



**GREAT NEWS!** Long-Awaited Ironwood Forest National Monument Management Plan Finalized — Prohibits Recreational Target Shooting Throughout the Entire Monument!  
More information available at [www.ironwoodforest.org](http://www.ironwoodforest.org).

## A Flood of Memories on an Arid Homestead

She's rangy and straight and she moves in easy strides across the land — an ease born of familiarity. Sally Lord's eyes come to rest on a rusted pipe rising from the hard, unforgiving earth: "The kitchen was here."

There's not much there now — a few aged timbers, some corrugated metal roofing, the stripped and '30s sedan shot full of holes where gunners could find little else on the desolate landscape at which to aim.

She was born on this land not too long after it was brought out of the public domain by her father. The Stock-Raising Homestead Act of



**Sally and her sisters on the Lord Ranch. Sally has since confessed she wore the shoes to show up her sisters.**

1916, promulgated to develop grazing on unproductive public land, had made it possible for the head of a household to lay claim to a full section (640 acres — a square mile) for livestock ranching, by living on it and improving it over a set period. (The act was one of a handful of so-called Homestead laws — starting with the Homestead Act of 1862, signed by Lincoln after the beginning of the Civil War and, most-notably, after Southern landowners who had blocked the legislation were no longer in Congress to do so. By 1976, when Homesteading was

discontinued in the lower 48 states, about 10 per cent of the total acreage of those states had

*continued page 6*

**Imagine that:  
Angora goats in the  
Sonoran Desert!**



# From the Board President

by Gaile James

The Friends of Ironwood Forest have learned, once again, that wonderful things happen on — and to — the Ironwood Forest National Monument.

Recently, the Bureau of Land Management hired a new Manager for the Ironwood Forest Monument. Welcome, Claire! Claire Crow comes to us from Zion National Park in Utah. Even in the short time she has been with us she has proven to be a great partner for the Friends. We look forward to many rewarding years under her leadership as we all work together to keep the Ironwood Forest National Monument a special place for coming generations.

Meet the Monument, an event chaired by Board member Gordon Hanson, was a huge success, overcoming significant and atypical weather challenges. The program gave folks of all ages opportunities to experience the Monument and to learn more about this unique place. The Friends were delighted so many could attend and to see the sincere expression of interest we have in keeping this wild and beautiful place for all to enjoy — flora, fauna and people alike. This event will be repeated, expanded, and more will attend as word spreads of how much fun was had by all.

It was at this event that Sally (Lord) Ziegler, who you will get to know a bit in our cover story, made herself known to us. All special places have stories

waiting to be discovered and the Ironwood is no exception. The Friends were fortunate that Sally contacted us and was willing to share her story of the land. Anyone have a story about the Ironwood? Please let the Friends know — we are interested in all that the Ironwood Forest National Monument has to tell.

Thank you for your support of the Friends of Ironwood Forest. You have made us a success as we all work to continue to insure that this land will stay as special for our children as it is for us.

More things are planned — stay tuned!



**Though the desert has reclaimed her childhood home at Lord Ranch (the rusted pipe is all that is left of the ranch house kitchen), Sally Lord Ziegler still stands tall and has an amazing story to tell.**



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. The Friends provide critical volunteer labor for projects on the Monument, working with the Bureau of Land Management and many other partners, and to increase community awareness through education, public outreach, and advocacy.

## Friends of Ironwood Forest Board of Directors

*Gaile James, President, Marana*  
*Royce Ballenger, Vice President, Marana*  
*Christina McVie, Secretary, Tucson*  
*Gordon Hanson, Tucson*  
*Bill Thornton, Tucson*

Lahsha Brown, Executive Director

Contact us at:  
**738 N. 5th Avenue, Suite 114**  
**Tucson, AZ 85705**  
**520.628.2092**

[lahsha@ironwoodforest.org](mailto:lahsha@ironwoodforest.org)

[www.ironwoodforest.org](http://www.ironwoodforest.org)

*Newsletter design by Julie St. John.*

# The Saguaro, Sonoran Desert Icon: Its Status and Outlook

by Bill Thornton



## SAGUARO HABITAT AND NUMBERS

The home of the Saguaro is a vast expanse of desert — stretching from northwest Arizona near Kingman to southern Sonora, Mexico, near the city of Navajoa — at elevations from near sea level (in Sonora, Mexico) to about 4,000 feet. Except for a few isolated populations west of the Colorado River in California, the saguaro's US range lies within the state of Arizona. Quality of habitat and saguaro density varies greatly throughout its range.

Prime habitat includes the eastern portion of the saguaro's range where precipitation exceeds 10 inches per year and populations are at their peak. The Tucson Mountains contain the greatest known densities. Much of the area is protected by Saguaro National Park West and the adjoining Tucson Mountain Park. The 2010 saguaro census estimated 1.42 million saguaros in Saguaro National Park West and 479,000 at Saguaro East, an increase of 65.5% from 1990 and 16.7% from 2000. Add an unknown but substantial total from outside the parks and we can see that saguaros may outnumber the Tucson area's human population (estimated at 1 million) by as much as three to one. (With the caveat that the estimate is subject to a wide margin of error, Dr. Ray

*continued page 8*

**A much younger saguaro towers over the ironwood tree which serves as its "nurse plant."**

## Click. Contribute. Build a Better Arizona!

On March 20<sup>th</sup>, the Friends of Ironwood Forest will be joining all the communities of Arizona to do something never done statewide in Arizona.

AZ Gives Day is a day for **Arizonans** to come together to raise as much money as possible for the state's 20,000 nonprofit organizations in **24 hours** on **March 20**.

**It is a one-day, statewide online movement to harness the giving power of the community to strengthen Arizona nonprofits.**

Your donation to the Friends of Ironwood Forest on March 20<sup>th</sup> will make us eligible for several competitive prizes, including \$10,000 for the small nonprofit with the most donors.

And, if you are a new member, your donation is matched up to \$7,500 by a generous challenge grant.

**AZ GIVES.ORG**



Please mark your calendar for **March 20<sup>th</sup>** and visit **www.azgives.org** to maximize your donation to the **Friends of Ironwood Forest!**

# Thank you for your donations!

You may have noticed that it's been awhile since our last newsletter. Over the last year, we put a hold on producing a printed newsletter in the interest of ensuring donations were going to absolutely critical work.

I am happy to report that thanks to the generous support of all the individual members and foundations you see on the following pages, we are able to create, print, and distribute a printed newsletter this spring.

It's too early to say how often we will be able to provide you with a printed newsletter. But, be assured that we always have news items and activities available to you in a variety of ways.

We send out updates, news, opportunities to volunteer, ways to learn more about the Monument and other special events via email. These updates are sent to you at least two times a month and are the best way to keep up-to-date. We do not sell or exchange anyone's email address and all addresses are confidential.

You can sign up to receive the Friends' e-news updates on our website, [www.ironwoodforest.org](http://www.ironwoodforest.org). Or, you can

simply send me an email and I'll sign you up, [lahsha@ironwoodforest.org](mailto:lahsha@ironwoodforest.org).

We are now on Facebook. Become a friend of the Friends to get even more updates, [www.facebook.com/FriendsOfIronwoodForest](http://www.facebook.com/FriendsOfIronwoodForest).

Visit our new website. We've made improvements to the website so that upcoming events and news items are highlighted on our home page. This makes it easier for you to check if any new activities are being planned. We're also working to expand the amount of information available to you through our website.

**None of this would be possible without your support. The Friends of Ironwood Forest rely on the generous donations of local individuals like you to continue our work. Thank you to everyone who has made our work possible!**

I am honored to serve and represent our community and our desire for the protection of the Ironwood Forest National Monument.

*Lahsha Brown, Executive Director*

## *The following individuals, businesses and organizations provided financial or in-kind support from October 1, 2011 through February 20, 2013.*

Mindee Abdulloh  
Briggs & Pat Ackert  
Jay & Mary Lou Adler  
William Adler  
Jan Ajemian  
John Alanis  
Jim Ambrose  
Barry Armstrong  
Steve Arnquist  
Jenny Neeley & Sergio Avila  
Jim & Marilyn Avramis  
Bach's Cactus Nursery  
Ray Bagley  
Sandy Bahr  
Gary & Darlene Bakken  
Royce Ballinger  
Jean Barchman  
Joanne Basta  
Peter Bazzoni  
Deron Beal  
Harry & Carol Beatty  
Jean Besich

Lynn Bevill  
Joy & Shawn Blackburn  
Murray Bollesta  
Rodney Boorse  
Gary & Carol Borax  
Kay Botel  
Susan Boyne  
Lindy & Steve Brigham  
Bruce Brown  
Bruce & Carmelita Brown  
Joan Scott & Bill Broyles  
Larry Brooks & Barbara  
Brussell  
Betsy Buffington  
Ruth Grant & Tom Bunch  
Cheryl Cage  
Dennis Caldwell  
Elizabeth Reed & William  
Casey  
Bill & Beth Clark  
Nancy Cloud  
Carol & Bill Coburn  
Eric Collignon

Community Foundation for  
Southern Arizona  
Valerie Conforti  
Robert & Valerie Conforti  
Conservation Lands  
Foundation  
Stephen Joel Coons  
Beverly Cospers  
Mariann Covello  
Steve Cox  
John Crow  
CSX Corporation  
Kevin Dahl  
Will & Linda DeBoer  
Desert Survivors  
Pamela & Arthur Deters  
Mark Dimmitt  
James Dixon  
Faith Dustrud  
Don & Carol Eagle  
Larry & Judy East  
Anne & Richard Edwards  
Ted & Rose Emery

Charlotte Engvall  
Grace Evans  
Nancy Evans  
Barbara Fahrenbach  
Jim and Teri Farney  
Gloria Fenner  
Holly Finstrom  
Al & Joan Fischer  
Daniel Fischer  
Lillian Fisher  
Logan White & Jo Ann Fite  
Robert & Marjorie Flory  
Bunny Fontana  
Joseph & Patricia Frannea  
Diana & David Freshwater  
Robert & Sharon "Garcia Jr."  
John & Linda Garrett  
Mary Gaverth  
Robert Gilby  
Joseph Giordano  
Leslie Glass  
Bruce & Vivianne Gold  
Matt Griffiths

Jim Coffman & Glenda Grow  
Steve & Kathy Hansen  
Gordon & Lin Hanson  
Marilyn Hanson  
Cathy Hareland  
Pattie Hellmann  
Highlands at Dove Mountain  
Golf Course  
Ron & Marian Hill  
Roger & Margaret Hinkle  
April Holle  
Mary Hoover  
William Todd & Suzanne Horst  
Elizabeth Hospodarsky  
Peter & Evelyn Hubbell  
Robert & JoAnne Hungate  
Cheryl Hunter-Houser  
Dianne Huston  
Ron & Mary Ireland  
Ben Irvine  
Lloyd Brendan & Kelley James  
Tom & Gaile James  
Frank & Jennifer Jennings  
Michael Johnson  
Scott Jones  
Beth Kane  
Lydia Kelley  
Carol Kennedy  
Sue Kozacek  
Mary Beth Tyndall & Kendall  
Kroesen  
Ruth & James Kurtis  
Brent & Phyllis Kyte  
Mark & Mika Lambert  
Laurie Larwood  
Kathi LaTourrette  
Charles & Kathryn Lauer  
Paula Little  
David Livingston  
Phil & Pam Lopes  
Harry J Loss  
Fred "Lupton Jr."  
John & Rosita Lutzell  
Tony Lux  
Wanda Wynne & Craig Marken  
Ross Markwardt  
Jean Martin  
Willie & Linda Maxwell  
Mary McCarthy  
Beau McClure  
Gene & Barb McCormick  
Patrick & Rachel McCusker



Pat & Carol McDonald  
Una Song & Bobby  
McEnaney  
Shela McFarlin  
Jim & Nan McKay  
James & Carole McLean  
Roger McManus  
Becky McSwain  
Douglas & Christina McVie  
Matthew McWenig  
William & Sally Meadows  
Trudy Mertens  
MET Foundation  
Charles Miles  
Saralaine Millet  
Drew Milsom  
Felipe Molina  
Allan Morgan  
Karen & Larry Morrison  
Susan Mosdell  
Dino & Elizabeth Murfee  
DeConcini  
Mark Murphy  
Danielle Murray  
National Environmental  
Education Foundation  
Raymond & Lou Anne  
Nesheim  
Bob Newton—Friends of  
Saguaro National Park  
Ruth Nickodemus  
Ed & Carol Nigl  
Emily Nottingham  
Roxann Nys  
Katharine Olmstead  
Thomas & Sherry Osborne  
Lester & Anny Packer  
Anna & Tom Panka  
Ron Pelech

**Thank you volunteers! One of the many groups of volunteers that help with restoration projects on the Ironwood Forest.**

Martin & Joan Person  
Gary & Susan Peterson  
Jim & Marcia Phillips  
Lorel V. Picciurro  
Alburt Pifer  
Lollie B Plank  
Patti Hartmann & Bruce  
Plenk  
Dr. Stephen Pozez  
Claire Jean Prager  
Clive Probert  
Liz Storer & Luther Propst  
Mike Quigley  
Shelley Rasmussen  
Diana Raymond  
REI  
Roger & Diana Repp  
John & Mercy Rhodes  
Ted Richardson  
Janet Robertson  
Bill & Alice Roe  
Brit Rosso  
Mike & Susan Roth  
Joseph & Barbara Rumburg  
Barbara Rusmore  
Danielle Sandsedt  
Ray Sayre  
Joan-Marie Schaefer  
Jerry & Shanna Schudda  
Cecil Schwalbe  
Donald & Sharon Shaver  
Max Shemwell  
Doug & Skye Siegel  
Paul & Diane Simmons  
John & JoAnne Skillicorn  
Emmett & Carol Smelser  
Joan F. Smith  
Ron and Karen Smith  
Julie St. John  
Mary Stadel  
George & Claire Stahler  
David Steele  
Susan Stevens  
Barry Stevenson  
Paul & Susan Stillman  
John & Linda Stockbauer  
Summit Hut  
Virgil & Erica Swadley Jr.  
Michael Tamarack  
Bill Thornton  
Sterling Torrance  
Ann Tousley  
Dale Turner  
Virginia Vander Veer  
Ken Ventura  
Kenneth & Wylene Vinall  
Frances Ann Walker  
Nancy Wall  
Roger & Susan Wallace  
Don & Audrey Weber  
Meg Weesner  
Don Eugene & Wendy  
Werden  
Gabe Wigtil  
Bill Astle & Karen Wiley  
Cynthia Williams  
Tom Wilson  
John & Catharine Woodin  
Bill & Beth Woodin  
David Yetman  
Sally Ziegler  
Elaine Zielinski

## A Flood of Memories continued from page 1



Above **Sally's grandparents—Elsworth and Matilda Lord—in an earlier day.**

Below **Edna Arlene Lord, the youngest of the eight children. Pictured by the live octotillo fence that enclosed the 10-acre garden, orchard, chickens, barns, and ranch house area.**



Right **After their mother passed away, Gilberta, the second oldest girl, took over running the ranch and raising the three youngest girls, including Sally. Gilberta was a natural, skilled at handling horses and stock, and the neighboring ranches often requested her help. She also worked for the Marana School, making sure the girls she raised were the first in their family to graduate high school.**

moved from public land to private hands under the Homestead programs).

So the Lord Ranch came to be — and it started, not only in the halls of Congress, but also in a local tavern. Sally Lord, whose memory is crystalline, says that her father, Lyn Lord, met three men in bar, as many stories and jokes begin. These particular men were brothers from Texas — named Sumerall or Sumrall or Somerall or some other variation — who were running a substantial herd of angora goats in the Sonoran Desert for their mohair. They convinced Sally's father to Homestead a section on the other side of one of the mountains from their land. What is now designated as the Lord Ranch sits in the shadow of the Waterman and Pan Quemado Mountains.

The combined herd reached 1,200 head at one point and she recalls the process of bringing in the goats for shearing. After the bi-annual shearing, the mohair was loaded into a truck and sent to Winkelman for marketing. (Winkelman, it appears, was once a hotbed for mohair. The *Prescott Evening Courier* of September 18, 1941, reported that, according to the Arizona Mohair Growers Association, the prior day's mohair sale in Winkelman had moved 90,000 pounds of hair to a buyer from Boston. Who knew?)

Along the way, in 1938, Sally joined her much older brothers and sisters (eventually there were to be three brothers and six sisters) on the electricity-free, luxury-free Lord Ranch where the roads were bad, the well was hand-dug and playtime was a frilly notion.

At some point, the Lords switched over from goats to cattle and chickens. With leased grazing land, the operating ranch was, at its height, more that 15,000 acres. But, generally life went on day to day as it did on farms everywhere. Her mother, Eudachia Lord, died of cancer at 42 and Sally remembers one of her sisters taking over raising those that needed raising, her brothers having left the farm to join the service in World War II. And everyone pulled their share — there never were hired hands.





She also remembers moving into Tucson with her grandparents for first and second grades (kindergarten was a foreign idea, much less pre-school), but she moved back to the ranch in later school years and recalls leaving the house at 5am to get to school at 9am.

Standing on the land again, memories come and go like old friends — mountain lions in the Watermans... bighorn sheep mixed in with the goat herd... her first movie (“Buffalo Bill” starring Joel McCrea and a young Maureen O’Hara, released in 1944) shown at the El Paso Gas pump station where movies were shown outdoors for free on a temporary screen put up on Friday nights.

Eventually, Sally left the land and found her way to the University of Arizona on scholarship, but only for a year. “I married an engineer (a graduating senior) and we moved to San Diego where he got a job building roads.”

Lord Ranch, no less hard and desolate than ever, is back in the hands of the public, an in-holding in Ironwood Forest National Monument that was purchased by Pima County as part of the county’s Sonoran Desert Conservation Plan.

And while their stations have changed — hers and that of the land on which she was raised — she looks at her life and the land with satisfaction. “I never felt that I wanted to be like someone else,” she says. And she isn’t.



Above **Scenes from today — the empty foundation, the shot-out sedan — only the mountains remain unchanged.**

## The Saguaro, Sonoran Desert Icon continued from page 3

Turner's 50-year analysis of saguaros suggests there could be as many as 115 million saguaros in Arizona).

Moving west from Tucson, saguaro densities, sizes and growth rates gradually decline as precipitation wanes and temperatures increase. Mid-range habitat averages five to ten inches of precipitation per year with moderately higher temperatures.

With less than five inches annual precipitation, the Yuman (aka Colorado) desert of southwestern Arizona presents the hottest and driest saguaro habitat. Saguaros are relatively few in number, short in stature, and often confined to the banks of desert washes to take full advantage of the precious little rain that falls. Even the casual observer can't help but notice the abrupt transition from Arizona Upland to Yuman Desert traveling west on I-8 from Casa Grande to Yuma: to the east of Gila Bend, saguaros are relatively abundant, to the west, conspicuously absent.

Through much of its kingdom the saguaro prefers rocky slopes, especially those with eastern and southern exposures. While it may be fitting for the monarch of the desert to look down upon its subjects, there are practical reasons. Rocky hillsides offer the greatest degree of protection for seedlings on cold winter nights. Rocks store, then slowly release, the day's warmth while heavier colder air drains into the valley below. Our summer rains tend to approach from the southeast. A little extra moisture on south- and east-facing slopes can make a big difference in seedling survival.

### POPULATION DYNAMICS AND TRENDS

The establishment of a new generation of saguaros requires a combination of favorable weather conditions that may occur no more than two or three times per century. To maintain stability in a population it is necessary for younger saguaros to reach maturity at approximately the same that rate older plants die off. Reproductive potential suffers if the generation gap is wider than the interval of favorable weather events required to establish a new crop. Seeds that don't germinate in their first season do not remain viable. A dry summer does not create a seed bank to draw from when more favorable conditions return. Favorable weather without an adequate seed supply may result in one or more "skipped" generations, creating a population subject to peaks and troughs.

The bright red fruits ripen near the onset of the summer rainy season in late June or early July. Seeds that are not eaten by birds and rodents face long odds against growing to maturity. A good soaking rain is needed to wash away an inhibitor in the seed coat. This improves the seedling's chances for survival by insuring germination will occur only when the soil will remain moist for several days. Seedlings that survive are those that germinate under a nurse plant such as a mesquite, palo verde, or ironwood. Nurse plants provide shelter from scorching summer sun and winter cold as well as concealment from desert critters seeking a succulent snack. Spines aren't well enough developed to provide



**Whether in the crook of a saguaro's arms or inside a carved-out "boot," many species of birds find this cactus an ideal nest site. Photo © Young Cage.**



much protection until the young plant is at least three years old.

A good rainy season (i.e. 2.5 to 3 inches of rain in July and again in August) will help the new crop of seedlings through their first summer. More favorable weather is needed for them to survive to the age of three when long-term prospects improve greatly.

The infrequent combination of favorable weather (i.e. two or three consecutive good summer monsoons separated by mild winters) helps explain even aged stands with large numbers of saguaros of similar sizes. A large population of two to three foot saguaros in prime habitat indicates conditions were right for a new crop of seedlings 20 to 25 years ago. The next common size in the stand may be nearing maturity at seven or eight feet and 60 to 70 years old.

### POPULATION CYCLES

A century of saguaro studies on Tumamoc Hill west of downtown Tucson reveals a dynamic population that rises and falls in response to climatic and biotic conditions. The answer to the question “are saguaro numbers increasing or declining” may depend largely on when and where the question is asked. The first census in 1908 was conducted a year after livestock were excluded from the site. At the time, saguaro populations were in long-term decline due to drought. A rebound began when more favorable conditions returned in the 1920s. As of 1993 the population was again in long-term decline but still nearly double the 1908 numbers on all slope conditions.

Predictions of the saguaro’s imminent demise were rampant in the 1940s and 50s. Bacterial necrosis appeared to be running rampant in the Cactus Forest (i.e. Saguaro National Park East). Worse yet, the plants were not reproducing. Fortunately, these dire predictions were premature. The dreaded bacterial necrosis proved to be the effect of a series of catastrophic freezes in the late 1930s. Bacteria were simply breaking down freeze-damaged tissue. Elimination of cattle grazing and woodcutting led to a recovery in the number of young saguaros. The increase at Saguaro East doesn’t tell the whole story. Age distribution has shifted toward the young. The giants of yesteryear are mostly gone but there’s

a new crop of youngsters to take their places. The reproductive potential of this population will remain low until this new generation reaches maturity in 40 to 50 years. The future may bode well for beautiful stands of mature saguaros but the skipping of one or more generations could result in an age-skewed population vulnerable to precipitous declines.

### THREATS

Invasive grasses and weeds pose the greatest threat not only to the saguaro but the entire Sonoran Desert ecosystem. Invasive-fueled fires have devastated large tracts of once healthy Sonoran Desert (Emming, 2006) and the prospect is for more in the future. Fortunately, awareness of the threat is increasing. Volunteer groups like the Sonoran Desert Weedwhackers labor tirelessly to remove buffelgrass and other invasives from prime desert habitats. Their efforts are complimented by carefully controlled applications of herbicide. Chemical control measures may be controversial but the problem is too big for hand removal alone.

Despite marginal conditions, cattle grazing continues in much of the Sonoran Desert. They have a demonstrably negative impact on the Sonoran Desert, trampling seedlings in their search for shade under the nurse plants so critical to the saguaro’s survival. Soil compaction reduces permeability to moisture and makes it more difficult for seedlings to establish. Saguaro National Park (East and West) provides good examples of ecosystems that have benefited from the exclusion of cattle. At Saguaro East, numbers began to recover after cattle were removed. Due to a lack of surface water, Saguaro West was never grazed intensively, and not grazed at all since the creation of Tucson Mountain Park in the 1920s. Saguaro populations have undergone cyclical ups and downs — never crashing as they did at Saguaro East — and remain the densest in saguaro country.

These data may not definitively link cattle grazing to declining saguaro numbers but evidence weighs in favor of no grazing options for Sonoran Desert ecosystems on public lands.



“Shiva Saguaro” in Avra Valley, Ironwood Forest National Monument. Photo © Ted Robbins.

## The Saguaro, Sonoran Desert Icon continued from page 9

Threats posed by invasives and cattle grazing are two sides of the same coin. Species like buffelgrass were introduced to repair damage done by unsustainable grazing in the 19th and early 20th centuries. They now threaten the entire ecosystem.

Some researchers (e.g. Drennan and Nobel, 2000) have suggested that warmer temperatures and more efficient photosynthesis from increased atmospheric CO<sub>2</sub> could enable several cactus species to extend their ranges beyond current limits of cold tolerance. The 2010 saguaro census did, in fact, find a few saguaros upslope from their previously known upper limit in the Rincon Mountains.

In a 2008 study, saguaro researchers Drezner and Balling established a link between global volcanic events and saguaro recruitment in marginal habitat near Kofa National Wildlife Refuge where effects of volcanic activity

would be most readily observed. A period of enhanced global volcanic activity in the late 1800s and early 1900s resulted in above normal rainfall, cooler summer temperatures and reduced evaporation rates — i.e., favorable conditions for the establishment of new cohorts of saguaros. Recruitment declined sharply in subsequent years when hotter drier conditions returned.

If cooler, wetter conditions favor saguaro recruitment then warmer, drier conditions can be expected to have the opposite effect. As temperatures warm and evaporation rates rise, conditions favoring the establishment of cohorts of new saguaros may occur less frequently, resulting in a gradual decline in stand densities throughout the saguaro's range, even with an easing of drought conditions and resumption of "normal" rainfall.

To complicate the effect of climate change, a dominant warming trend may be punctuated by more frequent hard freeze events. The Tucson area experienced hard freezes in February 2011 and again in January 2013. Saguaro researcher Bill Peachy observed extensive damage to mature saguaros at his test plot near Colossal Cave following the 2011 freeze. Of perhaps greater long-term significance is a much diminished rate of flowering and seed production for up to three years following a hard freeze. (Steenbergh and Lowe, 1977) If favorable summer monsoon rains follow a hard freeze, the opportunity to establish a new cohort of saguaros could be lost.

Foot and vehicle traffic — from drug and people smugglers, and the law enforcers who pursue them — damage vegetation, disturb wildlife, and cause erosion. Sonoran Desert ecosystems are paying a heavy price for dysfunctional border policies. A heavy volume of smuggling traffic has resulted in Organ Pipe's designation as our most endangered National Park.

Theft and vandalism are problems especially near urbanized areas. Saguaros are much in demand for low water-use landscaping and thieves can turn a quick profit with little risk. Awareness of the issue is increasing, but a greater outreach effort is needed to help the unwary buyer avoid illegal plants. Volunteer groups like the Tucson Cactus and Succulent Society offer legally salvaged, properly permitted plants for sale. Several reputable nurseries offer high quality plants at

**Silverbell Camp Site — Gordon Hanson for scale.**



reasonable prices. New tools to assist in native plant enforcement have shown promise.

Sprawl development is said to claim three acres of Sonoran Desert every two hours. Some foresee a megalopolis of 12 million extending from Las Vegas to the Mexican border. Dwindling water supplies will force limits long before this eventuality is realized. In the meantime, we can support conservation initiatives to preserve as much as possible of what's left.

## THE FUTURE

Although trends are favorable at Saguaro National Park, there is reason for concern about the saguaro's future. Six of nine saguaro populations declined at test plots monitored from 1959 to 2004 by Dr. Ray Turner. Even where saguaros are holding their own, serious threats must be addressed if future generations are to enjoy the saguaro-studded panoramas that make our Sonoran Desert such a special place.

With a population of many millions dispersed over a wide area, the saguaro is not in imminent danger of extinction. For the long term it will need a lot of help from its friends. If we fail to gain control of invasive grasses and weeds, more catastrophic fires are inevitable.

Conservationists have worked hard to secure protection for Ironwood Forest and Sonoran Desert National Monuments, for the expansion of Saguaro National Park, and for the comprehensive Sonoran Desert Protection Plan. These will be hollow achievements indeed if we watch our "protected" deserts go up in smoke from invasive-fueled fires.

Other major threats to the saguaro are partly or entirely of human origin and have human solutions. We can do it if we have the will. For the future of our planet let's hope so.

## REFERENCES

- Dimmitt, Mark, Aerial survey of saguaro populations in Tucson Mountains and test plot data from Ironwood Forest National Monument.
- Drezner, Taly Dawn and Lazarus, Barbi Lynn, "The Population Dynamics of Columnar and Other Cacti: A Review" *Geography Compass* 2/1 (2008)
- Emming, Jan, "The threat that invasive weeds and wildfires pose to our North American desert biomes, Part 2: The Sonoran Saguaro", *Cactus and Succulent Journal* Vol. 78 No. 1. January -February 2006.
- Malusa, Jim, "Sonoran Sentinel" *Tucson Weekly* July 17, 1991.
- Pierson, Elizabeth A, and Turner, Raymond M. "An 85 year study of Saguaro Demography" *United States Geological Survey and University of Arizona Desert Laboratory at Tumamoc Hill, Tucson, AZ "Ecology" 79(8) 1998.*
- Steenbergh, Warren F. and Lowe, Charles H., "Ecology of the Saguaro, Parts II and III", *National Park Service Scientific Monograph Series Number Eight, 1977.*
- Turner, Dale S. and Funicelli, Carianne S. "Ten Year Resurvey of Epidermal Browning and Population Structure of *CarnegieGigantea* in Saguaro National Park. Technical Report No. 69, October 2000, United States Geological Survey and School of Renewable Natural Resources.
- Turner, Raymond M. Data from field studies of saguaros at nine test plots in Arizona and Sonora.



Dear Friend,

Every day Friends of Ironwood Forest is making a difference by working to protect the Ironwood Forest National Monument. Now more than ever, your investment means the world to us.

Join us on March 20, 2013, Arizona's Gives Day, and help us continue to protect and raise awareness of the Ironwood Forest National Monument and preserve this national treasure in our backyard.

Your donation of \$10 or more on Arizona Gives Day, can help us protect the Ironwood trees, the region's last remaining herd of native bighorn sheep, living ranch history, native American cultural areas, recreation opportunities, and the wild, open landscape that once characterized our beautiful Sonoran Desert.

We are counting on you! Mark your calendar and please help us by spreading the word and pledging to make a donation at [www.azgives.org](http://www.azgives.org).



# Friends of Ironwood Forest

738 N. 5th Avenue, Suite 114, Tucson, AZ 85705 www.ironwoodforest.org



**Yes! I would like to support Friends of Ironwood Forest by becoming a member!**

\$35.00 \_\_\_\_\_

\$50.00 \_\_\_\_\_

\$75.00 \_\_\_\_\_

\$100.00 \_\_\_\_\_

\$250.00 \_\_\_\_\_

**I want to give more!** \_\_\_\_\_

Please make checks payable to  
Friends of Ironwood Forest  
738 N. 5th Avenue, Suite 114  
Tucson AZ 85705

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_

Email \_\_\_\_\_



Surveys within the Ironwood Forest National Monument have found archaeological sites to be so abundant that only a small percentage of the sites have been recorded. Evidence of the Hohokam people (600–450 A.D.) dominates the archaeological record, but evidence that humans inhabited the area covers a 5,000-year period.

*Petroglyphs at Ironwood Forest National Monument — Gordon P. Hanson.*

## Inside.....

A Flood of Memories on an Arid Homestead	1
From the Board President	2
The Saguaro, Sonoran Desert Icon: Its Status and Outlook	3
Click. Contribute. Build a Better Arizona with AZ Gives!	3
Thank You For Your Donations!	4