note:

Let me tell you a little about myself so you know some of my qualifications to be able to write about the Titan. I joined the Air Force at the young age of 18 and spent about a year in initial training before being assigned to the 390th at Davis-Monthan.

I worked in E-Lab, which maintained the

equipment needed to launch the Titan. During my nine-year tour, I saw many upgrades to modernize the system. I also spent time in quality control, during which I inspected both personnel and equipment.

The final section I worked in was the Technical Engineering and Analyst Team, which dealt with problems that did not have a clear-cut solution in the manuals. In this capacity I served on the alternate battle staff and was actually able to spend the night at one of the complexes.

I currently serve as President on the Board of Directors of the 390th SMWMA, a memorial association tasked with the mission to perpetuate the history of the 390th SMW.

Once again I want to thank your organization for their efforts to recognize the history of the Titan missile in Arizona.

Meet Lee Pagni, FIF Board Member

Lee Pagni, the newest member of our board, has been working in the field of conservation biology for 25 years. He has been a wildlife biologist, naturalist, field researcher, conservation educator, and species recovery planner.

He now writes and manages grants for LightHawk, a conservation organization that uses general aviation to protect the earth. He is also a private pilot and a UAS pilot.

Lee has lived in Tucson for 12 years, during and after earning his master's degree in Renewable Natural Resource Studies at the University of Arizona.

He fell in love with the Ironwood Forest National Monument over multiple camping trips there with his wife and kids.



Become a member of Friends of Ironwood Forest today!

We care about IFNM. We hope you do, too. We rely on the financial support of members to help us with our mission of protecting the resources of IFNM, enhancing the visitor experience there, and creating awareness.

Please join FIF today.

Basic membership is \$35, but additional contributions help us with our efforts.

Contribute online with a credit card or PayPal at:

www.ironwoodforest.org

Crested Saguaro, a Memorable Sighting

by Bill Thornton

For dedicated “cactus huggers” or even the mildly curious, the sight of a crested saguaro (*Carnegiea gigantea*) is special treat.

For decades the conventional wisdom was that only about 200 of these fascinating plants existed throughout the entire Sonoran desert, but nobody really knew since there was no record of a systematic search.

That began to change nearly 20 years ago when Bob Cardell and friends from the Southern Arizona Hiking Club took a special interest in them, photographing and recording GPS coordinates of each one they spotted.

Following leads from every corner of saguaro country, they eventually found and documented more than 2,000. While not as rare as once believed, each sighting is memorable.

Such was the case on a recent trip to Ironwood Forest National Monument when we spotted the beauty pictured here, just inside the northern boundary of the monument.

Despite countless visits to IFNM and participation in many workdays, this is the first fully developed crested saguaro I've seen.

A budding crest is developing alongside Silverbell Rd. near the foot of Ragged Top. We're monitoring its development.

Many species of cacti form crests. Potted specimens are highly prized by collectors and bring high prices at nurseries and trade shows. Information and photos can be found online by searching for crested cactus.

Many people are fortunate enough to have saguaros on their properties. A lucky few even have crested ones. Many reputable nurseries sell



saguaros. The Tucson Cactus and Succulent Society has a list of member nurseries, and “rescue saguaros” are offered at TCSS sales when available. Check their website for details.

While your young saguaro grows, many thousands of mature saguaros are yours to enjoy in both units of Saguaro National Park, Pima County's Tucson Mountain Park, and of course IFNM.

You may be lucky enough to spot a crested saguaro in the wild, but a nice specimen is located just outside the main entrance to the Arizona Sonora Desert Museum.

If you spot one in IFNM, please snap a photo and send it to me at: cactusworld@msn.com



In the Backyard ***with Monument Manager Claire Crow***

During my first year at Ironwood Forest National Monument, we began working together with you (interested partners, neighbors and public) to create the Travel Management Plan (TMP). Together, we identified some specific high-priority projects for initial implementation efforts related to appropriate access.

Friends of Ironwood Forest has been an instrumental partner in accomplishing on-the-ground work, such as developing interpretive and group recreation sites, reclaiming routes designated for decommissioning, installing fence sections along roads, installing gates, and improving a trail.

So what's coming next? Bureau of Land Management staff will be conducting condition assessments of the roads and identifying future road maintenance projects. Upcoming volunteer projects include: installing signs to identify where the traveler is entering and leaving the Monument; improving existing pullouts into portal sites with kiosks and parking; and installing road number identification signs.

Following the completion of the TMP, we worked together with the local scientific community and state wildlife managers (Arizona Game and Fish Department) to identify research needs and potential partners for accomplishing that research.

We will continue to expand these discussions in order to develop a Science Plan for IFNM, which will include strategies for attracting research projects that help us learn more about the resources and how best to manage them.

In the meantime, we issue scientific research and collections authorizations for studies across a number of disciplines. A new study starting this year will be acoustic surveys conducted by biologists from the Natural Resources Division of Pima County Natural Resources, Parks and Recreation, to determine the presence of *Macrotus* bats in the vicinity of the county's Lord's Ranch property.

From nearby University of Arizona, one student is finishing up a genetic study on the elephant tree (*Bursera microphylla*) population in the Waterman mountains. Another is preparing to publish research on the regeneration of a population of resurrection moss (*Selaginella arizonaica*), and a third is analyzing the

interactions of mistletoe (*Phoradendron californicum*) with its host species. The researchers in the latter two studies have also participated in volunteer projects!

The scientific research and collection authorizations that BLM issues allow the resources of IFNM to contribute to the pool of scientific knowledge. The results of the studies conducted on the IFNM help inform our management by indicating whether adjustments are needed in order to meet our goals.

In many studies, IFNM is one of many sites; the results of these studies indicate how we can best manage resources cooperatively with other agencies and organizations, contributing to ecological health at a landscape scale.



Photo by Scott Roederer

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 the 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.

From the President

By Tom Hannagan

In the O'odham language, Kekel Ha-Mascamakud means "Community College".

Friends of Ironwood Forest (FIF) has the mission of protecting and preserving Ironwood Forest National Monument. One strategy for carrying out that mission is to inform the public of the Monument's existence and the value of the objects within its boundaries. The more people know about the Monument, the more likely they are to support its continued protection.

FIF has held public events at IFNM for several years and given presentations to various community groups, all intended to explain and educate people what IFNM offers. We have just taken an additional step to involve college students and faculty in experiencing the Monument firsthand.

Following the FIF grants policy, we recently agreed to fund a request from the Tohono O'odham Community College (TOCC) to support their efforts to take students to IFNM. The students will be carrying out assignments and research as part of their curriculum related to biology, geology, and natural history.

The onsite learning will include three areas: Ragged Top, the Waterman Mountains, and an area of concentrated cultural artifacts. Their assignments and research are up to the students and their professor. Personally, I have lobbied for some language sharing of the O'odham names for the plants and other features.

The college is excited about this opportunity and so are we. We expect that the students will learn a lot about the natural and cultural features of the Monument and that this knowledge will enthruse some of them to pursue more studies or careers in nature and conservation.

FIF is also looking forward to learning about their experience and how this approach to spreading-the-word might occur more broadly, involving other educational partnerships.

The students' findings and reports will be presented to the FIF board and will likely find their way to our website. TOCC will manage the grant according to the approved request and a Memorandum of Understanding agreed to by the college and FIF.

The Tohono O'odham Nation is very supportive of the community college, and one benefit of involving the students in the Monument is to enhance the Nation's knowledge of the existence and value of IFNM.

IFNM was inhabited by ancestral people of the O'odham, and the Monument shares its western border with the Nation.

This initial collaboration between the College and FIF is expected to have many benefits for the students, the Nation, and IFNM.



Adrian Quijada, professor of natural studies, Tom Hannagan, FIF president, and Paul Robertson, TOCC president

Meet the Monument a Huge Success



It would be difficult to script a better day for our annual Meet the Monument 2018 event—guests were treated to perfect weather conditions and a highly engaging experience. By many accounts, the day was a huge success, with close to 250 participants!

Meet the Monument allowed a diverse group of visitors to enjoy a variety of what Ironwood Forest National Monument has to offer. This is the Friends of Ironwood Forest's yearly signature event that allows us a chance to share the Monument with the public. There is a lot to cover; this special land has been set aside to protect threatened plant and animal life, priceless archeological assets, and unique geology.



With majestic Ragged Top providing the backdrop, attendees (many first-timers) enjoyed walkabouts led by local naturalists, interpretive exhibits, and representatives from organizations charged with protecting this special place.

A variety of speakers covered the topics of saguaros, archeology, big horn sheep, and the role of The Wilderness Society and BLM in protecting and preserving the assets of the Monument.

FIF would like to thank our speakers—Bill Peachey, Claire Crow, Bill Gillespie, Mike Quigley, and Joe Sheehey—and hike leaders Reis Lindley, Rachel Feuerbach, Allan Morgan, and William Thornton.

Providing valuable information on the Titan II missile era was Richard Kampa, while Gary Borax shared the challenges and adventure of hiking in IFNM. Cecil Schwalbe shared his knowledge of reptiles including live “friends!” The BLM was key to staging and staffing the event, as well as providing information to the public.

Sponsors and partners for the event include The Conservation Lands Foundation, the BLM, The Wilderness Society, Patagonia, Summit



Hut, Dragoon Brewery, Bach's Cactus Nursery, Tucson Cactus and Succulent Society, Rusty Lizard Press, Arizona Native Plant Society, Jim Mabin, and Ray Kuhn. Doug Kreutz of The Arizona Daily Star once again provided generous coverage of our event.

And finally, the board of FIF is extremely grateful to the volunteers that constantly provide time and resources in organizing this event for the public. As well, those members contributing funds to the organization make it possible to maintain these events.

It takes a village; we have a great one.

Members and Supporters

Thank you to everyone who has donated to Friends of Ironwood Forest. Your generosity and love of IFNM are doubly appreciated. If your name should have been on this list and isn't, please let us know: gaile@ironwoodforest.org

Alanis, John	Flemm, Vicki & Paul	Doug	Wallin, John
Anderson, Flo	Foley, Theresa	McWenig, Matt	Waser, Nick & Price
Armstrong, Barry	Franklin, Colisse	Miles, Charles	Weesner, Margaret
Ashbaugh, Robert	Freshwater, Diana	Miller, Keith	Williams, Joy
Astroth, Kirk	Garcia, R.T & S.A	Millet, Saralaine	Woodin, Elizabeth & Bill
Avramis, Marilyn & Jim	Garrett, Linda & John	Milsom, John	Worboys, Susan
Bagley, Raymond	Gold, Vivianne & Bruce	Monahan, Pat	Yetman, David
Ballinger, Royce	Goodman, Roslyn	Morrison, Karen & Larry	Ziegler, Sally
Barker, Carol & David	Griffiths, Matthew	Mowry, Shelley & David	Zielinski, Elaine & William
Basta, Joanne	Grijalva, Ramone	Nevins, John	
Beal, Deron	Hage, Claudia & Gregg	Nigl, Carol	
Bender, Michael	Hahn, Julie & Jeffrey	Oler, Lee	
Benike, Anita & Bruce	Hannagan, Barbara & Tom	Olmstead, Katherine	
Besich, Mark	Hanson, Linda & Gordon	Packer, Anny & Lester	
Bevill, Lynn	Hart, Donald M.	Pagni, Lee	
Binney, David	Heller, Donald	Payne, Karen & Michael	
Black, Don	Hellmann, Pattie & Peter	Pettersen, Judith & Paul	
Boorse, Connie & Rodney	Higgins, John	Phillips, Marcia & James	
Borax, Carol & Gary	Hill, Marian & Ron	Picciurro, Lorel	
Botel, Karen	Hoover, Mary	Pifer, Alburt	
Bria, Carmen	Horst, Susanne	Plank, Louise	
Bronstein, Judith	Hubbell, Evelyn & Peter	Pogorelski, Dale	
Brown, Sara & Christopher	Hungate, Robert & Joann	Probert, Clive	
Burkholder, Martha & Bob	Huston, Dianne	Quinn, Joyce A.	
Cloud, Nancy S	Irvine, Ben	Ratliff, Laura	
Coburn, Carol & William	James, Taylor	Rhodes, Mercy & John	
Collazo, Debra & Thomas	James, Gaile	Rill, Jeffrey	
Cook, Brenda & Alan	Jandrey, Frederic	Rivera, Nancy	
Coons, Stephen Joel	Jehle, Paul	Roe, Alice & Bill	
Craig, Jacqueline	Johnson, Michael	Roederer, Julie & Scott	
Dahl, Kevin	Kane, Beth	Rossetter, Pamela & Dave	
Dalton, Jennifer	Kantor, Jeffrey	Rosso, Brit	
DeBoer, Linda	Keyes, Paula & Dale	Sachs, Karl	
DeConcini, Dino & Elizabeth Murfee	Klimek, BJ & KJ	Sausman, Karen	
Deters, Pamela & Arthur	Kniesly, Cristina & Warren	Schlusberg, Paula	
Diers, Janis & Russell	Koprowicz, Carl	Shaw, Bill	
Dimmitt, Mark	Kovatch, Ron	Simmons, Diane & Paul	
Doelle, William	Kozacek, Susan	Snow, Christy	
Eagle, Carol & Donald	Kurtis, Ruth & James	Sophiea, Eric	
East, Judy & Larry	Maben, Sharon & James	Speidel, Stephanie	
Evans, Victoria	Maish, Kristine	Stevenson, Barry	
Farabee Jr, Charles R	Marken, Craig D	Strniste, Virginia & Gary	
Farabee, Butch	Markwardt, Ross	Swadley, Virgil	
Fenner, Gloria J	McCormick, Gene	Tamarack, Michael	
Fischer, Daniel	McDonald, Carol	Thornton, William	
Fish, Suzanne & Paul	McFarlin, Shela	Timlick, Janis & Patrick	
Flagg, Jennifer & Andrew	McKay, Nan & James	Tousley, C. Ann	
	McLean, Carol & James	Walker, Frances	
	McVie, Christine &	Wall, Nancy	

Community Supporters

ASARCO

Bach's Cactus Nursery

City of Tucson ECAP

Conservation Lands Foundation

Dragoon Brewing Company

MET Foundation

Patagonia

Public Lands Foundation

Rusty Lizard Press

Summit Hut

Trico Electric Cooperative

Tucson Cactus and Succulent Society