

THE
SEARCH
LIGHT

GOLD BEAM

APRIL 2025

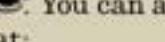


INTERCONNECTIONS
IN AVI KWA AME

WELCOME to the 2025 GOLD BEAM

We hope to share our deep affection for this part of the earth with you through science, art, history, and culture. Each year, we offer a free version of the Gold Beam, at locations in and around the East Mojave, and a deluxe, full-color, annual publication for a \$20 donation to Friends of Avi Kwa Ame. There is also bonus article info, resources and online features available at www.goldbeam.org.

The visual style for this issue is inspired by book design from the 1930s (that's almost 100 years ago, folks!), when text was straightforward, fonts were bold, and adventure books that romanticized the American desert west abounded, populated with colorized photos, line drawings and color block illustrations that evoked the wonders of the western landscape. We're pretty fond of this landscape too, and hope you enjoy this tribute from 15 contributing authors and 13 illustrators.

Additional resources, including bibliographies, further readings and links to helpful organizations are available online for many of the articles in this publication, as indicated by the occurrence of this symbol . You can access these resources at:

[friendsofavikwaame.org/
goldbeam/2025resources](http://friendsofavikwaame.org/goldbeam/2025resources)



Cover art by Kyle Larson



INTERCONNECTIONS IN AVI KWA AME

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FRIENDS OF AVI KWA AME

NATIONAL MONUMENT

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*If we can come together around this space,
Then the desert might remember us as friends.
And if we live in a meritorious way,
And understand our place and
our position with our environment,
Then we can co-steward it together.*

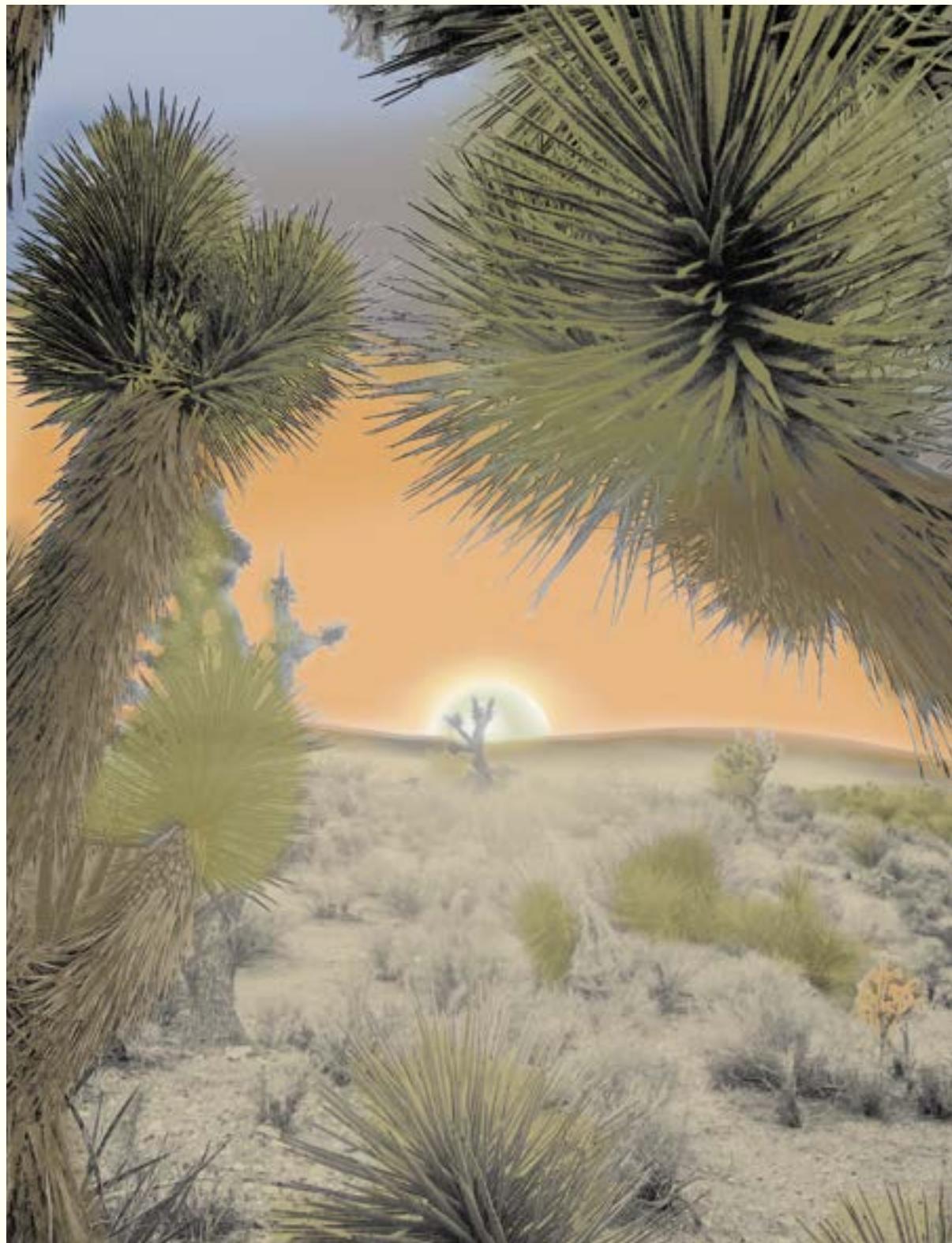
— ASHLEY HEMMERS



Illustration by Shannon La Bounty

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Sunset on the Wee Thump Eldorado Trail. Photograph by Alan O'Neill.

HAPPY ANNIVERSARY, AVI KWA AME!

THE MONUMENT'S SECOND YEAR.

WE HAVE ALL MADE A LOT OF PROGRESS TOGETHER since Avi Kwa Ame was designated as Nevada's fourth national monument on March 21st, 2023. There is now a Bureau of Land Management (BLM) monument manager, a tribal liaison, an interim management plan, and the official Monument Advisory Committee is scheduled to have its first meeting later this year.

Friends of Avi Kwa Ame is hosting monthly 1st Saturday events at Walking Box Ranch and regularly leading hikes and conservation activities around the monument. We are especially proud of the work being done to catalog the ecological and historical resources along the back roads within this 800 square mile area, which we are compiling into hiking and scenic driving route recommendations.

We also started several oral history projects, including one about the history of the monument campaign, and another in collaboration with the Fort Mojave Pipa Aha Macav Culture Society, on the history of the Fort Mojave Indian Boarding School, which you can read about in this publication. The return of Walking Box Ranch's original collection of furniture and tools, and the excellent volunteer work being done there each month to present additional interpretive information on the ranch and the monument is another reason to celebrate.

One of our most fun recent projects has been a collaboration with the Las Vegas Astronomical Society to highlight the monument's dark night skies, and work toward becoming a designated Dark Sky Park. This project involves many components, including monitoring light pollution, assessing the monument's outdoor lighting, and best of all, getting together for multiple public dark sky events throughout the year.

While it feels wonderful to see the monument taking shape with more resources for the public, there is also much cause for concern as we enter our third year. Administration changes have reduced National Park Service and Bureau of Land Management staff, cut their spending budgets to \$1, and frozen or shut down federal grants relied upon by researchers. Congressional bills have been introduced that threaten the integrity of the Antiquities Act that was used to designate Avi Kwa Ame as a permanently protected public landscape, and recent executive orders have made it clear that national monuments are on the chopping block to be privatized or leased to corporate industry.

As our Avi Kwa Ame community continues to grow, and we celebrate science and biodiversity in our first-ever Avi Kwa Ame spring bioblitz event, this is also the time for everyone to stand up and speak out for the public lands we love and want to see preserved for future generations, so that monuments like Avi Kwa Ame can have many happy anniversaries to come. 

MOAB TO MOJAVE

CONSERVATION CORRIDOR

FEDERAL LANDS

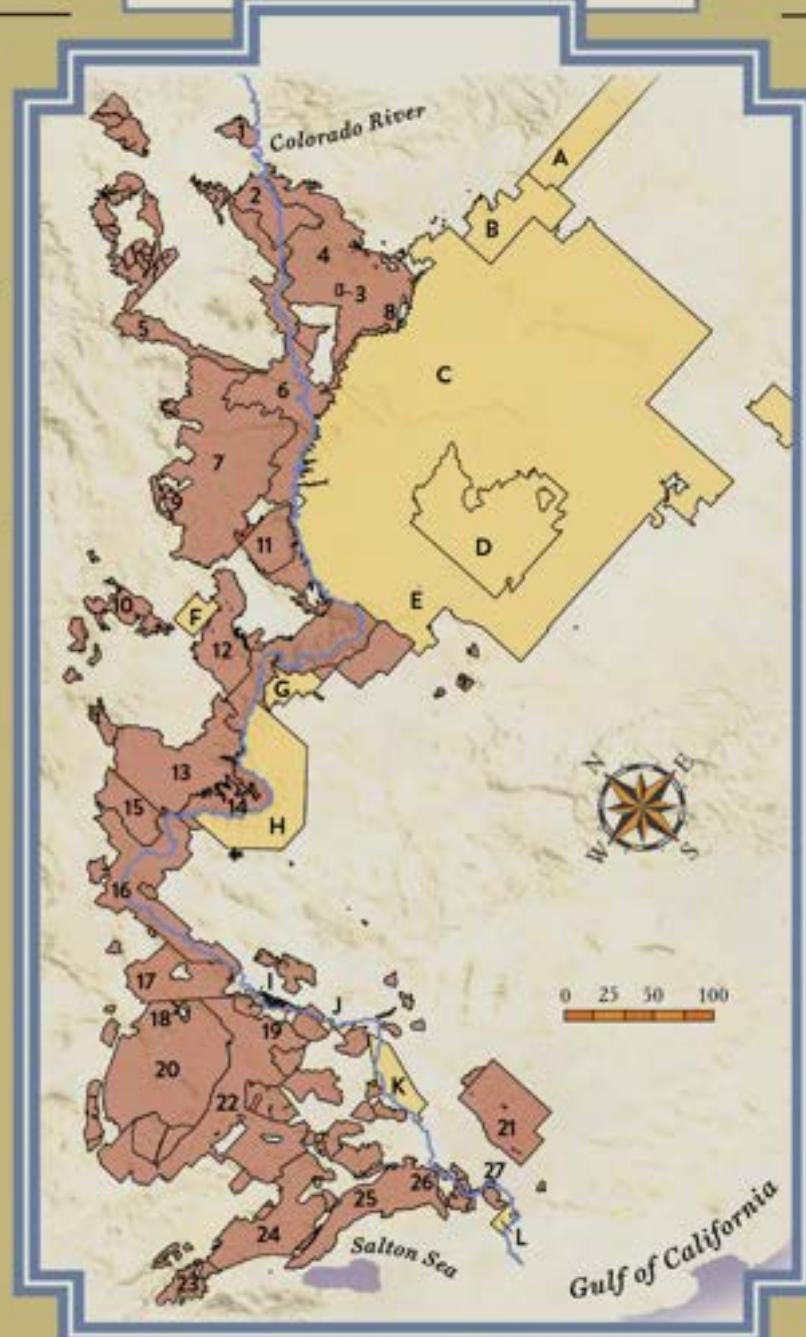
NATIONAL PARKS,
NATIONAL MONUMENTS
WILDLIFE REFUGES
& NATIONAL PRESERVES

- 1 - ARCHES N.P.
- 2 - CANYONLANDS N.P.
- 3 - NATURAL BRIDGES N.M.
- 4 - BEARS EARS N.M.
- 5 - CAPITOL REEF N.P.
- 6 - GLEN CANYON N.R.A.
- 7 - GRAND STAIRCASE-ESCALANTE N.M.
- 8 - RAINBOW BRIDGE N.M.
- 9 - BRYCE CANYON N.P.
- 10 - ZION N.P.
- 11 - VERMILLION CLIFFS N.M.
- 12 - BAAJ NWAAVJO ITAH KUKVENI - ANCESTRAL FOOTPRINTS OF THE GRAND CANYON N.M.
- 13 - GRAND CANYON-PARASHANT N.M.
- 14 - GRAND CANYON N.P.
- 15 - GOLD BUTTE N.M.
- 16 - LAKE MEAD N.R.A.
- 17 - AVI KWA AME N.M.
- 18 - CASTLE MOUNTAINS N.M.
- 19 - HAVASU NATIONAL W.R.
- 20 - MOJAVE NATIONAL PRESERVE
- 21 - KOFA NATIONAL W.R.
- 22 - MOJAVE TRAILS N.M.
- 23 - SAND TO SNOW N.M.
- 24 - JOSHUA TREE N.P.
- 25 - CHUCKWALLA N.M.
- 26 - CIBOLA NATIONAL W.R.
- 27 - IMPERIAL NATIONAL W.R.

TRIBAL NATIONS

TRIBAL LANDS ADJACENT TO CORRIDOR PROVIDE ADDITIONAL CONTINUITY IN THE LANDSCAPE

- A - SOUTHERN UTE INDIAN TRIBE
- B - UTE MOUNTAIN TRIBE
- C - NAVAJO NATION
- D - HOPI TRIBE OF ARIZONA
- E - SAN JUAN SOUTHERN PAIUTE TRIBE
- F - KAIBAB BAND OF PAIUTE INDIANS
- G - HAVASUPAI TRIBE
- H - HUALAPAI INDIAN TRIBE
- I - FORT MOJAVE INDIAN TRIBE
- J - CHEMEHUEVI INDIAN TRIBE
- K - COLORADO RIVER INDIAN TRIBES
- L - QUECHAN INDIAN TRIBE



Data Source: ESRI, TomTom, GARMIN, FAO, NOAA, USGS, BLM, EPA, NPS, USFWS, CGIAR

"THE LARGEST CORRIDOR OF PROTECTED LAND IN THE CONTINENTAL UNITED STATES"

THE MOAB TO MOJAVE CORRIDOR covers nearly 18 million acres and stretches approx. 600 miles, from Bears Ears National Monument and Canyonlands National Park in Southeast Utah to Joshua Tree National Park and the newly established Chuckwalla National Monument in Southern California.

HONORING LANDSCAPE INTERCONNECTIVITY

THE MOAB TO MOJAVE CONSERVATION CORRIDOR.

BY KEVIN BEREND

Map solutions by Eamon Brennan

GREETINGS FROM GRAND STAIRCASE ESCALANTE NATIONAL MONUMENT, your neighbor a few hundred miles to the northeast. Did you know that our monuments are connected through a new landscape corridor?

Water, earth and air do not adhere to lines drawn on a map. Plants and animals do not respect conceptual boundaries, and they often require much larger landscapes than humans allow. As climate change continues to alter the Earth's ecosystems and the behavior of wildlife, planning for connectivity through the creation of landscape corridors can preserve the pathways that plants, animals and insects need as they travel northward in latitude and upward in elevation to reach more desirable temperatures. To stay healthy, landscapes require interconnection.

In my day job, I work as the Conservation Programs Manager for Grand Staircase Escalante Partners, and I spend my free time enjoying the beautiful landscape of Southern Utah and its surroundings, so I'm excited to see that the need for connectivity has led to the rise of land-



A photo of the Escalante River within Grand Staircase Escalante National Monument.
Photograph by Kevin Berend.

scape-scale conservation. Ecological corridors recognize the extensive natural interconnectivity of our nation's ecosystems, and prioritize large-scale connectivity across jurisdictional boundaries such as national parks and monuments.

Landscape-scale conservation includes working to reduce and mitigate pollution, create safe passage for wildlife across roads and fences, and ensure healthy riparian (streamside) habitats for fish, birds, and insect pollinators. Such efforts are already underway in North America, including the well-known Yellowstone to Yukon corridor in the Rocky Mountains and the Algonquin to Adirondacks corridor in the northeast.

In January, as one of his last actions before leaving office, President Joe Biden signed an executive order establishing the Moab to Mojave Conservation Corridor (M2M), which spotlights landscape connectivity in the Southwest. The Moab to Mojave Corridor covers nearly 18 million acres and stretches approximately 600 miles, from Bears Ears National Monument and Canyonlands National Park in Southeast Utah to Joshua Tree National Park and the newly established Chuckwalla National Monument in Southern California. The corridor links five national parks with 12 national monuments, The Mojave National Preserve and Glen Canyon and Lake Mead National Recreation Areas. According to the National Parks Conservation Association, it is the “largest corridor of protected land in the continental United States.”

The M2M corridor already includes some of the most heavily visited tourist destinations in the country, but due to rapid population growth, the Colorado River and its sub-basins are experiencing some of the heaviest demand of any natural resources in the nation. As pressures for commercial and industrial development mount across this arid landscape, the connectivity of the greater Colorado River will be crucial to maintaining both biological integrity and human habitability.

For example, in the Southwest, big game such as mule deer, pronghorn, elk, and desert bighorn sheep undertake daily and seasonal migrations, navigating urban sprawl and frequently crossing treacherous roads and highways. Riparian ecosystems harbor the region's greatest biodiversity, and are crucial habitat for birds, fish, and rare plants. Riverscapes, therefore, demand attention as a whole to keep them healthy, rather than seeing them as a series of disconnected parts. By offering a framework for land managers, tribal nations, non-profit partners and community groups to work holistically on creative solutions to the challenges of habitat connectivity, M2M can strengthen ecological links between public land units, and act as a crucial bridge to the future.

The Moab to Mojave corridor will also help preserve tribal sovereignty for the many Native American nations that call the Colorado River home. Much as nature does not adhere to arbitrary borders, the history and stories of native peoples weave a complex fabric that permeates ancestral territories across this entire landscape. For tribal nations who have been repeatedly stripped of land and rights—and for whom history is literally written into land itself—M2M provides an additional basis for the protection of cultural heritage sites within the context of the natural landscape.

Finally, the Moab to Mojave corridor seeks to promote wise commercial and industrial development, including housing, renewable energy projects, and oil & gas production. Since recreation is a major economic driver across the corridor's natural landscape, unobstructed viewsheds are one of its prized assets. Landscape-scale connectivity allows for preservation of the natural aesthetic experience that local communities and tourists alike hold dear. This does not mean blocking all development; rather, the recognition of the larger landscape corridor can be an additional tool to help bring communities into the decisions about the lands that affect the shape of their lives and livelihoods.

The goal of landscape-scale conservation is to find balance in how we engage with the land for short-term and long-term benefits that aid both humans and the environment. Designation

of national monuments, such as Baaj-Nwaavjo I'tah Kukveni and Avi Kwa Ame, both established recently by President Biden, focus on protecting land that is historically, culturally and ecologically important to local communities and the nation. Designation of the Moab to Mojave corridor does not preclude existing land uses such as grazing, hunting, OHV use, or rockhounding. These issues are discussed extensively with local communities as part of the designation and management plan process, and reflect the wants and needs of each area's residents.

It remains to be seen how the Moab to Mojave corridor will be implemented on the ground, but it does begin to orient federal policy toward a broader, more inclusive view of what public lands are for and how best to steward them. This landscape-scale concept may also help galvanize support across its geography among nonprofit partners and the general public, allowing greater cooperation on shared conservation initiatives and goals in the future.

I was lucky enough to visit Avi Kwa Ame last November, when I camped among Joshua trees at the Wee Thump Wilderness and hiked through a rugged, narrow canyon. Though the views were different from Utah, I was reminded of the timeless continuity of water, rock, and life across this vast desert. I invite you to visit Grand Staircase-Escalante National Monument and experience another part of this boundaryless landscape for yourself! 

MRS. FRUGAL SUGGESTS...

BY FANCIE FRUGAL

MR. FRUGAL SUGGESTS ... LESS. Friends, while this may seem to imply a sense of Lack, Mrs. Frugal assures you that Less is, in most cases, definitely More. Less stress creates more relaxation, less clutter creates more room for living, and less plastics floating willy-nilly around in our cellular tissues must surely mean more health and longevity for all. In a modern, fast-paced society that seems intent on foisting upon us every next, new, big thing, how do we achieve the magic of less? Mrs. Frugal offers you these three pieces of advice: 1. Use it twice. 2. Use half as much. 3. Reduce it by half. When deciding what to keep among the many household items you may have accumulated, three magic questions can guide you: *Is it helpful? Is it the right tool for the job? And is it necessary?*

Mrs. Frugal would like to point out one more thing, dear readers. Economy can and should be utilized not only in one's physical realm, but in one's mind, spirit and actions. Just as we live in a world of too many things, we live in a world of oversharing and undercaring about the words we use and how we use them. Complaints, barbs, slurs and untruths abound, which make for an unpleasant community spirit at best, and at worst do real damage to the hearts and souls of good people. While there are technically now up to one million words in the English language, it is wise in most cases to use but few, and to use them well and sparingly. Mrs. Frugal suggests that the same questions above that can be used to evaluate your physical objects (Are they helpful, correct and necessary?) can be used as a divining rod for your speech and actions in most every social situation. The next time you are in conversation with someone, try using these questions to guide you, and you may be successful in creating more calm, more space and more room to breathe.

THE FORT MOJAVE INDIAN SCHOOL

BY KIM GARRISON MEANS

"My grandfather told us a lot of the parents would take their kids and hide them at Grapevine Canyon. One day the government men caught my grandfather and forced him back to the school only for him to run away again like a lot of the others did. They caught him and they took him into school but he ran off and he got caught again, then took off again. A good place to hide was at Grapevine Canyon, and his family took him over there. There's that little forest way back in there, and in those days, it didn't look like this. It was all trees. It was just trees, trees, trees. He got wandering around and came out playing around and the officials saw him and they took him back and of course he took off again. Many of the runaways were never caught because they knew where to hide and could easily live off the land way back in the mountains or near the river."

— Paul Jackson Jr.



Courtesy of NRM, Ron Ross Collection.

From November 2024 to February 2025, the Pipa Aha Macav Culture Society, in collaboration with volunteers from Friends of Avi Kwa Ame, held private sessions with Fort Mojave Tribe members to gather stories about the Fort Mojave Indian School. These testimonies, given mainly by descendants, were recorded in a digital archive for future use by the Culture Society, and also used to inform this article. Our shared goal with this project was to reach out to neighbors and listen with humility to acknowledge the pain and suffering the policies of this era caused to families and multiple local communities. (This story may be triggering for some. The resources at the end of this article include ways to find support).

"They did not attend. They were forced. They didn't ask to go to these schools. My Aunt said, when they took the kids, they came and they just grabbed them. And when the parents tried to fight for them, they would beat them and say that this was for their doing." — David Oechsner

From 1890 to 1931, there was a U.S. funded boarding school on the Arizona side of the Colorado River, south of Bullhead and north of Needles, on land which is now part of the Fort Mojave reservation. This school was in reality an internment camp for Native American children, who were taken forcibly from their homes, families and communities. The children were forced to adopt a foreign language, religion and customs, and punished if they spoke their language or practiced their own culture. This school was one of more than 500 US schools that abducted over 100,000 children in order to "kill the Indian, save the man," as quoted by Capt. Richard H. Pratt, who established the primary model of all early American Indian schools.

"It was really impactful on my grandmother. Her family would hear the horses coming and so they would all run and hide. In fact, she went to the river at one point and dug a hole and put my mother and my aunt in there because she didn't want them taken." — Charlotte Knox

By the 1880s, the U.S. reservation system was in full swing, and the Mojave, like people in tribal communities all over the country, had been held as prisoners, used as slave labor, and forced off of large portions of their lands. They were prevented from practicing their traditional ways of farming and hunting, but also excluded from the American economy, having to become dependent on government food rations and supplies from the Fort Mohave military installation. Then in 1883, Congress banned all ceremonies, dances, songs, and the practices of medicine persons, and gave authority to use force, imprison or withhold rations to stop Native American cultural practices, in an attempt to eradicate all aspects of native culture.

"They didn't have enough to eat, or they would get oatmeal but it would be burnt, and that's all they had. If they found orange peelings or any kind of peelings they would all save those and soak them in water and eat them. All the kids tried to scrounge around and find whatever food they could. It wasn't a good experience for any of them." — Mary Howe

By 1890, the Fort Mohave military installation was disbanded and the buildings used to house a new tool for subjugating the people of the area: the Fort Mohave Industrial School. Under a number of different names, this school operated until 1931, forty-one years later, and all Fort Mojave boys and girls between the ages of six and eighteen (some as young as four) were compelled to live at this school, or if the school was full to capacity at 250 students, to attend one of the other Indian boarding schools, far removed from their homelands.

"I believe most or all of our elders who attended the school are all gone now to the spirit world. However, our parents and grandparents that went to the school would often talk about how life was living there. As for myself, I had uncles and aunts who were forced to go there. My mother was supposed to be there also but the school was already filled up so the government sent her and others to a Catholic School in Tucson, AZ, while others were sent to other places all over the United States. There were other tribes that went to the school also, like the Southern Moapa Paiutes, the Walapais, some Hopis and Navajos. That is just a very small part of the history of the school -- not to mention many, many kids died there. To this day we do not let anyone know where their graveyard is located due to vandalism and grave robbers." — Paul Jackson Jr.

While the official focus was on education, life in the Fort Mojave Indian School was similar to a prison labor camp. Conditions were harsh and food was scarce, sometimes rotten or infested with bugs. The children cleaned the facilities, worked in the laundry, helped in the kitchens, dug ditches, and maintained fields of crops.

"She said that they marched them in lines, and that a lot of the older ones would take care of the younger ones, protect them. She said they slept in the upstairs of the dormitory, and she said it was cold. She said they really didn't have enough blankets. The conditions overall were somewhat harsh." — Diane Montoya

Besides the basic instruction of reading, writing, and arithmetic (all entirely in English to children who knew only their native languages, after a US law passed in 1887), the schools focused on teaching manual labor trades. Girls learned house cleaning, laundry, cooking, baking, sewing, and serving, while boys practiced carpentry, agriculture and other hard labor activities. Parents were largely prevented from visiting their children during the school year, and students were stopped from returning home in the summer, when special "trade programs" would transport them to places like Southern California, New York and Chicago to work as domestic servants or farm laborers, with the money made going back to the school.

"My late grandma was there and then they sent her to Los Angeles, because I guess they did that for the girls to go get training in housekeeping and things like that. So that's where she went, to Los Angeles and I guess then they relocated them over there." — Angie Alvarado

Children were required to wear militaristic uniforms and adopt new English-language names and surnames. They were punished if they used their clan names or Mojave nicknames. Their new names were chosen at random from a list of surnames that included those of their teachers and school officials, the military personnel of the former fort, and US presidents and generals. Some names, like the surname Jackson, were named for political leaders who inflicted some of the worst atrocities on native communities in US history.

"And then when they adjusted and they learned the English, -- then they still were treated bad. They had to do all the work. They were the ones that were cleaning up in the yard. And they're the ones that cleaned up the buildings. They were like slaves." — Wanda Jenkins

Children who couldn't speak English were punished if they spoke the only language they knew, and they were forbidden to touch or hug each other, even siblings. Students were severe-

ly punished or tortured if caught violating any of the cultural rules, and these punishments included beatings, hair-cutting, being tied up, being locked in cupboards or basements, additional hard labor, and going without food. In some cases, at the Fort Mojave school and elsewhere, severe punishments and physical, mental and sexual abuses of power on the part of those in charge resulted in children being murdered. Children also died from malnutrition and neglect, injuries, and infectious diseases. They were buried on the school grounds or hidden in graves in the nearby mountains, never to be returned to their families for a traditional funeral. In some cases, families were not even informed that their child had died. Mojave tribal members practice traditional cremation ceremonies to ensure the proper travel of the deceased to the afterlife, and these children being buried without consultation or ceremony remains painful to the community to this day. Children from other tribes were also prevented from returning home for proper funerals with their communities.



Courtesy of NRM, Ron Ross Collection.

"My grandmother went when she was six years old, taken from her aunt and her uncle and they were told if the children learned and were educated that we would get our land back. So that's what they were told. We heard her talk about the mistreatment of the children and how there was corporal punishment and sexual abuse and physical abuse and emotional abuse. And they really couldn't do anything because they were so young, they were children. Some of the older ones tried to help them the best they could." — Mary Howe

One of the most hated practices of all was the cutting of the children's hair. Upon arrival, children were scrubbed, their heads doused with kerosene and hair cut short. While this also minimized the spread of lice, the main goal of this exercise was to erase the traditional custom of long hair and braids. To the Mojave and many other tribes, women's and men's hair was always kept long, and only cut as an act of mourning. To cut another's hair without permission is an especially egregious act.

"We interviewed several elders, me and a friend, in college, and I remember the former chairman

and his sister-in-law, they attended the school, and I remember him saying that his grandparents hid him, they didn't want him to go to the school, so they hid him, but one day, he had to go. His sister-in-law said she remembered how they were very strict, and she said, I'll never forget (and by this time she was in her late 70s) but she said, they would say, I'll shake you till your teeth rattle down your throat." — Christina Otero

The abuses of power and the confusion that ensued from it during the Fort Mojave Indian School period has had deep and lasting effects on the Mojave community. While attending the school, children, their siblings and their parents were often assigned different surnames from one another. Community members no longer grew up knowing their clan names or who their relatives were, and it was not until the second half of the 20th century, when the Pipa Aha Culture Society was formed, that the Fort Mojave community was able to start piecing together the history of their kinship relationships again, with the help of a forgotten school ledger.

"I'm proud that we Mojave have a unique culture, and that I'm able to pass it on to those that are younger than me, like those who taught me. It makes me proud that I'm still continuing what we thought was once lost, and still finding new things that I can bring out to the new generations." — Bianca Otero

Today's Mojave youth now come to the Pipa Aha Macav Cultural Center, newly opened in 2021, to learn about their clans, their family histories and their traditional stories. They also come to learn more about the Mojave language, which was almost lost forever, but is now also being taught to kids in Fort Mojave schools. Much more work still needs to be done in the coming years to continue to protect and honor the language and culture of the Mojave people.

"I do believe children should know about this. I think they need to know about the whole continuum from the creation point to now. And to understand who we are and appreciate our home. We're very fortunate that at least we're still within the range of our original homelands--you know, that's pretty significant. A lot aren't. And that's what we're working on now through our cultural and tribal values and language and way of life." — Diane Montoya

The Fort Mojave Indian School was closed in 1931, along with a number of other Native American schools, after the US changed its policies. Native American boarding schools continue to be an educational option, but families now have the right to choose whether to send their children away from their communities or keep them at home. This fundamental right did not come about until 1978 when Congress passed the Indian Child Welfare Act. The second half of the 20th century also saw other long-overdue rights. The Indian Self-Determination and Assistance Act of 1975 enabled tribal nations to establish their own community schools and take over the management of education programs. This meant that not only were communities given more choices of how to educate their children, but also their children's education could include learning their traditional language, culture, and history. In the late 1970s, the right of native communities to openly practice their religious ceremonies, dances, and songs was also finally restored, as well as the right to speak their own languages.

"All kids should know about this and what really happened because they have to know the truth. They have to know the truth of what all Native Americans went through because we don't have the

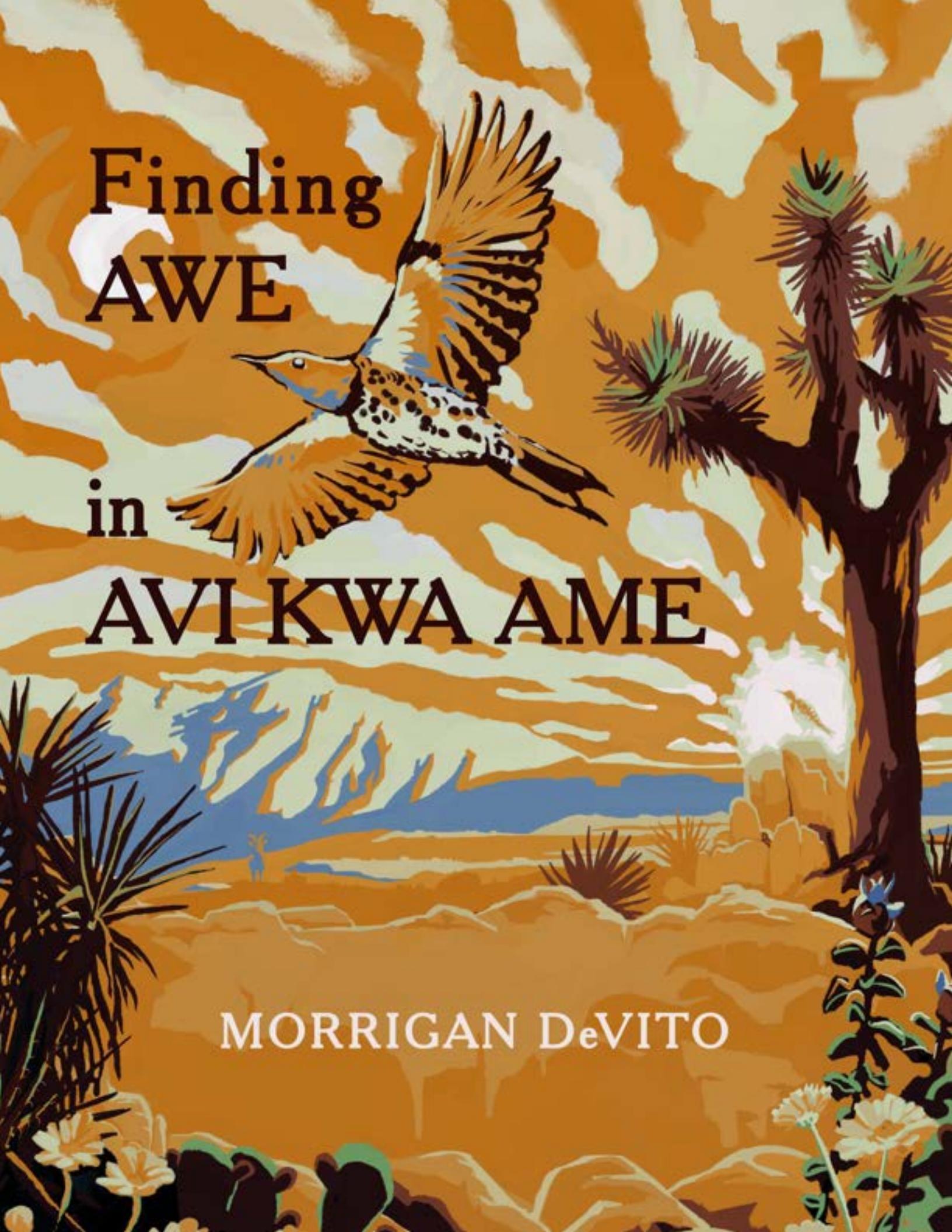
only boarding school here. There are others every place else and they need to know that. You can't just keep it hidden--they have to know." — Angie Alvarado

In the five decades since these more favorable laws, the Fort Mojave Indian Tribe and native communities across the country have been working hard to repair the damage done from the Indian boarding school era. Just a few months ago, in October 2024, President Biden visited the Gila River Indian Reservation, outside of Phoenix, Arizona, to deliver an address to all Native Americans: "I formally apologize as President of the United States of America for what we did," Biden said. "It's long overdue." "The federal Indian boarding school policy, the pain it has caused, will always be a significant mark of shame, a blot on American history." The president's apology, along with the work that his Secretary of the Interior Deb Haaland led to officially document the damage, is shedding some light on this dark period of history that has been largely swept under the rug until now. With that light, in Fort Mojave, up and down the Colorado River, in sovereign tribal nations, and all across America, may there be more healing for families in the years to come.

"One of the terms that we have is "Mojave Strong". And we are, you know, because of what we went through. I'm really, really proud of our people to have that strength to continue on. That's what we try to bring to our children when we get together, like at our Mojave Days festival, when we bring all our culture together -- our singing, our dancing, our beadwork, all the things that we enjoy doing. That's a part of us that was not taken away. And it's wonderful to just be together, to love one another, and to continue growing together, to keep that strength within us. We are still going, still going strong." — Wanda Jenkins



Illustration by Kyle Larson.



A stylized illustration of a desert landscape. In the foreground, there are various desert plants like yucca and wildflowers. A large, colorful bird, possibly a roadrunner or lizard, is shown in mid-flight across the center. The background features rolling hills and mountains under a sky filled with large, expressive orange and white clouds.

Finding
AWE
in
AVI KWA AME

MORRIGAN DeVITO

FINDING AWE IN AVI KWA AME

BY MORRIGAN DeVITO

Illustration by Kyle Larson

A SQUEAKY, RATTLING SONG PIERCES THE CLEAR SKY in the Wee Thump Joshua Tree Wilderness. I peer between stiff clusters of yucca leaves until I see the singer perched in a Joshua tree. He is a woodpecker called a Northern Flicker, and his black bib and spotted belly rise and fall with each punch of his staccato song. At first he attracts a rival, who he descends on in fiery fury, black and red-streaked wings beating through the air until the stranger zips across the sprawling, prickly landscape. The flicker resumes his song, and this time a female flies over to join him. Without preamble, they mate quickly and part ways, a new pulse of life and death forming inside her. I forget myself in this conception, immersed in the lives of other beings.

Why does awe matter? Why try to describe it? The limitations of language entangle me, but the longing to share this feeling pulls me back to the blank page again and again. I can only circle back to writing after I've had months to sit with the image of flickers fighting and mating, blinking in and out of my memory while countless other lives were unfolding, unseen, at the edges of my awareness. I do not come to Avi Kwa Ame in search of awe specifically. But when the world seems duller, when my thoughts are louder than birdsong and windsong, I know I must come to the open desert. Standing among ancient Joshua trees, blackbushes, and creosotes, awe flows through the blue pointillist sky, sweeping through my senses, slowing my breath and heartbeat to a present stillness.

One of the foundational scientific studies of awe by researchers Dacher Keltner and Jonathan Haidt identifies this feeling as a sense of vastness, physical or mental, and a need for accommodation in our mind. I confront that need for accommodation on the blank page, where I try to invoke the awe I conceived in the desert—formless and shapeshifting in my mind. Many of the spaces and creatures in Avi Kwa Ame trigger this awe, and although the scientific study of awe is only about fifteen years old, Keltner and Haidt hypothesize that awe may be as old as our species, originating in song and storytelling. We created awe, and awe created us. This feeling, difficult as it is to define and describe, courses through our mythology in cross-cultural themes of creation, destruction, and rebirth in nature. We are reminded of our smallness when we face the cosmos, wild animals, thunderstorms, floods, and fires, to name a few.

Avi Kwa Ame is one place where we can experience the awe that shaped our species. A friend and I come to one of Avi Kwa Ame's scars at a burn site from the 2023 York Fire. Wind pounds the charred skeletons of burnt Joshua trees, and only our crunching footsteps break through its unrelenting voice. The Joshua trees are not fire-adapted, and as our world becomes hotter and drier, these woodlands are more vulnerable to fires like this. The yellow heads of desert marigolds stipple the earth, poking in and out among the dead. I bend over a singed barrel cactus, its blackened spots like dots on a Northern Flicker's breast. Has she laid her eggs now? Will her children flit through this hot, burnt land?

Those fallen Joshua trees will not regrow. The universe circles on and on with or without them—with or without us. Awe reminds us of this truth, though our sense of self may not always like it. The word “awe” comes from Old Norse “agi” and Old English “ege”, both words conveying feelings of terror and dread. But we must know these feelings are good for us, because so much of the American land conservation movement was built on the foundation of protecting landscapes that invoke awe. This appreciation goes back to transcendentalists like Emerson and Thoreau who

sought “the sublime” in American wilderness. Inspired by the Romantic movement of European literature, art, and philosophy, which often portrayed the sublime as experiences of beauty with hints of divine terror in nature, American transcendentalism carved out a unique nature philosophy emphasizing wilderness as places to experience awe, and therefore worthy of protection.

Early southwest nature writers like Mary Hunter Austin and John C. Van Dyke sought to portray awe borne from the desert, conceiving it beneath the milky way in the company of coyotes, cottontails, and quails. “Go as far as you dare in the heart of this lonely land, you cannot go so far that life and death are not before you,” Austin writes in *Land of Little Rain*. When I am in awe of the same cycles Austin witnessed, I am not alone in grappling for the right language. “There is no tale or text or testimony to be tortured out of the blue sky,” writes Van Dyke. “It is a splendid body of color; no more.”

The southwest was different for Austin and Dyke, who wrote in the early 1900s. Although they too faced many uncertainties, today our reality is shaped by impending scarcity, loss, and uncertainty of a different kind—megadrought, wildfires, bird declines, habitat loss, hotter temperatures... does awe still matter in this environmental reckoning? I return to the Wee Thump Wilderness one autumn night when I am lost in this question. I wonder if coming here is just a distraction from the work that needs to be done to protect our desert. I settle in, standing at a crossroads between the setting sun and the rising full moon. I breathe the dry air in and out for six seconds each, turning to the last light on my exhale and to the moon on my inhale. Black-throated Sparrows twitter, unseen. As the moon climbs higher and higher, I kneel, holding myself. Saturn, Venus, Polaris. Creosote, blackbrush, yucca. Too many Joshua trees to count. The moonlight penetrates— I cry, pouring more salt into the earth. What’s left is stillness. Presence.

Awe is a conception between ourselves and the world. What is born is openness. Keltner and Haidt have found that those who experience awe also feel more interconnection, gratitude, and wonder in their daily lives. When we carry the landscape of awe inside ourselves, we are never alone. If Avi Kwa Ame had not been protected through the hard work and advocacy of so many people, there would be one less place to come to. I carry Avi Kwa Ame back with me to Las Vegas in my body and memory. There are Northern Flickers and full moons in Las Vegas, too.

Somewhere in Avi Kwa Ame, a beavertail cactus blooms in the spring sunshine. Opening twenty-four fuschia flowers as bright as flames, the cactus beckons pollinators to come. I peer into one flower. Within its petals, a dozen tiny red-and-black beetles teem and twitch between the anthers, spreading white pollen with each step. One crawls on top of another and they mate slowly. Soon, their children will hatch and crawl through more cactus blooms. Soon, this flower will wilt and the cactus will beckon new creatures with its sweet fruit. Perhaps the beetles will be food for flickers. Again I forget myself, immersed in the lives of other beings.



Illustration by Kyle Larson.

NATURE'S PERFECT PAIR

By Paula Jacoby-Garrett



NATURE'S PERFECT PAIR: THE JOSHUA TREE & THE YUCCA MOTH

BY PAULA JACOBY-GARRETT

IN THE VAST, ARID LANDSCAPES OF THE MOJAVE DESERT, an unlikely partnership has flourished for millions of years between the visually arresting Joshua tree, with its shaggy branches and bold clusters of spiky leaves, and its pollinator, the small, unassuming, but infinitely interesting yucca moth. The mutually beneficial relationship between these two organisms is an extraordinary example of what ecologists call “*coevolution*,” where each species has evolved unique adaptations over time that benefit the other. The survival of each depends on its partner, and their delicate relationship offers a glimpse into the complex interconnections that shape desert ecosystems like those in Avi Kwa Ame National Monument.

THE JOSHUA TREE

There are over 70 species and subspecies of Yucca plants, including the Mojave yucca, the banana yucca, and the world-famous Joshua tree. Joshua trees (*Yucca brevifolia*) are unique to the Mojave Desert, where they stand as an iconic symbol of resilience and beauty. Named by Mormon settlers who thought the trees’ branches resembled the biblical prophet Joshua with his arms raised in prayer, these ancient plants are deeply rooted in desert culture and ecology. Ecologists estimate that the development of the Joshua tree as we know it dates back six million years, and over time, the tree has become specially adapted to withstand extreme heat, scarce water, and poor soil. Two subspecies of Joshua tree currently exist: *Yucca brevifolia brevifolia* found in the western portion of the Mojave, and *Yucca brevifolia jaegeriana*, found in the eastern portion, including in Avi Kwa Ame.

Joshua trees, particularly in the Wee Thump Wilderness area within the monument, are robust and create a dense desert forest habitat. They are essential to the desert ecosystem, providing shelter and food for many desert animals. The elevation in this area ranges from 4000-5000 feet, and with that higher elevation, cooler temperatures and more rainfall allow for healthy trees. Some Joshuas are estimated to be over 900 years old, with many being 30' or more in height. In fact, the term Wee Thump in the Southern Paiute language means “Ancient Ones”, a fitting description of these elders.

Despite their robustness, Joshua trees are relatively fragile in their early stages. Seedlings need specific conditions to grow successfully, including sufficient rainfall, mild temperatures, well-drained soils, and usually a “nurse plant” to provide moisture and cover. Even under ideal circumstances, Joshua trees have a slow growth rate, averaging about half an inch annually. Both growth rates and flowering are highly variable and dependent on rainfall in the area. For this reason, it can easily take many decades for the Joshua tree to go from a seedling to a mature tree capable of flowering. Reproduction for these trees is especially challenging, as they rely on a single, specialized group of pollinators: yucca moths.

THE YUCCA MOTH

Yucca moths are small, light, slim creatures. There are at least a dozen species (and likely more that are undescribed) belonging to the genera *Tegeticula*, *Parategeticula*, and *Prodoxus*. Amazingly, every different species of Yucca moth has evolved to mutually benefit a corresponding species or subspecies of Yucca. Two species, *Tegeticula synthetica* and *Tegeticula antithetica*, co-evolved alongside the Joshuas, with each moth corresponding to one of the two varieties of tree. *Tegeticula synthetica* is slightly larger and collaborates with the western Joshua tree, and *Tegeticula antithetica* is slightly smaller and collaborates with our eastern tree. Most scientific studies of Joshua tree pollination have only focused on the western trees, and *Tegeticula antithetica* was only discovered in 2013; its specific pollination of the eastern Joshua, *Yucca brevifolia jaegeriana*, was only confirmed in 2017!

Unlike most generalist moths that feed on the nectar of many different types of plants (and inadvertently pollinate flowers as they do so), both species of Joshua tree yucca moths have a unique and highly specialized relationship with their type of Joshua tree. The eastern yucca moth is the only species easily capable of pollinating the flowers of the eastern Joshua tree, and the tree, in turn, is the only place where the yucca moths can reproduce. This exclusivity is rare in nature and forms the backbone of their mutually dependent relationship.

The life cycle of the yucca moth is perfectly synchronized with the flowering cycle of the Joshua tree. When the Joshua tree's waxy, creamy-white flowers bloom in early spring, female yucca moths emerge from their underground pupae and seek out these blossoms. Here, the moths have an essential job to perform, one that no other insect can do.

The Joshua tree's flowers, with their white color, strong scent and tubular shape, are uniquely adapted to attract only yucca moths. Other pollinators, like bees or butterflies, are not interested in the flowers, as they do not offer nectar. This exclusion ensures that only yucca moths are responsible for pollination, strengthening the bond between the two species. Yucca moths have similarly evolved to pollinate their specific Joshua tree. Their specialized structures allow them to carry and deposit pollen in a way that other insects cannot replicate. In the few weeks that the moths live, they do not eat, focusing instead on finding other moths around the Joshua tree flowers with which to mate, and then depositing their fertilized eggs in the flowers' ovaries.

POLLINATION

The pollination ritual of the yucca moth is remarkably complex. Upon finding a Joshua tree flower, a female moth collects pollen by scraping it into a small ball with specialized tentacle structures on her face—a trait unique to yucca moths. She then flies to another flower on a different Joshua tree to deposit the pollen. This behavior ensures cross-pollination, a rare phenomenon among insects, as most simply gather pollen incidentally while feeding.

Once at the new flower, the moth carefully places her pollen ball onto the plant's stigma (the flower's female reproductive part), initiating fertilization. In an extraordinary act of precision, she then deposits her eggs directly into the flower's ovary. This placement allows the hatching larvae to feed on developing seeds while leaving enough seeds for the Joshua tree to spread. The mutual adaptations between tree and moth go even further; the thickness of the flower stile leading to the flower's ovary exactly match up with the length of its companion moth's ovipositor (the long, knife-like appendage that cuts through the ovary wall and makes depositing the eggs possible), allowing the moths to successfully implant their eggs in the most advantageous part of the ovary, and making via-

ble cross-species pollination between Joshua trees and their non-partner yucca moths extremely rare.

There is a delicate balance at play in the relationship between plant and animal here—if the moth lays too many eggs, they could consume all the seeds, reducing the tree's ability to reproduce. There is also evidence that the Joshua tree has evolved the ability to ascertain how many eggs have been laid in each flower ovary, and if that number is too high, the tree rejects that flower all together, rather than putting its energy into developing it for the sole benefit of the moth larvae. This relationship, with all of its checks and balances, has ensured that both the tree and the moth benefit from this interaction.

The tree and the moths also seem to have evolved ways to communicate with one another. The yucca moth's mature larvae emerge from the Joshua tree seedpod that gave them food and shelter during the first part of their lives, and make their way down to the desert floor below (one USGS researcher has witnessed them jumping from the trees en masse), where they burrow into the sandy soil. In good years, when trees are preparing to flower in the spring, the yucca moths somehow receive a message from the tree so they know when it's time to emerge as moths and begin the process anew.

CHALLENGES AND CONSERVATION EFFORTS

The relationship between the Joshua tree and the yucca moth is a testament to nature's resilience and interconnectedness. This mutually beneficial partnership has weathered millions of years of environmental changes and continues to define the Mojave Desert's unique ecosystem. However, as human impact on the planet increases, this ancient relationship faces unprecedented challenges. Climate change, habitat loss, and human activities have placed unprecedented pressure on Joshua tree populations, and now endanger the survival of both the trees and their pollinator partners.

Climate change is the most significant threat to this delicate partnership, as Joshua trees require specific conditions to reproduce and grow, including winter freezes that help germinate seeds and rainfall to sustain young trees. Rising temperatures and prolonged droughts in the Mojave Desert make it harder for Joshua trees to survive. Recent studies predict that Joshua trees may lose up to 90% of their current range by the end of the century without intervention. As Joshua trees decline, so does habitat for yucca moths. Without enough trees to provide food and a place for egg-laying, moth populations are also at risk. This loss could also trigger a domino effect, affecting numerous other species of plants, animals, insects and birds that rely on Joshua trees for habitat and resources.

Researchers are working to find ways to protect both the Joshua tree and the yucca moth from environmental threats, and studying these organisms to better understand how they work together and what they need to be successful is key. Places such as Wee Thump Wilderness Area in Avi Kwa Ame National Monument play a crucial role in conserving large populations of Joshua trees and promoting public awareness of the species' ecological importance. Research into transplanting and cultivating Joshua trees at higher altitudes with cooler temperatures is underway to help the species adapt to climate change.

In the end, the Joshua tree and the yucca moth remind us that survival often depends on cooperation. Protecting one means protecting the other, and in doing so, we help preserve the intricate web of life that makes our world so diverse and resilient. It is also a reminder of how important places like Avi Kwa Ame National Monument are in maintaining the interconnectedness of the greater Mojave ecosystem that so many organisms call home.



**FROM STARDOM TO SAGEBRUSH,
REX BELL'S
Nevada Legacy**



By N. Ron Safran

FROM STARDOM TO SAGEBRUSH: REX BELL'S NEVADA LEGACY

BY N. RON SAFRAN
Illustration by Rachel Hillberg

IN THE SWELTERING SUMMER OF 1931, as Rex Bell's Lincoln Roadster kicked up dust along the primitive road to Searchlight, Nevada, a transformation was about to take place. Behind the wheel, Rex, known to millions as the star of their favorite Western films, knew himself to be a man ready for reinvention. The Hollywood movie sets, with their painted backdrops and choreographed action, lay behind him. Ahead stretched acres of raw, unexplored Nevada desert—where no cameras rolled, and no director would yell “cut.” At last, he was not merely playing a part.

This article is a portrait of a cowboy film star who pursued his passion to be a real cowboy, businessman, and politician. Rex Bell's life was a journey where his love for Nevada would catalyze his success in many ventures and help forge the state's modern identity.

SUCCESS IN THE WESTERNS

George Francis Beldam Jr. embodied the intersection of Hollywood glamor and frontier authenticity that helped define Nevada's unique character. His contributions as one of the first prominent characters in Nevada represent far more than a simple career change. They embody the very essence of what Nevada offered in those transformative years: the chance to shed prescribed roles and write one's own story in the vast emptiness of the desert.

Beldam was born in Chicago in 1903. He and his family moved to Hollywood in the 1920s, where his rugged good looks and natural charisma as well as his skill with horses made him the perfect fit for the booming Western film genre. He was soon offered a contract with Fox studios. His name, however, did not have the right cowboy ring to it, so he chose the stage name “Rex Bell”. Soon, he was a recognizable face in dozens of Westerns, including “The Cowboy Kid” (1928) and “They Had to See Paris” (1929). However, the film that would change his trajectory was “True to the Navy” (1930), a romance where he starred alongside the vivacious “It Girl” of the silent film era, Clara Bow.

THE COWBOY BEHIND THE SCREEN

Rex Bell's life took a dramatic turn when he met Clara, sparking a whirlwind romance that led them to elope in Las Vegas in 1931. Their marriage marked the beginning of a new chapter that would leave its mark forever on Nevada. Now intertwined with Hollywood's most beloved silent film star, Bell's fame reached new heights, with one newspaper noting that the “former melodrama star and husband of Clara



A movie still of Rex Bell

Bow, [had] won the unanimous praise of theater audiences" (News Observer, 1934). While he was often introduced in the tabloids merely as "Clara Bow's husband," Bell began creating a reputation of his own and building his bona fides into something remarkable at the location that was eventually to become known as Walking Box Ranch.

The name came from the box-shaped motion picture cameras used in Hollywood; the 400,000 acre-ranch in Searchlight, Nevada became a bridge between two worlds—where the glamor of the entertainment industry met the grit of frontier life. Here, Bell would live the dream that Westerns are made of. "It is a great relief to get away from Hollywood," Clara Bow had told the Las Vegas Age in 1933, "I can really feel free and enjoy myself. I love the desert and hope to spend every available day on the ranch." Nevada represented respite for Clara, but for Rex, it represented that and something more—opportunity.

While Clara sought refuge from the relentless publicity and litigation that had nearly broken her spirit, Rex saw the potential to transform his Hollywood persona into something authentic and lasting. Raising his cattle, riding horses, and tending to their rock gardens, Rex found himself and his purpose in being a real cowboy. Though Clara subsequently retired from acting, Rex continued to travel back to California over the years to star in dozens of productions from "Broadway to Cheyenne" (1932) and "Idaho Kid" (1936), to his final film "The Misfits" (1961), also starring Marilyn Monroe. Even with frequent visits to Hollywood, the allure of the Mojave Desert prevailed and home would perpetually mean Nevada to Rex Bell.

Dr. Michael Green, UNLV History Professor, notes this crucial distinction. "Rex Bell and Clara Bow were really the first, or at least most prominent, Hollywood stars to play a role of any significance in Nevada. This was before gambling spread widely and big-name entertainment became part of the equation." Their Spanish Colonial-Revival home quickly became a celebrity retreat during a time when nearby Las Vegas had a population of only 5,000. Western film icons like William "Hopalong Cassidy" Boyd, Red Rider, Roy Rogers, and other Hollywood luminaries like Clark Gable and Carole Lombard found their way to Walking Box Ranch. Though the location was obscure for the time, for many years Walking Box was Nevada's second-largest ranch, playing an integral role in the state's economic development. This stands in stark

contrast to what originally drew Bell and other stars to Nevada—the allure of privacy and simplicity—as opposed to the bright lights that define the region today.



Rex and Clara in front of the fireplace of their ranch home

BUSINESS MEETS NEVADA BRANDING

As the pair embraced their ranching lifestyle over the years, raising their two sons Rex Jr. and George, Rex's entrepreneurial spirit could not be tamed. He

pursued many new ventures in Nevada's relative infancy, launching Rexco Inc. in 1944. Under the Rexco umbrella were multiple souvenir shops in Las Vegas and Reno, as well as the clothing label, Walking Box Brand—a tangible blend of Western authenticity and show-business flair. UNLV Professor and fashion historian Deirdre Clemente explains “[The brand] was an extension of Rex Bell's celebrity and it capitalized on a movement in American culture at the time that was celebrating Western clothing and a Western aesthetic to not just the West, but to the country at large.”

The distinctive western wear featured designer Viola Grae's hand-embroidered desert flora and fauna, celebrating Nevada's natural heritage. “The craftsmanship made them great,” Dr. Clemente emphasizes. “A lot of the motifs of the clothing are cacti and flora that are specific to Nevada, so [Bell] really did make sure that we spoke to the environment from Nevada.” Rex Bell's Western Wear store on Fremont Street became a landmark in early Las Vegas, offering not just clothing but a taste of authentic Western lifestyle and a way visitors can take home a piece of Nevada.

POLITICAL ASPIRATIONS UNFOLD

As Clara Bow retreated further from the public eye, Rex Bell's new businesses expanded, and in turn, his profile rose. Marking yet another evolution, Rex's natural charisma and genuine connection to Nevada's people led him into politics. This transition was exciting for him. However, being thrust back into the limelight took a toll on Clara, contributing to their split in the mid-40s (the couple never divorced but lived separate lives). When Bow moved back to California, Bell maintained his passion for Nevada and his political presence continued to flourish. He was a leader in the Republican party and active in the Nevada Chamber of Commerce and Boy Scouts. Most prominently, Bell served as Lieutenant Governor from 1954 until his death in 1962, bringing his characteristic authenticity to public service. As he told the Nevada State Journal in 1954, “Nevada needs leadership that understands both its heritage and its future potential. I've lived that heritage, and I believe in our future.”

“Fewer celebrities entered politics themselves when he started out,” Dr. Green explains. “His first campaign was more than 20 years before Ronald Reagan ran for governor of California. It's also worth remembering that in the era in which he was part of Nevada politics, it was easier and possible to know a lot of constituents by name and to meet much of the voting populace.”



Left: an interior view of Bell's westernwear store. Right: Rex (on the right) in front of a hat display. Walking Box Ranch Photograph Collection, 1880-1979. PH-00346. Special Collections and Archives, University Libraries, University of Nevada, Las Vegas. Las Vegas, Nevada.



ible feat by today's standards. His pervasiveness was cut short, however, in 1962, when Bell suffered a fatal heart attack while filing his candidacy for Governor. Dr. Green reflects poignantly, "He had a better chance than anyone in his party did of defeating the incumbent, Democrat Grant Sawyer. Had Rex Bell lived, it's interesting to ponder how far he might have gone."

REX BELL'S ENDURING IMPACT

Bell's influence on Nevada extended far beyond his lifetime. His vision of Nevada as a place where Western heritage could coexist with modern progress helped shape the state's development philosophy. Today, the Rex Bell Elementary School in Las Vegas bears his name, and the Walking Box Brand clothing line remains a collectible that encapsulates the spirit of Nevada's Wild West—an era that is rapidly fading as modernization reshapes the landscape. Perhaps offering us the most insights today into Bell and Bow's past is Walking Box Ranch. As part of Avi Kwa Ame National Monument, their special retreat and many of their belongings have been preserved, serving as a living laboratory for cultural research, and further emphasizing Bell's significance to Nevada. Artifacts from the lives of Rex Bell and Clara Bow also reside at the Nevada State Museum, The Clark County Museum, the Searchlight Museum and UNLV.

In the collection of artifacts from Walking Box Ranch is one of the most personal and lasting symbols of Rex Bell's connections to Nevada—his cream-felt cowboy hat and case. Signed by Rex, Clara Bow, and their movie star friends, this hat is covered in handwritten messages that echo Rex's warm, genuine relationships with those he met in Nevada and beyond. The hat stands as a timeless memento of Bell's impact, memorializing the friendships and legacy he left in the state he loved, with autographs including; "Best Wishes Rex Bell, Clara Bow," "The Westerner," "Tonto, 'Getum up Scout,'" "The Lone Ranger 'Hi Ho Silver,'" "Little Beaver 'You Betum, Red Ryder,'" "California Carlson," and "Hopalong Cassidy."

The stories of Rex Bell's many roles and connections, born out of the unlikely town of Searchlight, serve as a beacon of inspiration and guidance: in Nevada, one need not choose between preserving the past and embracing progress, between publicity and simplicity, or between dreaming and doing. As Rex Bell demonstrated, it is possible to embody all these facets and more, making life's journey far more compelling than any Hollywood script. 

He liked that part of the political game and the people liked him." Bell's approach to politics was distinctly Nevadan in that it was practical and personable. Because he truly "walked the walk" at Walking Box Ranch, he had great appeal to Nevada's voters.

"His business helped reduce any distance between a big-name celebrity and the average Nevadan, making Bell even more likable." Green notes that even Democrats would comment on what a nice guy he was regardless of his party affiliation, an incred-

A SEASON STUDYING THRASHERS

BY
SPENCER GUISEMAN

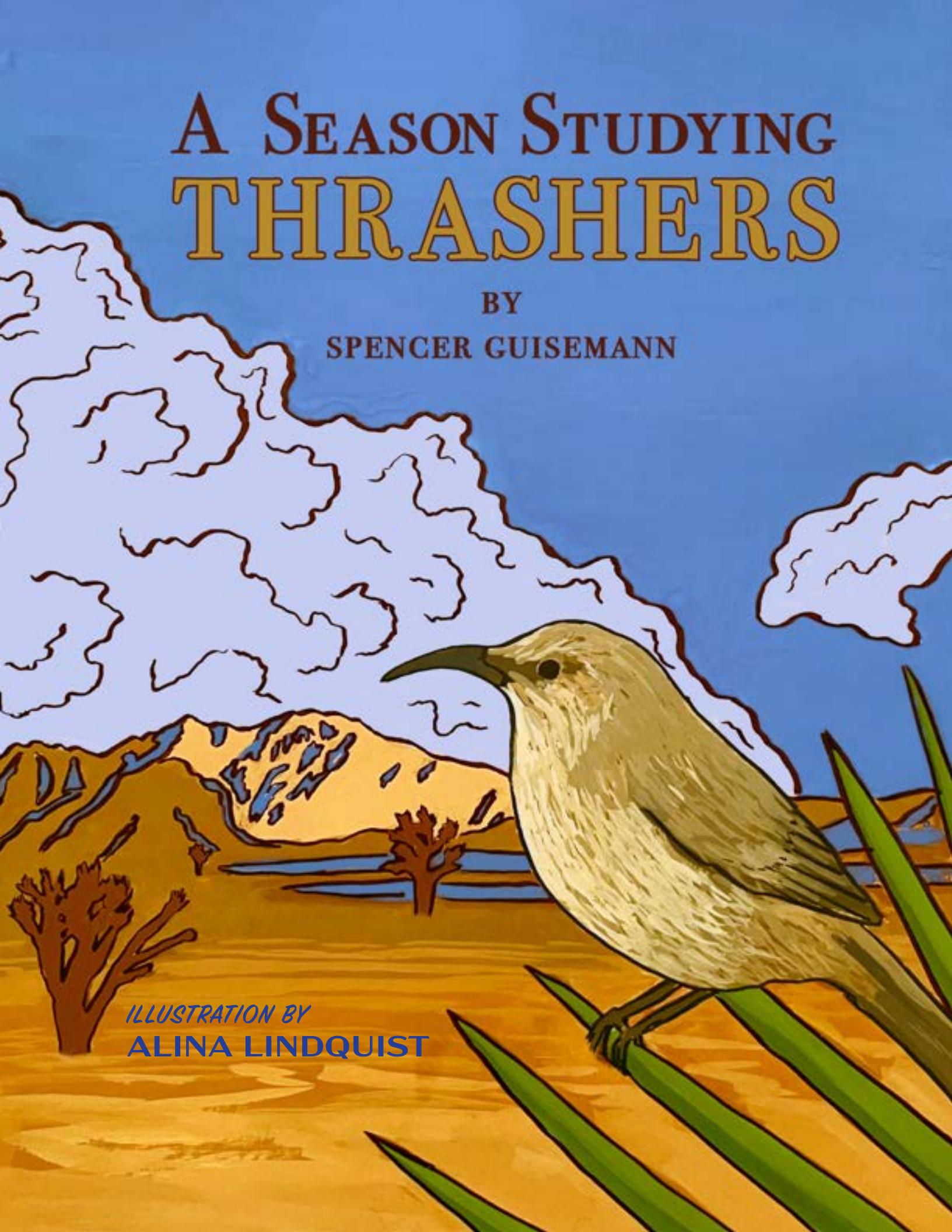


ILLUSTRATION BY
ALINA LINDQUIST

RESEARCH IN AVI KWA AME: A SEASON STUDYING THRASHERS

BY SPENCER GUISEMANN

DESERT THRASHERS ARE A MYSTERIOUS GROUP OF BIRDS, long evolved to the southwest deserts, that may be used as indicators of environmental health. In spring 2024, Great Basin Bird Observatory initiated a project studying two at-risk species of thrasher under a grant from the Bureau of Land Management, I was hired as the sole field technician helping with the research. This project's purpose was to better understand the causes of decline of thrasher species, to clarify the habitat preferences within the monument, uncover the impacts of disturbance, and generally fill in gaps in the knowledge base. GBBO is a non-profit focused on bird conservation. It has conducted research in this area since 1997 and previous data collected was utilized to help prevent the construction of an industrial-scale windfarm in 2017 that was proposed to surround the town of Searchlight.

The efforts of local communities and the establishment of Avi Kwa Ame National Monument in 2023 broadened the possibilities of conservation and scientific research in an area often seen as desert "wasteland". The monument is a huge success, providing protected habitat connections to nearby public lands in California, Nevada, and Arizona for countless wildlife.

The two species I was lucky enough to study last year were the LeConte's and Bendire's thrashers. They are both threatened species, listed on the Partners in Flight *Red Watch List*; their populations have declines by 67% since 1970. These birds are poorly understood in general because of their discreet nature, and even less understood within the monument, as this ongoing study is the first to be focused on birds in this region of Nevada. These two species of thrashers have limited ranges, largely restricted to northwestern Mexico, Arizona and New Mexico and the Mojave Desert of California and Nevada.

Since these species are so well adapted to an arid desert climate, they are particularly vulnerable to habitat fragmentation and the rapidly changing landscape. New urban housing developments, ranching activities and energy developments can threaten the quality of usable habitat these birds rely on, habitat that is already scarce in resources. Compounding with these challenges to viable habitat are the impacts of climate change on the populations. As drought continues and seasonal trends become less trendy, excess strain is put on thrashers that are already pushed past their biologic limits.

The 2024 study season lasted from late March to the end of June, and my days started very early, with me driving an hour before sunrise to each of forty, pre-selected, randomly placed, four-kilometer straight lines, or transects, within the monument. These transects were all within expected habitat for these thrasher species and they varied in their proximity to disturbances, with some even falling within the York Fire burn scar.

As I slowly paced through the transects, I periodically broadcasted thrasher songs from a Bluetooth speaker to try to elicit a response from a nearby individual or mating pair. I did this ten times at every transect, and I visited each transect twice over the course of the study. Because of this repetition, I became an undeniable expert in identifying thrasher song, calls, and other vocalizations. Once I found a thrasher (which if I'm honest occurred less than half the time), I gathered as much behavioral information as possible to understand where they were in their

breeding cycle. I recorded their singing and foraging habits, and nest site selection and construction. Once I found where thrashers lived, I would come back and check-up on their nests, gathering information on nest timing, parent behavior, and the success of fledglings.

I often found myself standing silent and still in the desert for extended periods, waiting for one of these birds to reveal any information about their lifestyles, which they were discourteously unlikely to do. I learned quickly how they earned their nickname, 'desert ghosts'. Thrashers are a particularly intriguing species to study because of their cagey, secretive nature. Most of the time I would hear them before seeing them -- half the time I heard them and never saw them, tracking them off their sounds alone. Apart from their songs, LeConte's make loud *hoo-it* calls, while Bendire's perform a low gravelly *chek* call.

Although these birds were charismatic in their behaviors, you could consider them misanthropic, often darting away as I silently moved to get a better view, only to see them appear moments later a hundred meters away. The birds' physical traits disguised them unbelievably well. I can't count how many times I stared at a suspected thrasher from a distance, only to discover I spent 5 minutes staring at a crooked branch, clump of debris, or a strangely shaped rock.

For those that would not like to make that same mistake, a brief description follows. LeConte's are a slender, sand-colored species with a dramatically decurved black bill and black eye. Bendire's are a dusky brown bird with a shorter decurved bill than other thrashers, faint streaking on the breast, and a striking yellow eye. The Bendire's and LeConte's Thrashers both live in flat, braided, sandy washes of open, desert scrub, perfect for their characteristic ground foraging behavior of probing, kicking, or thrashing (hence the name) for invertebrates in the dirt or under rocks and litter.



Bendire's Thrasher.



LeConte's Thrasher.

Over the season, I experienced different ways to find thrashers, and I honestly had the best luck when I quietly hid, watched and listened, instead of actively searching for them. To ensure I was simply an observer of the birds as they existed in their natural habitat, I always remained at a considerable distance and crouched in any shade I could find. I aimed not to disturb them in any way, eliminating the chance of influence on the data in the process. Searching for thrashers can prove difficult and frustrating to any bird watcher. Since they are well-camouflaged and dispersed across a landscape (you won't ever see large flocks of thrashers), finding them in the first place is more than half the battle. But when you do, after trekking through the hot desert filled with spiny cacti, shin scraping low shrubs, and irritating burrs, it is oh so rewarding.

LeConte's are found throughout the Piute and El Dorado valleys and the gradual upland slopes on the way down to Cottonwood Cove. However, Bendire's are much rarer, in fact birders from across the country flock to Walking Box Ranch and Wee Thump just for the slight chance of seeing one of these gorgeous desert ghosts. If you are successful with your endeavor, you may get treated to the sight of one scurrying across the desert floor, or you may be graced to hear their rich, melodious warble of varied trills and whistles in repetitive phrases, which sometimes include mimicry of other birds. When looking for them, it is important to remember how sensitive they are to humans, and do everything you can to reduce disturbances towards them. Don't linger too long if you are lucky enough to see one. Remain as quiet as possible, be respectful, and enjoy the experience.

Of the six LeConte's thrasher nests I found throughout the survey period, just two of them

fledged (made it past nesting and were able to forage on their own). The other four nests were either abandoned or depredated. The cause of abandonment isn't always known; some of the possibilities are lack of resources or high competition, poor nest timing, or disturbance from human impacts. Other results showed that LeConte's Thrasher are far more likely to nest away from development and roads, showing the need to keep a check on urban development so as to not limit usable habitat any further.

It's possible that these thrashers might be able to adapt to local conditions, shifting their time of nesting earlier or later in the breeding season to account for resource availability and favorable weather. This, however, is just a hypothesis; we should not account for an individual's or even the population's ability to shift locally as it may not be true for an entire species, especially in a modern climate when regional differences can be quite dramatic.

Efforts have been made by various organizations and management agencies to better understand LeConte's and Bendire's thrashers, as the future of their habitat is uncertain, and the establishment of Avi Kwa Ame as a monument has presented an opportunity to invigorate research in the area. Birds can be incredible indicators of change, and studying these two sensitive species can help us better understand the health of the monument's whole ecosystem.

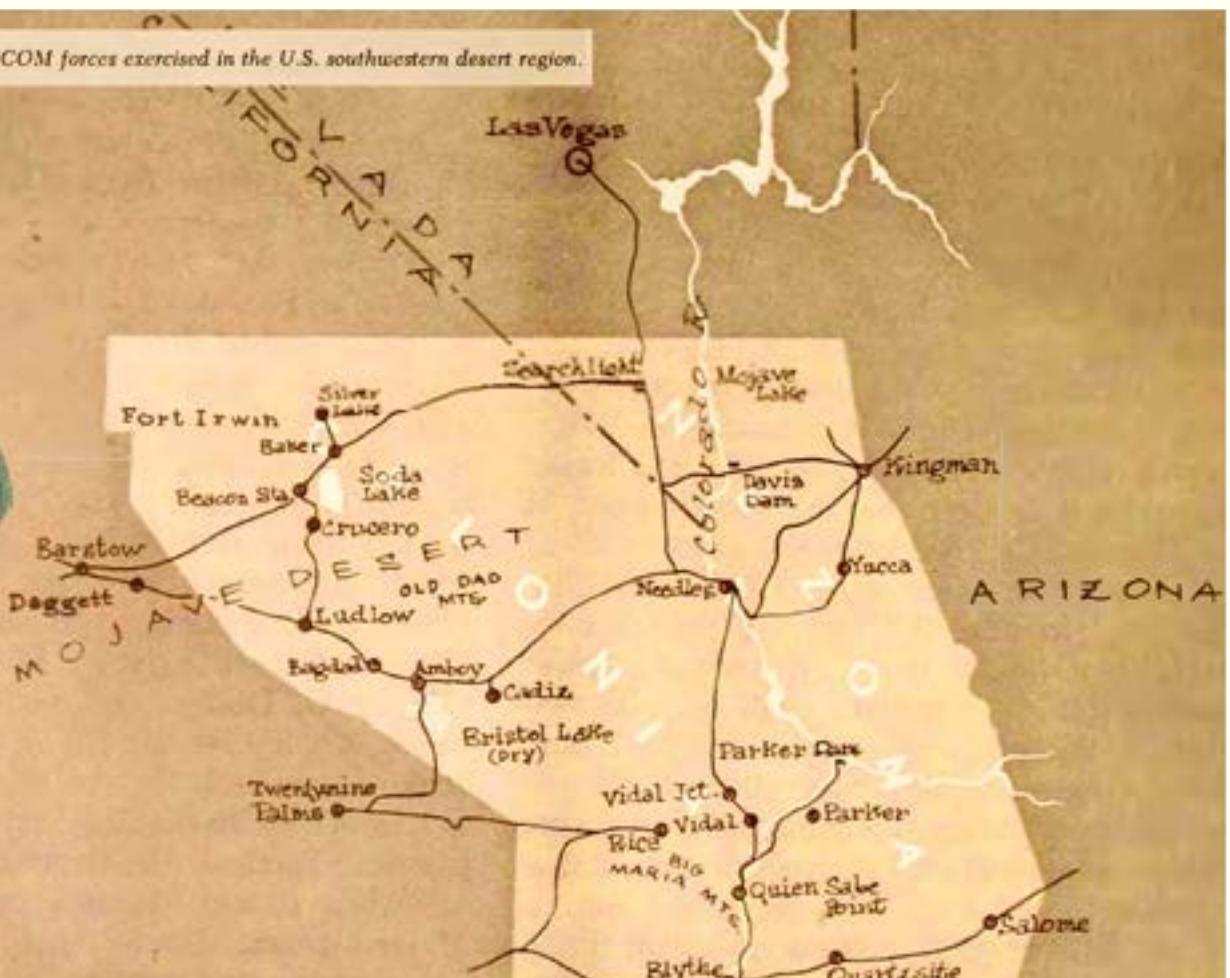
With this information, we can inform management actions to benefit thrashers and other species, but there's still more work to do. For any scientific inquiry to yield viable management implications, it needs to have a wealthy bank of data that spans multiple years. This project, as a pilot study, allows us to initiate this research and refine our methodology for future seasons. With more support, we can broaden the geographic scope of the study to include areas outside of Avi Kwa Ame and further collaborations with other agencies and communities throughout the species' range. After just one season studying these birds, they've quickly become some of my favorite. While I left the 2024 season knowing there is always more to do in conservation, I felt like I helped make a great stride towards a better future for these birds. I hope visitors to the monument, old and new, have an opportunity to enjoy these remarkable species just as I have. 



Buckhorn Cholla, Compare with Actual Buck Horns

CACTUS CORNER: Buckhorn cholla (*Cylindropuntia acanthocarpa*) is an open and branching, woody cactus of the Mojave, Sonoran and Colorado deserts that can grow over 7 feet tall. Their forked branches are a favorite of nesting birds, and in spring they are topped with large, yellow to crimson flowers. New growth tips are tender and can be roasted and eaten like asparagus or dried and stewed.

During May 1964 USSTRICOM forces exercised in the U.S. southwestern desert region.



AVI KWA AME NATIONAL MONUMENT AND THE MILITARY

DESERT TRAINING CENTER & JOINT OPERATION DESERT STRIKE

BY KASSIDY N. WHETSTONE

A March 27, 1942 editorial in the *Las Vegas Evening Review-Journal* headlines, “Tank Units Will Train in Vicinity of Searchlight.” The United States had entered World War II, though the fighting was not seen here at home. So why were military tanks on the move in the Southern Nevada desert? The tanks were from the Desert Training Center, also known as the California-Arizona Maneuver Area, which prepared American troops for desert warfare in North Africa.

The United States military has held a long and unique relationship with the deserts of the American Southwest; everything from the Army’s Camel Corps expeditions, the establishment of Fort Mohave, and large military installations and structural takeovers at Goffs, to prisoner of war camps, military installations to protect the Hoover Dam, nuclear and atomic testing, and the Fort Irwin National Training Center. This relationship can be further understood by exploring the operations of the Desert Training Center in the 1940s and Joint Operation Desert Strike in the 1960s, which occupied portions of Nevada, Arizona, and California, including Avi Kwa Ame National Monument. These two singular operations reflect a popular viewpoint of the desert as a potential killer, a teacher of invaluable lessons, and a haven for recreational adventure. At the same time, the Mojave desert experienced damage from these activities that is still visible today.

In the 1940s, the perception of the desert as a lethal environment led to its starring role in the training exercises of the Desert Training Center. In February 1942, the United States Army assigned General George S. Patton, Jr. to administer desert training to American troops to simulate the environmental conditions found in North Africa. That March, Patton and support staff surveyed the boundaries of what would become the 18,000 square-mile Desert Training Center that spanned Southeastern California, Southern Nevada, and Northwestern Arizona. Between 1942 and 1944, over one million troops passed through the Desert Training Center in preparation for desert warfare.

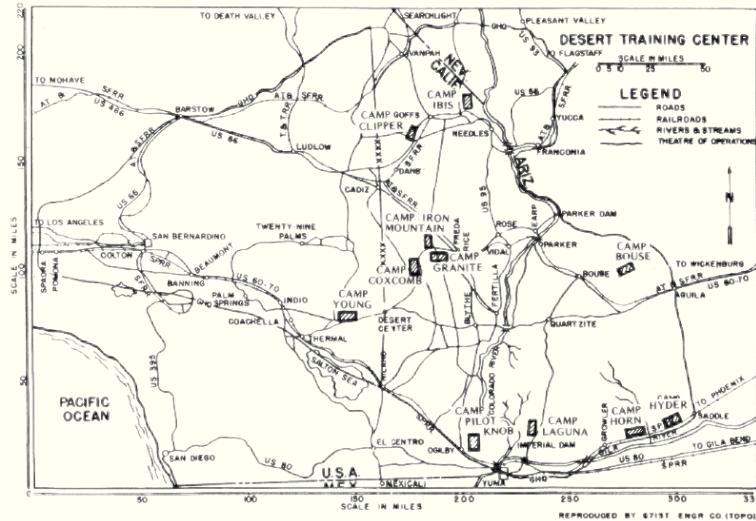
Camps and hospitals throughout the area, such as in Needles and Goffs, were constructed to mimic what a setup would look like in the conflict area. Water, food, and supplies were limited and tested for sustainability, and the troops endured grueling exercises with prolonged exposure under the desert sun with limited resources. Troops were initially restricted to one canteen of water each day. However, after enough troops collapsed from heat exhaustion, rations were increased to one gallon per day (for both drinking and bathing). “The desert is a killer,” said General Patton, “and we must acclimate our soldiers to the climate.” Others described it as “a desert designed for hell.”

Quotes such as these from the United States military's top leaders reveal hostile attitudes toward the desert environment of the American Southwest. The desert was something to be survived, and a lack of acclimation and preparation could prove deadly during the summer months or winter months of battle. The North African desert was brutal, and the Mojave Desert was perceived to be its match.

Though the desert was perceived as a potential killer, there were also lessons to be learned from it. The environment was seen as a (tough) teacher that would prepare troops for gruesome military deployment. The desert provided critical lessons for the training and conditioning of American troops; in surviving the desert, the men gained irreplaceable experience for the battlefield. Enduring the DTC was no small feat but it prepared US troops for war in South Africa.

In World War II, Southern Nevada towns such as Las Vegas, Boulder City, and Searchlight sent their men and women to support the war effort; neighboring areas including Fort Mohave, Bullhead City, and Needles did the same. During these training exercises, troops also frequented the local towns of Boulder City and Searchlight, sometimes blowing off some steam while drinking, gambling, and being "entertained" while keeping the economies of these remote outposts alive. General Patton's troops even visited movie stars Rex Bell and Clara Bow at the Walking Box Ranch and took advantage of their swimming pool and games.

In May 1964, Joint Operation Desert Strike (JODS) was launched as one of the largest United States military exercises of the Cold War, using the Mojave as a training ground for large-scale military equipment such as tanks and Jeeps. It took place largely in the area previously occupied by the Desert Training Center from World War II, and approximately 89,000 troops rotated through the program. The training program was managed by the U.S. Strike Command and included a "semi-controlled" exercise of opposing forces (made up by the United States Army



and Air Force) over a fictional Colorado River water rights dispute.

What was the rationale for conducting this exercise in the old training grounds of the DTC? According to General Paul D. Adams, Commander in Chief of USSTRICOM and Exercise Director, the intrigue was “the use of land areas many times larger than areas of even the largest military reservations.” This time around, the “harsh” conditions of the desert environment did not inform the location selection; rather, it was the freedom of desert activity.

In their down time, troops stationed here in the 1940s through the 1960s traversed the desert terrain in Jeeps and motorcycles, changing the tone of the landscape from a threat to a playground. Surplus military vehicles became the vessels for recreational adventure, and after their service, the same troops returned to their training grounds with their friends and families to explore the region’s natural wonders. Outdoor recreation did certainly exist prior to this era, but the use of specialized motorized vehicles as transportation throughout the desert increased dramatically following these training exercises. These activities continue to shape outdoor recreation today as a regular part of downtime on military bases; for example, Fort Irwin’s Outdoor Recreation program offers OHV rentals and tours of the Mojave region for military members and their families.

Throughout the 20th century, the Mojave Desert was used for military training, despite the impact this would have on the natural environment. In addition to the countless individuals from around the country who served in this area and fought in world conflicts, the desert ecosystem made its own sacrifice for the good of our country. The environmental damage was so extensive that in 1986, the United States Geological Survey noted that there was still heavy visible scarring from the DTC and JODS military exercises, testing, and recreation that altered the vegetation and ecology. Even today, assessments are periodically performed to understand the lasting consequences of these military exercises. As you tour the monument, if you see areas that look more bare than usual of mature plant life (especially southwest of Searchlight along Hwy 95) there is a good chance you are looking at the effects of the Mojave Desert’s military service.

This is yet another layer of the story of Avi Kwa Ame National Monument and the ways in which its natural landscape contributes to our ever-evolving story in Southern Nevada and the West. From rich and thriving Indigenous cultures, to cross-country movement, immigrants and the gold rush, to United States government and military operations, this place means many different things to so many different people, and that is what makes this region so special. This landscape holds a plethora of histories that have not only shaped who we are as a region today, but also how we understand ourselves, and how we will choose to move forward together into our future of caring for this place. 



ASK THE PROFESSOR

Professor Emeritus,

I am planning to take a Mojave road trip with my elderly neighbor and am trying to decide what to take. He's too old to drive now and so all the prep is up to me. He says I need one of those canvas waterbags that you hang on your headlight. What are those bags even for? Is it water for the car or for me? And is there anything else I need? — I.M. TRIPPIN

Well for starters, it's been many years since cars had headlights that you could hang anything from. The bags you refer to functioned as canteens and were used to quench the thirst of everything from horses to people to cars. They have been largely usurped by plastic water bottles but if you want to be a 7th level Route 66 geek, purchase one on eBay and hang it out your window, or around your neighbor's neck.

Dr. Professor, Sir;

I'm not naming names, but I recently visited a very fashionable and nationally protected desert park, where a nearly middle-aged ranger explained to a group of visitors that feral mules from the mining days were thriving in the ecosystem, and their population was increasing. Confused, I asked "don't you mean mules AND donkeys?" to which she most adamantly replied "No, they are all MULES." CAN mules reproduce ON THEIR OWN without DONKEYS? I mean mules are just lady donkeys, right? Last time I checked, females still needed males in THAT capacity. Please set the record straight. — JENNY BURROWS

Jenny, let me guess. You visited a protected area named after a plant. For those places it is best to ask only about the plant that the area is named for. Don't "branch out". Now about mules. Mules come from the interbreeding of a male donkey with a female horse. The resulting offspring is a mule. A male mule is called a Jack and a female mule is called a Jenny. (A more rare animal is a Hinny, bred from a stallion and a female donkey). Mules cannot reproduce with other mules or with anyone else for that matter. End of the line they are. So, there cannot be descendants.

Now, there are wild burros (burro is Spanish for donkey) wandering the Mojave, descendants of the working burros during the mining days and these would be the critters your ranger pal should have referred to. Their current fate is tied to climate change and government policies. Just last year the Bureau of Land Management rounded up 50 burros and put them up for adoption in Ridgecrest, CA. So you too, Jenny, could have your own Jenny, Jenny, named Jenny perhaps. Check it out at blm.gov under programs.



PROFESSOR EMERITUS has opinions on all things
desert-related, and shares them freely and frequently ad nauseum.
Send queries to: searchlightgoldbeaminfo@gmail.com

LIFE, THE DESERT and CLIMATE CHANGE



By
ALEX HARPER

LIFE, THE DESERT AND CLIMATE CHANGE

BY ALEX HARPER

Illustration by Nancy Ko

I VISITED A DESERT FOR THE FIRST TIME when I was in the eighth grade, coming along for the ride while my father attended a conference. The big southwest was new to me. We lived in Florida, sandwiched between the Everglades and Biscayne Bay, and the most familiar plant I knew was a mangrove. I brought my binoculars and my Peterson Field Guide to the Birds of Western North America as we toured the Desert Botanical Garden in Scottsdale, Arizona, where unfamiliar birds lived among strange, thorny, unapproachable plants. Cactus wrens called from chollas, and I saw Gila woodpeckers perched atop column-shaped saguaros.

I was in the parking lot coming back from a short hike when I witnessed a memorable scene with two birds. I heard them first, just before seeing them. They were small and nondescript at first glance, and my eyes were drawn to their facial patterns. Bold black, gray, and white punctuated their striking appearance; I was looking at black-throated sparrows. I watched them as they assessed their surroundings, and together, they flew to a small puddle that lay under a drinking fountain. Bathed in the glow of a desert afternoon, the delicate birds drank from the small pool and darted back into the shrubs and out of sight. I realized, as I watched, that this puddle may have been the only water source readily available to them.

This was new to me. In Florida, it's hard to avoid water. It falls from the sky nearly every day for months. It is thick in the air from spring to fall. Most of the peninsula is a wetland. But there in the desert, the daily routine for animals revolved around a leaky fountain. It was also on this trip, while passing the arroyos and mesas, that I thought about living in the desert one day. The topography, the vastness, the freedom, the mystery, the strangeness--all were elements that pulled me in.

Twenty-two years later, I still watch birds. And I live in Las Vegas. I landed here ten years ago, believing I would be here for a short work opportunity, but as time went on, more opportunities, friendships, and the lure of the Southwestern public lands gave me reasons to stay. I took jobs collecting field data in the emerging renewable energy industry; at the time, little data existed on just how much solar energy sites negatively impacted birds.

In the years that have passed since I first started this work, we know a lot more about how solar sites affect birds. We know that habitat is lost when the land is graded and developed, and that birds living and breeding in those areas are often displaced and may not find new territories. We know that some solar energy sites look convincingly like bodies of water, and can entice birds to certain death when they mistakenly attempt to land on a panel (there is a term for this now: the "lake effect"). We know that the transmission lines that connect sites to the grid claim the lives of migratory songbirds, who cannot see them while they make their nightly journeys. Still, the average solar energy project site does not have as much impact as other human-created causes of bird population decline, mainly because these projects still take up a small area relative to the vast size of the desert.

However, the updated Western Solar Plan released recently by the Bureau of Land Management has identified about 31 million acres of land eligible for utility-scale solar development

across the western states. Nearly 12 million acres are open to application in Nevada alone. The plan arrives on the heels of the 2022 Inflation Reduction Act, the federal law that creates incentives for renewable energy development. I believe we need to quickly move away from reliance on fossil fuels for our energy needs; the continued combustion of liquid oil and solid coal converts these fuels into gases, which have nowhere to go but into our oceans and atmosphere, where they will remain for a very long time. Once trapped in the atmosphere, these carbon-based molecules prevent heat from escaping into space, and they become what are called greenhouse gases. The more of these gases we add, the warmer Earth becomes.

Earth's climate continuously changing is nothing new -- that's not the problem. However, the accelerating rate of this change is outpacing the abilities of the living world to keep up. Biological adaptations take time, and most species have adapted in lockstep with a climate that changes slowly. Following the industrial revolution, however, this pace has sped up dramatically.

Here in the desert, the changes come with increased temperature and increased aridity. Water is not only less available, but organisms need to consume more water to replenish what is lost, especially in extreme heat events. Desert plants and animals already live life at the edge, where their adaptations help them survive. For example, many desert animals can get their water from food sources and have far more efficient kidneys than their relatives from moist climates. Studies on Mojave bird species have demonstrated that many are in decline, and that those declines are linked to a warming climate. Birds are easily studied, but it stands to reason that mammals and reptiles are also in decline for similar reasons. Across the West, I see signs of the cumulative tolls of the heat and aridity on temperature-stressed plants, and stressed plants point to stressed ecosystems.

So, as little as I like the idea of seeing millions of acres of desert valleys used for solar panels and transmission lines, it is undoubtedly better for the Earth as a whole than relying on fossil fuels. Nuclear energy is an option, but with the high costs and safety considerations, few people have the appetite for it. And currently little technology exists to remove or offset the excess greenhouses from the atmosphere at a meaningful scale through capturing and storing methods.

Still, the placement of energy-producing sites can make a difference, because the level of impact varies widely from location to location. The western landscape is a mosaic of habitats, from alpine zones, coniferous-aspen woodlands, pinyon-juniper woodlands, foothills and valleys of cacti, yucca, shrublands, and occasionally, wetlands. Although all living things are bound and tethered by countless ecological connections that we call ecosystems, some are more ecologically unique, abundant, sensitive, or biodiverse than others, such as Avi Kwa Ame National Monument, the Amargosa River watershed, and the Pahranagat Valley.

This is just one of the reasons that the elevated protective status of a national monument was given to Avi Kwa Ame in 2023. Another important reason lies in its *connectivity* to adjoining living landscapes in California and Arizona. Fragmentation is the antithesis of connectivity. When roads and development dice up the landscape, obstructions are created that alter how water flows, how plants are pollinated and seeds are dispersed, and how animals move across the seasons. Genetic diversity and overall health of plants and animals decline when isolated populations become cut off from the larger population.

We are going to continue to see the ecological and cultural tradeoffs made to convert millions of acres of western lands into energy farms. And so, we can not only look to Avi Kwa Ame National Monument as a timely win for the protection of an important ecological resource, but also as a model of how to thoughtfully balance development and preservation of the deserts of the American Southwest.

There are many other ecologically important lands in our area that are eligible for large-scale industrial development under the new solar plan. Some of these lands sit on groundwater that harbors life for expansive mesquite bosques and springs. Others are situated in valleys that act as migratory corridors for mammals, stopover habitats for migratory birds, or connect Important Bird Areas and National Wildlife Refuges, like Ash Meadows.

Where the land is not developed still matters, and we must choose these sites carefully, with community involvement. We may still have to sacrifice some beautiful places for the greater good of our planet's atmosphere, but we can and should work to save the places that have the most ecological and cultural impact. Sensible development uses criteria such as the ecological value of the area, connectivity, the watershed influence and the availability of springs, seeps, and wetlands. When areas with rich biodiversity or ecological value are threatened by development, such as in the Amargosa Basin, voicing our opinions is crucial during the necessary public commenting periods, before permits are granted to developers.

Advocating for more efficient water use, both locally and regionally, is also sorely needed. Asking for protections for natural seeps, springs, and wetlands can go a long way to help the places we love. In addition, providing other consistent water sources for wildlife, such as creating and maintaining a backyard pond, can also be very important. Sometimes I daydream about a vast, communicating network of landowners who have created small ponds across the West along migratory bird corridors, helping to offset the loss of drying springs that have hydrated millions of birds over time.

When I look back on my childhood road trip, gazing over the Colorado Plateau from the backseat window of a car, I think maybe what first connected me to the West was a transformative sense of awe, working silently on my psyche as my family sat in their own quietness. If this land has a spirit, then it may be equal to the strength of our connections to it, paired with our recognition of those connections and what we are willing to do with them.

I don't feel alone in my love for this desert, and despite the very large challenges facing it, I also see possibilities. All processes come with change, and within these changes are people, embracing their roles in response. To me, the most astounding piece of the Avi Kwa Ame designation was the citizen-led, multi-community effort that was envisioned by people who saw their own possibilities of how the future can be created. We need to discuss these issues with our children, while spending time with them in nature to let them create their own connections. We also must share our success stories with our children, show them the necessity of collaborating with our neighbors to find common ground, and let them know that they too can work to create the future they want to see for the land they love.



AVI KWA AME: A RIVER CROSSING

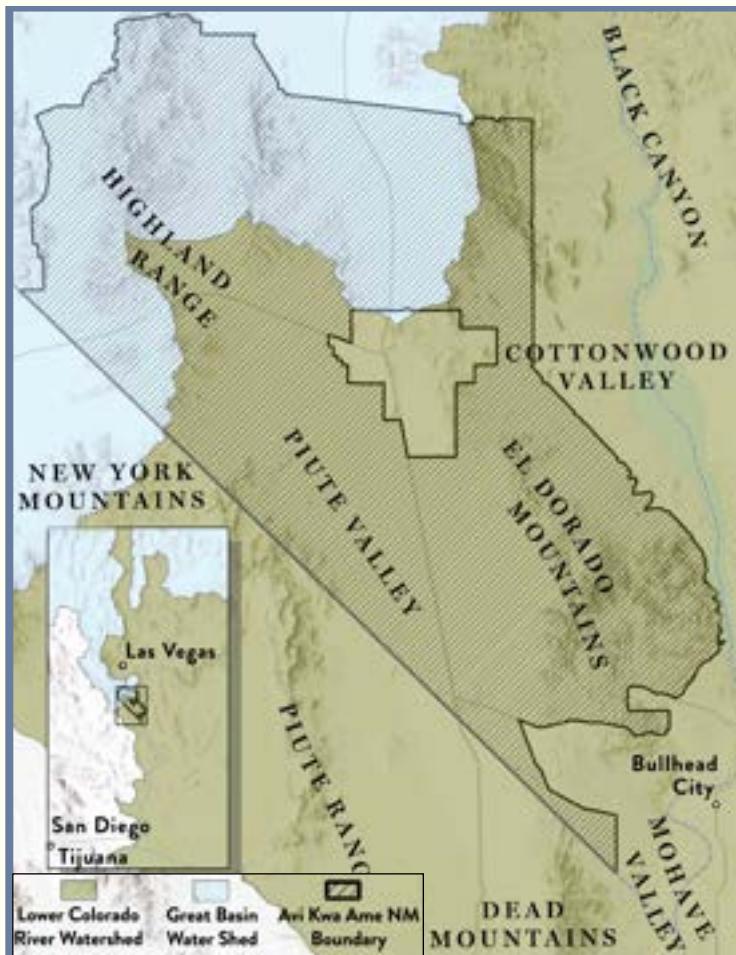
BY WILL JOSEPH

WHEN A DROP OF WATER FALLS WITHIN THE BOUNDS of Avi Kwa Ame National Monument, it begins a journey that will ultimately transport it to one of a number of vastly different destinations. A summer monsoon that falls in the Highland Range, in the northwestern section of the monument, will bring much needed moisture to the flora and fauna of the high Mojave desert. However, the course of this precipitation will flow into distinct basins depending on where it falls. South of the Highland Range, precipitation flows southward into the Colorado River and ultimately to the Pacific Ocean via the Sea of Cortez. Rain falling on the northern slopes of the Highland Range empties into the landlocked Great Basin. The reason for this has to do with geologic forces that have shaped the landscape for eons. Avi Kwa Ame lies at the crossroads of these geologic forces and represents an area that connects the Pacific to the Intermountain West.

The geologic forces that created the landscapes and watersheds we observe at Avi Kwa Ame National Monument today commenced around 23 million years ago. During this time, the Earth's crust thinned and pulled apart along faults. These faults spread mountains apart and simultaneously created adjoining basins between these ranges. Geologists refer to the area impacted by these faults as the Basin and Range province. The Basin and Range is characterized by northeast-southwest trending mountain ranges with alternating arid valleys. The province includes large portions of Nevada, Utah, California, and Arizona and extends south into Mexico.

This naming convention is not to be confused with the Great Basin, which refers to the watershed that overlaps a large portion of the Basin and Range. A watershed is an area of land that drains all precipitation (rain, snow) into a common source (lakes, streams, oceans). The Great Basin is unique in that precipitation drains into lakes, sinks,





Avi Kwa Ame lies at a crossroads within the greater American West. While the landscapes encountered here are unique in their transections and local adaptations, traits common to both the Great Basin and Lower Colorado have been shaped by geologic forces 23 million years in the making.



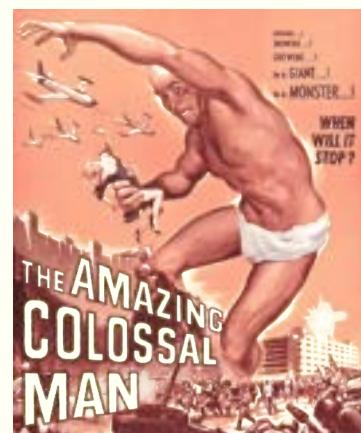
UNCLE IVAN'S DESERT VHS PICK

THE AMAZING COLOSSAL MAN (1958)

Colonel Glen Manning is a large, corpulent white dude desperate to keep from wedding his petite, long-suffering fiancé Carol. This he finally accomplishes by exposing himself to a deadly plutonium blast and becoming a 50ft tall, bald, pudgy, white dude in diapers, and proceeding to wreck Las Vegas. In the finale he falls from Boulder Dam and clogs up Black Canyon, much to the relief of everyone involved. NOT RECOMMENDED.

streams, and into groundwater aquifers without an outlet to the ocean. This contrasts with the Lower Colorado River basin which drains Arizona and portions of California and Nevada into the Pacific Ocean.

Avi Kwa Ame represents a snapshot into the diversity of the Basin and Range, exemplified by the overlap of these two watersheds. Biomes common to both environments can be found here in the monument. For example, juniper tree forests found in abundance in the Great Basin can be found dotting the upper elevations of the Highland and McCullough mountains. Conversely, creosote bush scrub found in the Piute Valley dominates the landscapes of the Mojave and Sonoran deserts of the Lower Colorado. The monument also provides a high-altitude haven for one of the most prolific populations of Joshua trees found in the Southwest.



LOCAL RESOURCES

FOOD

Nearby restaurants in Searchlight include McDonalds, Denny's & Terrible's Bar. Convenience stores are located in Searchlight, CalNevAri, Cottonwood Cove & Palm Gardens. Nipton no longer has a store or restaurant but the Habberdashery Thrift Shop has snacks. Cottonwood Cove Cafe in the Lake Mead National Recreation Area is open Saturday and Sunday from 8AM-3PM

LODGING

Searchlight, Nev. - El Rey and BV Motels, Cree's Mobile Home Park overnight RV stays. CalNevAri - Blue Sky Motel & RV Park.

Cottonwood Cove - Campground, RV Park, Resort Motel

Primm, Nev. - Various hotels

Nipton, Cal. - No lodging or services.

Additional lodging can be found in Boulder City and Laughlin.

CAMPING

Primitive camping is available throughout the monument - no facilities are available. Check fire restrictions before the event and remember to pack it in, pack it out.

WEATHER

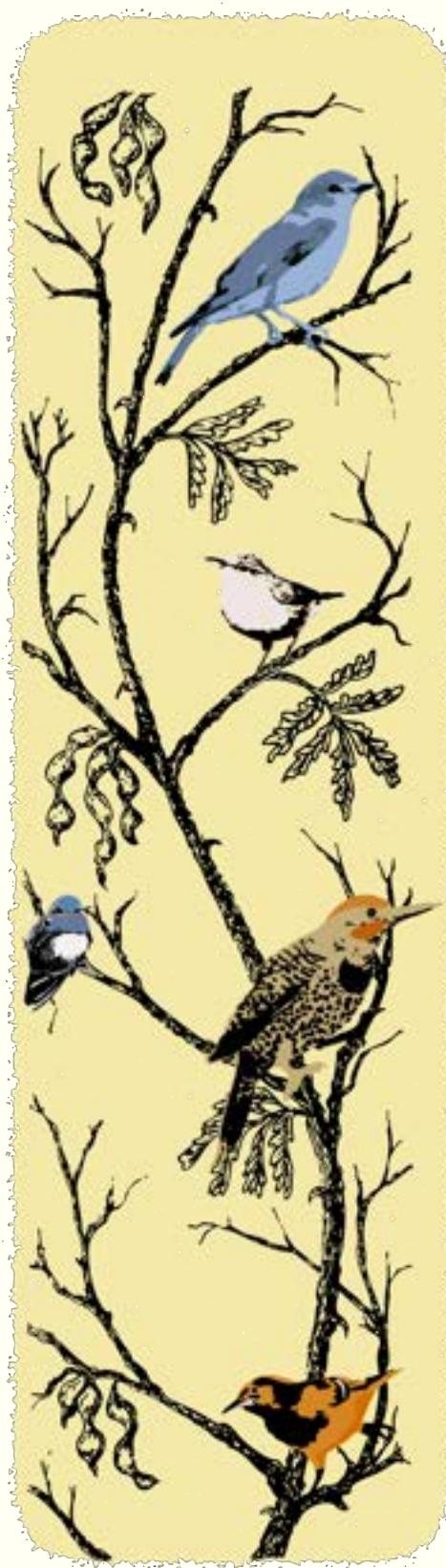
Avi Kwa Ame National Monument is higher in elevation than the Las Vegas Valley, and temperatures range from 10 degrees hotter to 10 degrees cooler than Vegas. In the evenings it can become suddenly cool, even on warm days. Prepare for sun and wind exposure and sudden temperature changes.

ADDITIONAL ADVICE

Dress in preparation for sun exposure, sudden temperature changes, bitey animals and pokey plants. Bring plenty of water for your stay and excursions. Sun hats and sturdy, closed-toed shoes are essential.

Accurate as of printing; please verify all resources before travelling.





SPRINGTIME *for birds* IN AVI KWA AME

BY SPENCER GIESEMANN
Illustration by Kim Garrison Means

AS NIGHT BREAKS AND THE MORNING SUN SHINES over the mountain ranges, filling valleys and canyons with light, beautiful melodies of bird song are carried by crisp spring winds. Each bird, in each setting of Avi Kwa Ame, from mountains to washes or cholla gardens, has a completely different set of strategies and skills they use to navigate life in the harsh Mojave Desert. Since the beginning of humankind, we've recognized these unique behaviors, and birds have played significant roles in our culture and our connections with nature, transcending time and geographic boundaries. Birds have been our teachers and our scientific and creative muses. We have always been inspired by them, and strive to innovate from their examples, propelling humanity forward.

Avi Kwa Ame is home to many unique and wonderful birds for us to find and enjoy. In the spring, migration routes carry countless species through this landscape, some passing through, and others intent on raising their next generation of young in the canyons, valleys, and arroyos within the monument. Watching birds closely, we can observe their stories of adversity and resilience, playfulness and companionship, and learn from the joy, peace and connections with their surroundings that they demonstrate on a spring day.

From the center of Searchlight to the farthest boundaries of Avi Kwa Ame, mourning doves, black-throated sparrows, great-tailed grackles, and Gambel's quail are easily the most common and widespread of all the birds found in the monument. Mourning doves are perhaps the most prolific bird in North America. They aren't difficult to find, as their characteristically simple gray-brown plumage with black spots on the wings, and their long tails make them easily identifiable. Their name suggests a measure of sorrow but is appropriately likened to the soft descending coo of their

song. While exploring the monument, one might also hear a sharp whistle of their wings as they speed like bullets overhead.

Black-throated sparrows are undoubtedly the most common bird in Avi Kwa Ame; they are one of the most striking birds in the Mojave, known for their bold black throat, contrasted by two white facial stripes: one above the eye and the other below on an otherwise soft gray-brown body. These sparrows sing like tinkling bells. They nest in all sorts of low shrubs, cacti, or other dense and well-protected plants, but can be seen foraging on the ground for seeds, which are the primary source of their water. Washes often serve as a bountiful year-round cache for seeds that gather there from rain and wind for the black-throated sparrow to survive on through times of drought.

The great-tailed grackle is a cacophonous bird often found in noisy groups, creating a harsh and audible chorus for nearby observers to enjoy. As their name suggests, they have a large, broad tail: in flight it looks as though it slows their momentum, making it difficult to fly, but the tail's main purpose is for attracting mates.

One of the most endearing birds is the Gambel's quail. They are most often spotted scurrying along in trailing family groups of up to 15 newly hatched chicks behind their trusted parent. There is safety in numbers for these birds. When they hatch, Gambel's quail leave no kin behind. As the first chick begins to escape its egg, it lets out light pips, signaling its brothers and sisters to follow suit. The chicks then peck small windows in their shell, and patiently wait for all their siblings to signal their readiness. And then all at once, the dozen or so chicks break through their shells at once, taking in their first breaths, ready to run.

Walking Box Ranch lies in the heart of the monument, west of Searchlight and just south of the impressive Wee Thump Wilderness. The ranch has stood strong since the early 1930s, when Clara Bow and Rex Bell moved in, but an older chronicle exists of the birds that now inhabit the eaves structures there. A likely sighting at the ranch is the Say's phoebe, they're quite familiar with man-made structures, as they rely on overhanging cover from roofs for nesting. A fly-catching species, Say's are small, gray birds with cinnamon bellies and a pale gray throat. They can be seen as they sally from fence posts and low bushes to catch their insect prey.

Flickers, on the other hand, are obliged to nest in cavities, the large and dense Joshua tree forest surrounding Walking Box is their most suitable home. In Avi Kwa Ame,



it's possible to see two different species of flicker: northern and gilded. The two birds are very similar in appearance, with hefty, slightly curved bills, and large bodies covered in black spots or bars. As the name suggests, gilded flickers are bright yellow under the wings and tail, while northern flickers display rich, orange-red hues. The flicker makes its presence known through a distinctive kyeer call. Catching a glimpse of a gilded flicker is a rare and precious encounter; like finding gold in the desert.

The cavities carved by flickers and woodpeckers are also the perfect home for the smallest falcon in North America, the American kestrel. A slate-blue and rufous colored bird, kestrels can be seen along highways or in the open shrublands of the desert on a high perch, or while hovering in midair, almost perfectly still, as they scout the land for grasshoppers, rodents, or small birds. Soaring higher over the valley, one can spot the red-tail hawk as it flies aloft columns of hot air while scanning the landscape for prey. In flight one can see its white wings with dark shoulders and a prominent, rufous red tail. When the light hits its tail just right, it seems to glow with a bright flame.

People don't often appreciate the flat, far-reaching desert that is the Piute Valley; just south of Searchlight, it's woven with sandy washes lined with creosote and cholla, perfect habitat for dozens of species. Phainopepla are the romantics of the desert. A glossy black bird with white patches on its wings, phainopepla evolved closely with desert mistletoe and even display a stunning red eye to match the plant's quintessential berries. To most birds, the vibrant red berries are toxic, but to phainopepla, it's a primary food source high in nutrients. They ingest the fruit and deposit the seed in acacia or mesquite across the desert, ensuring a secure food source and nesting sites in years to come. Curiously, phainopepla exhibit a great deal of flexibility in mating behavior. Nesting in the desert in the early spring, mating in the higher elevation oak-scrub woodlands in summer, or possibly both, or neither, depending on resource quality and conditions.

A vocal species, ash-throated flycatchers move into the valley during the spring, taking advantage of the abundance of flying insects. Ash-throated are small songbirds, with a characteristically ashy gray throat, a darker gray crest, long cinnamon tail, and a muted yellow belly. They blend in well with their perches, but are curious about people and will occasionally perch near a hiker to investigate. They release a frequent sputtering of pips and burrs while curiously twitching their head side-to-side. Listen for an audible snap while they're hunting; that's their beaks clapping shut around their prey.

Western kingbirds are the plus-sized relative of the Ash-throated. They look similar, but western kingbirds are more robust and more vibrantly yellow on their breasts and bellies. They lack any cinnamon color, and the white edges of their tails are easily spotted as they fly overhead. Kingbirds are proud, like their name suggests, and will aggressively scold any intruders or competitors, animals and humans alike.

In the sparse shrublands and open fields of the Piute Valley, horned larks scuttle along the ground, looking for seeds and insects. They're small, slender birds, mostly brown aloft and white below, with black masks and 'horns' poking up from their round heads. Spotting small dust clouds rising from the dirt during early spring, is characteristic of a female performing a courting display, though it might be mistaken for a dust bath during other times of the year.

One of the sweeter songs in Avi Kwa Ame comes from the verdin, a restless songbird likened to a chickadee of the desert. During breeding season, a honeyed *deet-doot-doot* song can be heard from these yellow-headed rascals as they boldly announce their territory amongst the mesquite and creosote filled washes. Their nests are small and twiggy closed spheres lined with grasses or plant fibers, placed conspicuously in the outer limbs of plants like acacia, they have a low opening

facing the prevailing wind to ventilate the structure in the scorching heat.

To the north, the El Dorado Valley stretches over rocky scrublands, littered with flecks of orange and yellow from wildflowers, until it eventually reaches Copper Mountain Solar Facility, one of the largest in the nation. The greater roadrunner is perpetually evasive, as it darts from cover to cover, it might be seen speeding through washes or across one of many OHV trails running through the monument. They rapidly scurry across the expansive flatlands, searching for lizards and small mammals. Catching a lucky glimpse of one of them rewards the keen eye with a view of their impressive black crests, their brown and white mottled bodies, and long tails that help them balance as they sprint.

On the perimeters of the valley, as the terrain gets rockier and mountainous, rock wrens offer a cheerful, springy song – with their equally springy bodies - to the morning sun, as they scramble around the foothills of mountains and canyon walls. As they hop between the boulders, these wrens search for insects in cracks which they carefully glean with their slender beaks. While rare in the monument, golden eagles are majestic, high-soaring birds with sharp talons, beaks, and eyes, a necessary set of traits to facilitate their cliffside hunts as they sail above the nearby Colorado river looking for jackrabbits and other small mammals to prey upon. Golden eagles are named for their opulent yellow-gold nape, framing their head like a lion's mane. Since these eagles are so large, they often require updraft from cliffs or canyons to provide the necessary lift as they take off from high perches.

Towards the eastern boundary of Avi Kwa Ame, the gentle slopes holding thousands of teddy bear cholla on the way to Cottonwood Cove are home to an equally impressive host of feathered animals. LeConte's thrashers stay low in dense cholla gardens and run along sandy washes, looking for invertebrates to eat. They are a pale gray bird with a long, slender tail, a black, steeply curved bill, and black eyes. They build robust nests barely off the ground, sometimes decorated with small yellow flowers around the rim, deep in a cage of cactus as a fortress for their young.

High in the sky, turkey vultures ride thermals above Cottonwood Cove Road, waiting for an unfortunate car strike to provide them food or an animal to succumb to the intense pressures of the Mojave. They look almost like the carrion they feed on with a wrinkly red and bald head, and ominous black body. They might congregate in large groups, perched in large cottonwoods or mesquite tracing the banks of the river or soar independently, with their wings cocked in a distinct V-shape.

The York Fire burn in 2023 left a once magnificent forest of Joshua tree in ruin, but in the time since, the colorful flowers that have emerged from the desolation prove a striking sight against the backdrop of charred landscape. Fortunately, the birds have begun to return, including the common sparrows, quail, and doves.

Possibly the most obvious bird, the northern mockingbird, loudly and irreverently dominates the desert choir. They perch conspicuously atop Joshua tree or acacia and sing incessantly as they mimic the songs of others from the desert. Unlike some songbirds, Mockingbirds evolved to expend their energy on singing to attract mates, instead of into bright colors and fancy plumages. While their slender gray bodies, long tails, and yellow eyes might seem understated, their mating displays, in which they flip between phrases of their song while perched, are a remarkable sight.

More gracefully, great horned owls fly swiftly and silently into the night air. They are regal and commanding: their deep hoots, piercing yellow eyes, and ear tufts make them an intimidating predator of the night. The burn scar allows for a greater visibility of the desert floor, which these owls take advantage of while hunting for rodents. These owls can detect the glowing urine of their prey with special UV receptors in their eyes, allowing them to follow tracks of nervously piddling pack rats.

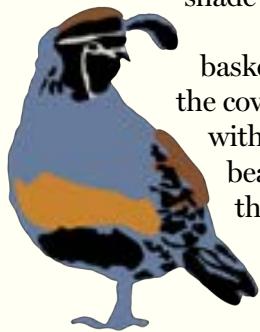
In the mountains, where the fire didn't reach, there are patches of juniper trees safely tucked into the steep canyons. On these rocky, heavily-shrubbed slopes live the crissal thrasher. Of the five thrashers known to inhabit Nevada, crissal have the most dramatically decurved bill, resembling a sickle used for harvesting grain. They're named after an area on a bird's body called the crissal, just underneath the tail and at the base of their bellies, and these thrashers have a bold rufous color on theirs. They are a vocal species that sing melodiously in short phrases of two to three repeated notes and spend most of their time on the ground probing for insects.

In contrast to the scar left by the York Fire, just a few miles to the north, the Wee Thump Wilderness Area holds one of the greatest continuous Joshua tree forests with some of the largest in the world. Ladder-backed woodpeckers live here, who excavate their nests into the trunks of Joshua tree or large mesquite similar to the flicker. They get their name from the black and white horizontal barring on their backs, and are generally small with stout tails, and sturdy pointed bills. These woodpeckers are agile and difficult to spot; most of the time, they can be seen in the early mornings, scaling a trunk or briefly flying to a nearby tree. They contribute to the desert symphony with their sharp *piik* calls, resembling the noise a squeaky toy might make when stepped on.

Not quite as innocent and charming, loggerhead shrikes are a unique songbird that occupy the open shrublands in Avi Kwa Ame. Exploring the wilderness might offer a zip of black and white out of the corner of one's eye, as these birds are swift and agile in pursuit of their prey. They vigilantly perch on the tall Joshua trees to prey on lizards, mammals, and other birds with their raptor-like skill. Sometimes they create a macabre display as they skewer their catch on a cactus, yucca, or one of the many barbed wire fences that dissect the land to more efficiently tear their victim apart into manageable pieces. If it proves too big a meal, the loggerhead shrike might leave their leftovers hanging until the next day's breakfast.

A ghost of the desert, Bendire's thrashers elude birders with their incredible camouflage and cryptic behaviors. Bendire's are small, dusky brown birds with bright yellow eyes and faint streaking on the breast. Some might consider them a drab bird; however, their rarity makes them an expert level challenge when seeking wildlife. Searching long and low in shrubby washes, might lead to the coveted sight of a Bendire's as it darts across the desert, possibly perching on a Joshua tree to sing one of their mumbled, but melodious songs. Bendire's are thought to mate for life and finding one might lead to another nearby.

Cactus wren are another characteristic species of all Southwest deserts, that are sometimes easier to hear than see; their repeated, guttural song sounds like a car's engine turning over. These wrens have brown and white mottled bodies with a distinct, white eyebrow above their deep brownish red eyes. After a female selects the nesting site, the pair get to work building multiple nests, with some for nesting, and others to roost while keeping themselves coolly protected from the baking sun. They weave intricate football shaped nests of fine grass and straw, designed to insulate and shade its contents. After all, no bird appreciates cooked eggs like humans do.



Utilizing a different strategy, Scott's oriole delicately hang their finely woven basket nests about head height in junipers and Joshua trees, taking advantage of the cover. They have vibrant yellow bodies, a black hood and tail, and black wings with contrasting white wing bars. Seeing them is a treat, but possibly even more beautiful is their song. They are some of the earliest risers, singing before dawn through the morning, as they vocalize a series of sweet, melodious whistles.

To the southeast at the foothills of Spirit Mountain, lies the steep, colorful walls of Grapevine Canyon. Past the many ancient carvings, the cascading song of a canyon wren bounces off the narrow rock walls that con-

verge into the canyon floor. These wrens have a delightful appearance, showing a rich, cinnamon body, vividly white throat, and a long, narrow bill. They are often seen flicking their cocked tails or playfully bouncing around the rocky cliff walls.

Hummingbirds are always the first to arise in the canyon, and notably before dawn. They immediately set on the hunt for rich nectar from the blooming wildflowers. These tiny-bodied birds have the metabolism of a teenage track athlete, pumping their wings at a steady 70-200 beats per second depending on the behavior, requiring a constant stream of sugar from any available nectaries. Both Anna's and Costa's hummingbirds boast a flashy gorget of purple or pink hues. Anna's display a unique courtship dive: they fly straight up to 130 feet in the air and fall into a steep, vertical dive conjuring a loud squeak by the wind passing through their tail feathers.



In the evenings, a different cast of wild characters take the stage. As the kangaroo rats scurry, coyotes yelp, and pack rats search for food along the desert floor, the western screech-owl begins its hunt. These stout owls release an accelerating series of high toots that might sound like the cadence of a bouncing ball as it rebounds on a hard floor.

Lesser nighthawks soar into the air with long wings and small cylindrical bodies releasing a constant murmured trill into the night. They hunt for insects on the wing with their impressively large gape. Throughout the night, common poorwills announce their presence in the lowlands of the monument as they hunt for aerial insects in flight. Both species are unique in that they exhibit a behavior like hibernation called torpor. In the winter, when insects are scarcer, they decrease their metabolic activity for extended periods, but not quite to the extent of hibernation. In the day, both birds sit silently, expertly camouflaged as rocks. You might stumble near and startle them, subsequently noticing their disapproving grunts as they fly off to a more secure resting place. When night finally sets, while the mammals and owls are out, most songbirds rest, preparing for the challenges of tomorrow.

Springtime in Avi Kwa Ame features a captivating variety of common and charismatic species. There are well over a hundred that utilize this special patch of desert at any point throughout the year.

As the seasons change, so do the birds. In the late summer, after young birds have left the nest, they exhibit a blend of juvenile and adult plumage making them look different than others of their species. In the fall, many adult birds begin to lose their colorful breeding feathers in exchange for a duller look, allowing them to put energy purely into survival, as they prepare for the dangers of migration.

This cyclical plumage change, occurring in both the spring and fall, increases the challenge in identifying birds, but also increases the fun. The Colorado river corridor becomes an international superhighway for birds migrating to their productive breeding grounds up north, or to their wintering habitats in the south. Thousands of ducks, cranes, ibis, gulls, swallows, and songbirds follow the graceful curve of the Colorado as it carves through the southwest.

The river serves as a lifeline for many species, as it provides food and shelter in cottonwoods and willows during their arduous journeys. A visit to any of the shorelines or wetlands in the area offers sights of countless amazing birds on their migration and breathtakingly beautiful landscapes. Each bird offers a unique and treasured experience for all who visit, no matter the time of year. And when it is finally time to depart Avi Kwa Ame National Monument, it is easy to leave feeling the desire for a quick return, just as the birds do.

THE CELESTIAL CARTOGRAPHER:

*Uncovering Interconnections
in the Night Sky*

FRANCISCO SILVA



THE CELESTIAL CARTOGRAPHER: UNCOVERING INTERCONNECTIONS IN THE NIGHT SKY

BY FRANCISCO SILVA

Illustration by Patrick Zolp-Mikols

THE NIGHT SKY HAS ALWAYS BEEN A SOURCE OF FASCINATION for humanity, inspiring cosmic drama and stories, legends, and cultural beliefs that span across time and civilizations. As we gaze up at the star-studded expanse of the night sky, it is fascinating to explore the threads that weave together seemingly disparate cultures and mythologies. Let us journey through time and space in this article, tracing the connections between ancient civilizations and the celestial ballet that has captivated human imagination for millennia.

I will speak of Ursa Major, the Great Bear. In modern times, it is often referred to as the Big Dipper, due to light pollution obscuring some of its stars. It is one of the most familiar and visible constellations in the Northern Hemisphere, and it's worth noting that Ursa Major has played a significant role in the different cultures of the human race.

The ancient Sumerians, who hailed from Mesopotamia (modern-day Iraq), were keen observers of the night sky. They developed one of the earliest known systems of celestial division and associated various constellations with their myths and gods. The Sumerians saw a divine shepherd guiding his flock through the heavens, while the Babylonians interpreted Ursa Major as a cosmic wheel, symbolizing time and destiny's ever-turning hand.

Across Asia, Ursa Major has played pivotal roles in several culture's belief systems and traditions. In Chinese culture it is known as "The Great Chariot," symbolizing the celestial charioteer with a wheel formed by seven stars from Ursa Major. It also represents justice (Li) and wisdom (Zhi). In Japanese mythology, Ursa Major is linked to the story of the celestial weaver, who uses her loom to create the fabric of reality itself. In Vietnamese mythology, it is known as the The Big Rudder. The imagery of a rudder suggests a navigational tool, emphasizing the role of these stars in guiding travelers across the night sky.

In India, the constellation is associated with the Sapta Rishis, the seven sages. Meanwhile, in African cultures, Ursa Major is linked to the myth of the "Wild Hunt," where a group of celestial hunters, led by a charioteer, ride across the sky.

One fascinating thing about this group of stars is how many different cultures have seen a bear in them. Moreover, these interpretations often overlook the bear's short tail and depict a long tail instead, adding to the mystery of how these stories came to be, how they have been passed down from person to person, and how they have traveled and evolved into new tales.

Before the Romans named the constellation Ursa Major, the Greeks called it Artos, meaning bear. Interestingly, this word also links with the English word 'Arctic,' referencing the northern regions where Zeus and Callisto's story unfolded. It is in the Arctic where Zeus discovers and seduces the beautiful young Callisto, and they have a kid called Arcas. When Zeus' wife, the goddess Juno, finds out, she tries to punish Callisto and Arcas, but Zeus protects them by disguising them as bears and placing them in the heavens.

In the Americas, many indigenous stories include Ursa Major as a bear. Inuit groups saw

a bear in the constellation, with the handle representing its tail. In Micmac and Algonquin mythology, Ursa Major represents a bear being hunted by seven hunters. The Lakota view Ursa Major as Wicasa, a powerful hunter who leads the constellation. And the Pawnee believe it's seven brothers who were cast into the sky. The Iroquois see the movement of Ursa Major across the heavens as part of the story of their changing seasons. They tell tales of hunters chasing the bear; in autumn, the bear is caught and its blood turns the leaves red.

Let's now move to the deserts of North America, and explore the stories of indigenous peoples in the Great Basin region. The lower Colorado River Valley, which includes parts of Arizona, California, and Nevada, has a rich cultural heritage that dates back thousands of years. The ancient cultures of this region have long been connected by trade networks, ceremonial traditions, and mythological narratives that span vast distances.

To the Mojave people, the big dipper is the fisherman throwing a large net into the water to catch the fish in the Milky Way. The Navajo have Náhookos Bika'ii, The Northern Male. This figure is a man lying down on one of his sides, representing the father and protector of the home.

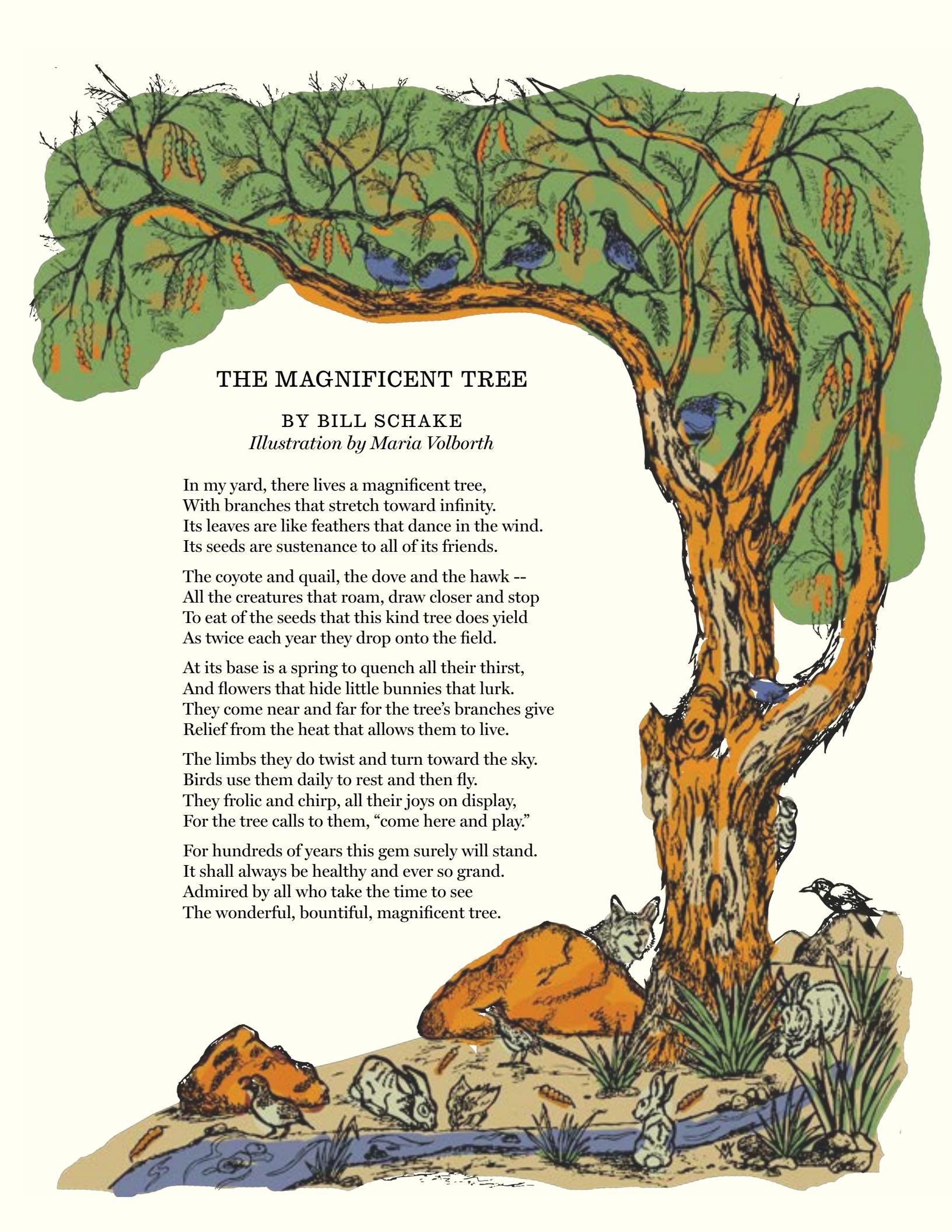
Aztec mythology tells a different story about Ursa Major. This star cluster depicts Tezcatlipoca, the cunning sorcerer who was also Quetzalcoatl's troublesome brother. A door slammed shut on him, costing him one of his legs. When his mischief went too far, Quetzalcoatl turned him into a three-legged jaguar and banished him to the night sky. Bound to an eternal dance around Polaris, Tezcatlipoca hops on one leg in the east, walks on his hands near the west, and crawls on his back when high above us. We can hear the echoing of these sacred stories in the relatives of the Aztecs, the people of the Great Basin. For example, the Shoshone and Paiute tribes have tales about a three-legged deer or coyote. These stories often revolve around themes of transformation, balance, and the cyclical nature of life.

As we gaze upon the Ursa Major this spring, let us remember that its stories are not just distant echoes, but vibrant threads connecting humanity across time and space. Each culture's interpretation is a unique lens through which we can better understand ourselves and our place in the universe, and view the interconnectedness of all things.



STARGAZING TIPS

Ursa Major will be visible in the northern sky this spring, with its seven bright stars forming an inverted ladle shape. You can find Polaris (the North Star) shining brightly near the top of constellation. As you look at the Big Dipper part of Ursa Major, the two bright stars at the end of the dipper's "cup" will point you to Polaris, which is the star that forms the tip of the handle of the Little Dipper constellation. This star marks the celestial pole and is a helpful navigational aid.



THE MAGNIFICENT TREE

BY BILL SCHAKE
Illustration by Maria Volborth

In my yard, there lives a magnificent tree,
With branches that stretch toward infinity.
Its leaves are like feathers that dance in the wind.
Its seeds are sustenance to all of its friends.

The coyote and quail, the dove and the hawk --
All the creatures that roam, draw closer and stop
To eat of the seeds that this kind tree does yield
As twice each year they drop onto the field.

At its base is a spring to quench all their thirst,
And flowers that hide little bunnies that lurk.
They come near and far for the tree's branches give
Relief from the heat that allows them to live.

The limbs they do twist and turn toward the sky.
Birds use them daily to rest and then fly.
They frolic and chirp, all their joys on display,
For the tree calls to them, "come here and play."

For hundreds of years this gem surely will stand.
It shall always be healthy and ever so grand.
Admired by all who take the time to see
The wonderful, bountiful, magnificent tree.

THE TRAIL OF THE OPAL SKULL

BY JOHN LEGALLEE

Jason Terrell thought it would be a simple reconnaissance mission. A Scouting job in the past for an elderly academic would be an easy run, and a good chance to give Gilbert Mantree some hands-on experience with time-travel. But when hired goons abduct Hick Fenton and make off with him in an aeroplane, the crew find themselves running a dangerous gauntlet of mystery and adventure along the “Trail of the Opal Skull.”

Step aboard, and strap in for another heart-pounding chapter of John LeGallee’s wiz-Bang scorchер of a story, printed in serial form in each and every issue of the *SEARCHLIGHT GOLD BEAM!*

CHAPTER V. -GEMS IN THE DESERT

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BACK DOWN ON THE EARTH’S SURFACE FOR NOW, **Hick Fenton** found himself up in a scrub oak hanging from his feet. Hick’s battered head dangled but a few inches from the tree’s root. He could smell the oak bark, and the dry, crunchy gravel of the desert floor, as the tips of long grasses tickled his nose. Except for the blood pounding in his brain, the world was suddenly quieter than it had been in hours. His unique viewpoint gave the darkened landscape a bizarre aspect; up was down, and down was up. The trees seemed to be growing downward from a rocky ceiling, and the sky dropped away beneath him like a vast, dark, bottomless sea.

For a moment, Hick Fenton found his current situation slightly perplexing. How was it he was still alive? So much had happened so quickly, and he’d been barely conscious.

With effort, Hick pressed his chin to his chest and looked up. The straps of the parachute which had saved his life were twisted tightly around his legs, and were beginning to cut off the blood supply to his feet. Further up, the tree’s branches were tangled with parachute cords, and to the side, the silken canopy was slowly filling and deflating with the gentle breeze, causing the tree to sway.

Up in the sky, he had seen he was descending under ‘chute and upside-down, but how did this happen? At the time, he hadn’t felt the need to figure it out.

He remembered sliding head-first out of the airplane with a lurch. His legs had been tangled in some cargo which had caught on something before he dropped free. As he fell, he’d heard multiple rounds going off like a machine-gun, but without the regular marching rhythm. This was followed by an explosion, followed by a much more devastating explosion.

“Of course!” he thought, “It was the *parachute* I was tangled in. And somehow the rip-cord caught on the plane on the way out!”

Hick started to gather all the recent events together in his mind. He resisted the urge to calculate the number of times he narrowly missed being killed in the last eight minutes.

"I was grinding away at the ropes around my wrists in the plane," he thought. "No. The *bader hole*?" He absently tugged at the ropes as he was thinking this, and to his surprise, they broke free! Just then, the branch supporting him gave way with a loud "CRACK!"

The broken branch remained attached to its stump, with Hick Fenton's legs and the rest of the parachute still entangled in it. But his neck and head were now resting on the ground, and his hands were free. He reached into the right breast pocket on his jacket, produced a razor-sharp push button knife, and proceeded to make short work of cutting himself out of his 'chute and the rest of his bounds.

Hick shimmied out from under the tree and lay still for a moment, looking at the sky. *Those explosions!*—He must have been the only one who made it out of the plane alive.

After rubbing his extremities to get some circulation in them, Hick stood up, and began looking around to get his bearings. He was in the mountains, and he could smell pine needles. "The moon is pretty high," he thought, frowning. "I wonder if the plane stopped somewhere else?" It was now that he was out of the airplane, with its odors of aviation fuel, castor oil, kerosene, nitro-glycerin, and chop suey, that Hick smelled traces of chloroform on his face.

Hick spied a caterpillar on the ground, near his foot. Feeling giddy, he bent down and kissed it. "We're in the same club now, little brother." Bending back up hurt, and now he felt a little dizzy. "How long was I out?" he wondered. It might have been hours.

Standing up straight was painful, but Hick told himself it felt good. He stretched himself up to his full five-foot-ten, and made an effort to calm himself down and let his rational mind take hold. Two breaths later though, he found himself bent over again, with severe cramps in his legs.

"Walking is going to help," he decided, forcing one foot in front of the other, and carefully moving down the slope.

He was on the eastern side of the range, he discovered. That meant walking downhill would carry him east, and into the valley he could just make out below in the moonlight. Eastward suited him fine. The big blue truck had been heading east, probably the plane as well, although he couldn't pinpoint just why he thought so.

Slowly moving through the night, his muscles began to stretch out and relax. After half an hour, he came to a rock perched on an overlook, and decided to sit down and take in the terrain. Hick fished the pipe and tobacco from his pocket as he examined landscape around him. The pipe-stem had broken in half, but Hick filled the pipe and lit it anyway.

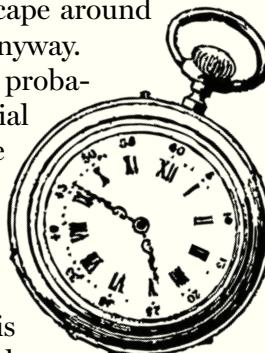
He couldn't make out any roads or settlements below him, but it was probably too dark for that, and the valley was a long way off yet. Hick took especial notice of any washes and ravines he could see on the slope, down which he was advancing. He was looking for any large, dark clumps of vegetation that might indicate the presence of a mountain spring. From where he was sitting however, nothing looked particularly promising, and he shifted his attention to finding the most practical route down.

Hick calculated it would take a couple of hours at least, to make his way down the slope. "What time was it, anyway?" He reached into his pocket and produced a gold timepiece, hoping it hadn't suffered the same fate as his pipe.

"Two forty-seven."

The watch was fine.

All the boys carried gold watches on a shunt. It was **Marcus Dee's** idea. Dee held that the



watches would help keep the men *inter-catalytically* connected. How this was supposed to work was never made very clear, but Dee insisted the gold was an essential part of it.

Hick Fenton snapped his watch closed, and prepared to continue his trek downhill. He made a soft grunt as he stood up, and froze in his tracks when he heard something behind him gently snort in reply.

Not twenty feet behind him, a round little mare stood staring at him in the moonlight through baleful eyes. Hick turned slowly, and the mare shifted slightly on her hoofs.

The ground was soft right through here, Hick thought, but still, it was remarkable he hadn't heard her hoofbeats. She certainly hadn't been there a few moments before, when he passed by...

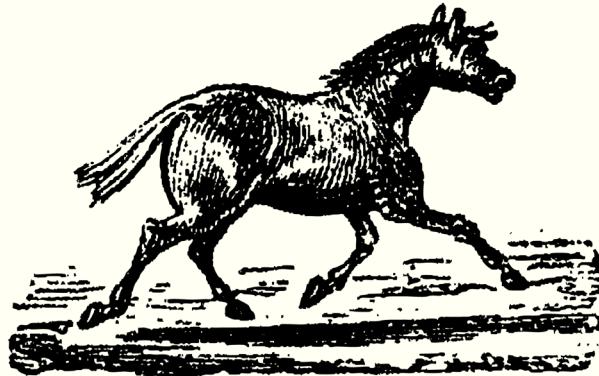
Hick Fenton had been brought up in horse country and was known to have a way with the beasts. This one didn't act like a wild horse, and Hick felt instinctively she'd been gentled, and ridden before. He was in no shape to be afoot in country this rough, and he knew it. Furthermore, this horse would know where to find the water he was now so desperately in need of. He resolved at once to catch her and ride her if she'd let him.

Moving as naturally as he could, Hick slowly approached the horse, stopping often, and speaking to her in reassuring tones. She was a medium-dark color, maybe a chestnut, and as he got closer, he noticed she had a lot of white in the eyes. She had the makings of a good night horse he thought, and would probably be careful and deliberate about where she placed her feet.

Close enough now to confirm she had been shod, Hick reached into his jacket and retrieved a greasy paper sack containing a couple of *food-balls*; the on shunt sustenance that Sheila Reyes, their hippie godmother from Topanga Canyon, or "**Shee-LAH**" as everyone knew her, had provided for the crew. Typically, these would be about three inches in diameter, and fairly sturdy. Shee-LAH always supplied a variety of these; including some made specifically for King. The recipes, she claimed, were derived from ancient Vedic literature, intended for Vimana pilots, and retrieved through mystical trance.

The food-balls in Hick's crumpled sack were the kind made from cornmeal and pinto beans, with a chunk of hot dog in the center. They were no longer spherical though, or for that matter, intact. Hick popped one of the hot dog chunks in his mouth, and commenced to bribe the mare with a handful of the cornbread mixture.

He needn't have bothered. Whatever transaction would need to occur between the two had already been concluded. -Such is ever the case in courtship rites throughout the animal kingdom; the female does the choosing. The little chestnut mare had *chosen Hick*.



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Elsewhere in the high-desert that fateful night, the big blue truck was moving again. **Gilbert Mantree** sat at the controls this time, expertly piloting the strange craft, and feeling more at ease now that he had something tangible to do.

The water, having done its trick, had **Jason Terrell** back in top form again; which is to say, he wasn't feeling very talkative. He sat, alert and relaxed, pen-light in hand, consulting a USGS topographical map, his sinewy form rolling with the movements, as the truck squeaked and bumped its way through the mountain pass.

Gilbert, new to the work, was a natural; but presently he had *questions...*

"Man, that was weird." he began, "I've seen you in a lot tougher spots before. -I've never seen you get rattled."

"Yeah," acknowledged JT casually, "It wasn't the fight, it was that water thing."

"No, I get it now. Now that I've gone through it too," he said, smoothly avoiding a sharp boulder embedded in the road. "You were talking about us trying to find the ferry, and getting across the river. Are we still doing that?"

"I think we have to, Pard." Jayce explained, "Deke says that's where the Longhammer operation is biggest, and that's where all the orders seem to originate. -I feel it in my bones, Gil," he concluded, "I think that's where they're taking Hick!"

Gilbert held the truck steady. He chewed on this information as Big-Blue churned its way up the sandy wash on the western slope of the Nipton pass. Gil's restless eyes darted across the instruments as he drove. "Hey," he ventured suddenly, "how do you suppose those cats knew to look for us in Nipton?"

"Yeah," Jayce answered with a bit of a frown. "I've been thinking about that. Could be they operate out of a mine big enough to have a telephone line."

"Sure, but who called them? There wasn't anybody left at that field after the airplane took off." Gil turned and looked directly at Jayce, "Do airplanes even *have* radios in 1924?"

Jason shook his head, "It's possible, I guess. But no, it's not real likely." Jason had a pained look on his face and added, "We don't know where that plane went though, and it's been hours."

This was an uncomfortable thought. Jason had simply meant to imply the plane could have stopped someplace that had a phone, but his wording was awkward, and it only served to remind them both of the seriousness of Hick Fenton's perilous situation.

A brooding silence seemed to fill the truck's interior. Gil and Jayce both felt the danger Hick Fenton was facing very keenly, but in the absence of more facts, it made no sense to discuss the matter further.

Still, the cheerless atmosphere wasn't helping anything either. So when Gilbert started speaking again a few rods down the road, both men were happy to entertain a change of subject.

"That guy we met, Deke Rivers," Gil began, still trying to put the pieces together.

"Deke Nivens."

"Deke Nivens. He knew you, but he didn't know he knew you. But you knew him?"

"That's about it," Jason acknowledged.

"Because you knew each other in a different timeline?"

"More than one."

"And all of those are potential timelines that converge at our lives, right?"

"Yeah," Jason hedged, "but only to the instant that we left on the shunt. See, every moment has its own wild potential, both forward and back. The past timelines we deal with on a ride are all tangents, fanning out from the specific moment we initiated the shunt," he explained, "and

their number is infinite.”

“So the chances of hitting the same timeline as before are almost impossible?”

Jason was folding the map. “More than that. I met Deke on different trips. All those previous experiences took place in timelines that converged on the specific *loci* associated with those other shunts.”

Gilbert exhaled. It was a satisfied sigh. He nodded his head, letting everything sink in. He felt as though doors had opened up in his brain, and new corridors had been discovered, allowing connections to rooms in his mind that had previously been unconnected.

“Thanks, Pard,” he said at last, “I’m getting a better sense of this.”

“Didn’t you have a long talk with Marc before we left?” Jason inquired.

Gilbert sighed, “He’s not real good at explaining stuff.”

“No,” Terrell agreed, “What did he tell you?”

Gilbert straightened in his seat and cocked his hat. “He told me a lot of stuff,” he began, “He said he tricked the space aliens into purchasing a lease on the landing rights to Earth from him...”

Jason grimaced, bracing himself for the rest of it.

“He said that Walter Westermann hired him as an ‘Investigative Reporter’ to get to the bottom of the J.F.K. assassination, *which he did*, and then the government retaliated with some kind of atom bomb test or something, and that he should have died from it, but he didn’t.”

“And,” he concluded, “that now there’s a movie script floating around town telling the story, except that they changed it from the Kennedy thing to NASA faking the moon landing.”

Jason frowned, “He didn’t talk to you about time-shunt theory?”

“I’m telling you the *coherent* parts!” Gilbert ejaculated.

“Okay,” Jason said resolutely, “So you got *that* Marcus Dee.”

Gilbert looked at Jason, skeptically, “There’s another Marcus DEE?”

“Well, not quite,” Jason admitted, “Sometimes he’s a little more on track. The man is a legitimate genius, Gil. I mean, we couldn’t have done any of this without him. The technology *works*, but,” and Jayce took his time here; he was trying to put this delicately, “I don’t always know what to make of what Marc thinks, moment-to-moment. I don’t think *he* does.”

Gilbert squared the blue-grey felt hat on his head. “I think *Marc* is a figment of his own imagination!”

Jason acknowledged the wisdom of Gilbert’s viewpoint with a nod. The boys travelled in silence for a bit, both of them thinking about the thorny, two legged problem that was Marcus Dee.

Gilbert Mantree broke the spell thusly, “Earlier, when we were still in California, I dozed off and he was in my dream.”

Jason turned suddenly. “Marc was? Why didn’t you tell me?”

“Are you kidding?” Gilbert frowned. But they locked eyes, and no reply was necessary. Jason Terrell was not given to kidding.

“What did he say?” inquired Jason.

“He asked me what time it was.”

Jason looked very serious. “What time was it?”

Gilbert looked a little frustrated and didn’t answer right away.

“What time was it, Gil?” Jason repeated in an insistent tone.

“It was two forty-seven.” Gilbert frowned.

Jason looked at his watch, and jotted something down in the tiny, three ring binder he kept in his shirt pocket. Then, he stared out the passenger side window for a moment in deep thought.

The moon was retreating to the West and had gone behind a cloud. The desert night darkened noticeably. **Gilbert Mantree** was scanning the horizon, his ham-like mitts ably guiding the steering wheel as **Big-Blue** continued slogging up the sandy wash, near the top of the pass. "I'm getting about ready for some breakfast," he announced, "How about a couple of those food-balls?"

Jayce reached down to a bracket attached to the front of the seat, and slid out a "Rat Patrol" themed children's lunch box. "Knock yourself out," he said, as he popped the lid open.

"Hey, Don't give me a *dog* one!" the driver said, glancing down at the variety on display.

"It's all right," Terrell laughed, "those are in the back."

Gilbert selected one without looking, and took a bite. "What the Hell!" he said, suddenly.

"What is it?"

"It's got," Gilbert frowned, and turned the ball around in his hand, "...Fruit Loops in it?"

"What?" Jason screwed up his face.

"Yeah, and..." the bite of food-ball was rolling around in his mouth as he spoke, "...raisins, and nuts, and marshmallow krishpys..."

Jason turned with a start, "DON'T EAT THAT!" he cried.

"Huh?"

"It's not for us," he said, shaking his head violently, "It must have got in there by mistake!"

"It isn't bad."

"Spit it out!" Terrell insisted.

Gilbert opened the door and spat out the chunk of food-ball. Then, slamming the door, he turned to Jason with an aggressively annoyed look. "You serious?" he demanded.

"You know Shee-LAH," Jason exclaimed, "That thing's probably full of Mescaline!"

Gilbert registered a brief look of horror, which immediately turned to one of mischief as he regarded the suspicious object, "Maybe I'll save it for later," he volunteered in a deadpan tone.

Jason looked grim. "If 'the King' gets into that, we're in for it."

King Snedley was following every gesture Gil made with the food-ball.

"He's right, you know," Gilbert said, addressing the dog with affection, "you'd probably murder us all."

Gilbert rolled the window down and chucked the mysterious food-ball as far as it would go.

As air from the north rushed in through the open window, King let loose with a low, ghostly growl and got to his feet.

With King standing at alert, the interior of the truck's cabin went from snug to painfully cramped in an instant. *What King was smelling, the boys knew not, but it was immediately clear the iron-jawed dog had resolved to shove his head through the driver's window in order to better employ his powerful olfactory senses.* King's hind legs bore down hard on Jason's lap, as the determined quadruped began to burrow behind Gilbert's back, wedging the big man's chest and abdomen into the steering wheel. With unmovable will, the mighty dog continued forward, and jammed his entire body between Gilbert and the seat.

Gilbert Mantree found he could move the steering wheel on this twisting road only with great difficulty. The pedals proved a challenge as well; his right foot was wedged against the accelerator pedal, and he couldn't lift it. He couldn't lift his left foot either, for he was pressing it against the firewall with all his might, -it was the only thing keeping him from breaking the steering wheel and mashing the gas pedal to the floor!

Big Blue was fishtailing up the wash with its horn bleating like a pig caught under a gate.

To be sure, this was a serious situation; but in spite of himself, Gilbert could not stop giggling. He dared not stop the truck either, for fear of King construing this as a signal to leap out of the truck and pursue his quarry!

Jason briefly considered hauling King back by his tail, but King Snedley had his own way of anchoring himself to the Earth's magma core in these situations, and wouldn't be shifted by a twenty ton truck.

Big-Blue hit a huge bump. Suddenly, the powerful dog pushed himself rapidly back to the center of the seat, and sat up with a curious look on his face. Gilbert immediately slid back and regained control of the vehicle, simultaneously rolling the window up as he went.

They were out of the deep sand by this point, and the road was in fine shape, so it was doubly alarming when the truck started sliding around like it was in four inches of mud!

Big-Blue was nearly sideways now, and King let out another spooky howl. He was up on his haunches in a half-crouch; ready to pounce. His dense, inky fur stood straight up, making him look twice his size. His ears flattened out, and his formidable ivory fangs appeared to glow in the darkness.

Jason Terrell looked ready to pounce, too.

"Quick! Crank up the Systems!" he cried.

Gilbert threw the master switch and started energizing a bank of secondary switches as fast as he could. Instantly, a myriad of gauges came alive, illuminating the interior with their glow as the needles started reporting. "We're not going back!?!?" he queried, with some alarm.

J.T. was leaning into some dials. "Of course not!" he spat, his eyes darting between the mag-compass and the truck's chronometer, then glancing at the gold watch on his arm.

Jason reached over, and pushed in the headlight switch, dowsing the lights. Outside, the terrain appeared bathed in a strange reddish glow, -and it was *moving!*

To the stunned crew, an otherworldly landscape seemed to be superimposed upon the normal one; a landscape composed of enormous, writhing slug-like, fanged creatures. They appeared suddenly, like ghosts of another epoch, summoned from the deep by their sorcerers. Gilbert held steady at the wheel. The motor raced, but the truck was slowing, as the wheels began to spin.

"Cut in the PTO!" Jason yelled, as he threw a dozen switches all over the dash, in a complicated sequence.

Gilbert matched the RPMs, and engaged the Power Take Off feature with the special shift lever on the floor, elbowing the stolid King as he did so. The shift was smooth as silk, and a vibration rose up from the floorboards as the turbine began to whine.

"Get on the Trailer-Brake when I say!" Jason howled above the whine, his left hand on a large dial, and his eyes divided between the turbine speed indicator, and the horrific spectacle occurring outside the windshield.

"NOW!" he hollered, and Gilbert's hand was moving before the syllable had finished being uttered.

(The 'Trailer-Brake' was a long lever attached to the steering column on Big-Blue that controlled a rheostat. It was a commonly available item, normally used to apply electric brakes on a trailer, but as fitted to Big-Blue, the lever gave hands-on control to the oscillating frequency applied to the field coils on the truck's Magneto-Turbine, an essential part of the temporal shunt system. -ed.)

A loud whirring, grinding sound came from under the truck's hood. The sound was accompanied by a strong vibration, emanating not only from every solid piece of the truck, but even the air around it.

Gilbert moved the lever tentatively at first, gauging the results he observed. The systems on the truck were highly interconnected, nearly every control affected everything else; the speed of the truck, the RPMs of the motor, the speed, voltage, and frequency of the turbine, -and dozens of other factors all combined to manifest results from a system designed to do the impossible!

The technology demanded inspired instinct, virtuoso machine operating skills, and fearless resolve. Gilbert assimilated the technique quickly, seeming to sense intuitively what did, and did not, feel right.

As the turbine hit the sweet spot, the truck started to straighten out and gain traction. Streams of colored light were now radiating from the strange orb mounted on the truck's hood ornament. They fanned out in prismatic layers, and commenced to rotate, like the propeller of an aeroplane.

Gilbert continued to adjust the controls, the multiple vibrations blended into resonance, the truck smoothed out, and the writhing things began to scream. It was a horrible, unforgettable scream; the kind of sound that once heard, could sear your soul.

King was baring his teeth now, and the reddish glow of the creatures was pulsing. Jason, with one hand on a big radio knob, and his eyes riveted to a dial gauge, made ready to throw a large knife switch, "HANG ON!" he yelled.

"CRACK!!" a blinding electric blue flash lit up the night as Jayce threw the switch. This startling moment was accompanied by the acrid smell of ozone and a terrifying cacophony of noises; a series of crashing, lurching, banging sounds that felt like they were coming from inside the truck, and would later be described as "like a dozen steel garbage cans falling off the back, except louder," and, "like a nine car pile-up on the highway, if no one tried to stop."

The red of the landscape was gone now, and the horrible creatures were too. Jason's steel-hard eyes made a survey of every gauge and meter in the cab. He then looked outside in every direction for a full minute before he announced, "That did it. I think we're good to crank her down."

The boys started flipping switches to de-energize the systems. It kept them busy for a good two minutes while the complicated apparatus slowly wound to a stop.

Jason relaxed into his seat. With a sigh, a look of calm complacency spread over his rocky features. He turned, and regarded Gilbert with a tranquil smile.

Gilbert gazed back at Jayce, momentarily mimicking his placid countenance, and shouted, "WHAT, in the THREE WHEELED HUNGARIAN BUBBLE-CAR JUST HAPPENED?"

There was a pause before Jason asked, "Are you sure you didn't eat that special 'ball?'"

Gilbert was shaking his head now, "I'm gonna cut you up in little pieces, Terrell!"

Jayce smiled back. It was a closed mouth, innocent, childlike smile. "I've never seen anyone master the Mag-Turbine that fast," he purred.

There was murder in Gilbert's eyes. "What were those *things* out there?" he demanded.

"Don't really know," Terrell admitted in a more serious tone. "I'm not sure I even really want to know. They seem to be one of the hazards of Inter-dimensional Time-Travel. If something gets a little out of whack, we seem to slide out of sync with our intended reality, and dip our feet into an adjacent one." Jason was back to his customary look of steely resolve, "At least, we kind of know what to do about it," he added, somewhat unconvincingly.

The gears in Gilbert's mind were turning as he drove. "What went outta whack?" he asked.

Jason sat and thought for a bit. "Something's weird about this run," he said, "I've been feeling it for a while. All the forces have to be in balance for things to go the way we expect. I think

there're factors in play we didn't count on."

Gil rested his hand on King's warm fur, and drove on in silence. He knew Jason had more to say, but he didn't want to crowd him.

Jayce had a brooding look about him. He seemed to be examining an idea in his mind, going over it from every angle, and then starting the process all over again. Finally, he looked up and declared, "I think it's that Skull!"

"The skull?" Gilbert asked.

"I don't know why," Jason answered, "But yeah, -the Skull! I'm sure of it. A couple of times on this trip I've closed my eyes, and I could *see* it."

Gilbert twitched slightly. He looked over at Jayce and asked him very slowly and carefully, "What did it look like, J.T.?"

There was an odd glow in Jason's eyes. "It was staring right at me. Right up close. It was covered with shining opals of all different colors. -Feathers sticking out of its neck, and gold teeth..."

"What about the eyes?" Gilbert asked.

"They were reddish amber colored crystals!"

Gilbert slowly pulled to the side of the road and stopped. He shut off the motor and stepped outside, reaching into his shirt pocket for a cigarette. Everybody needed a break. Jayce went around the back of the truck, broke out some water, ambled over to Gil, and handed him a cup. Gilbert still hadn't spoken, so when Jason got through putting the pan on the ground for King, he asked, "You okay?"

Gilbert nodded in the affirmative as he drank. Then he looked Jason straight in the eyes and said, "I saw it too." 

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What were those THINGS ?

DON'T FORGET TO REMEMBER

Blood Trail in the Sand

THE SIXTH THRILL PACKED CHAPTER of John Le Gallee'

"Trail of the Opal Skull"

WILL BE FOUND:

*IN the next issue of the Searchlight Gold Beam
Available soon on newsstands everywhere.*

THERE WERE CAMELS IN AVIKWA AME

By MARK HALL PATTON



THERE WERE CAMELS IN AVI KWA AME



BY MARK HALL-PATTON

Illustration by Cat Johnson



THE GREAT ARID LANDS OF THE WESTERN UNITED STATES beckoned explorers, exploiters, and settlers throughout the nineteenth century, and one recurring issue was the need for efficient transportation. The vast mineral wealth of the area was of little value unless supplies needed by the miners could get efficiently to the mines, and ore could get from the mines to the smelters.

One of the more unusual animals to be introduced into the Southwest to meet this need was the camel. Horses, mules, burros, and oxen were all widely known and understood, and had been used to haul loads in the U.S. for centuries, but they had their limitations in the harsh desert environment. For this reason, the camel, an icon of the deserts of the Middle East, was used as a form of transport in a grand experiment by the U.S. government starting in the 1850s. Camels were imported across the Atlantic in ships, for use from Texas to California and from Canada to Mexico, and even here in Avi Kwa Ame National Monument.

Camels had been widely studied and proponents in the American government such as Senator Jefferson Davis and Lt. Edward Beale stated the case for their effective use in extreme temperatures and areas with little water resources. These proponents were, in effect, harkening back to prehistoric times, when the camelops, the ancient ancestor of the camel, roamed the ancient southwest.

These military camels had initially entered the US at Indianola, Texas, in two shipments, the first in May of 1856 and the second in February 1857. The camels were used by the government in a number of experiments, most notably the laying out of what became known as Beale's Road, the route later followed by Highway 66 across northern Arizona.

In addition, they were used in experimental runs to haul mail between Camp Fitzgerald at Los Angeles and Camp Mohave at the Colorado River. These army experiments in 1859 and 1860 showed they were not good for prolonged fast runs, but they were faster than wagons. In 1861, three camels also helped with the California Nevada Border Survey. All of these efforts brought them through today's Avi Kwa Ame lands.

The army also employed traders as civilian freighters who used the army's camels to carry supplies to troops coming over Beale's Road. On one trip in 1859, the Mohave Indians (over whose land the party was traveling) decided they had had enough disrespect from the barrage of settlers that the California Gold Rush had encouraged, and banded together with Paiute and Yuma warriors to attack the freighters. When it became clear there were hundreds of Native Americans in their path preparing to attack the camel express train, the goods were offloaded and sent back or buried, and the men boarded their camels and charged for the Colorado River about two miles away. This was at Beaver Lake, at the extreme southern tip of today's Nevada, and there was a ford over the Colorado at this site.

Even though the traders only had their pistols and a few rifles, and couldn't accurately fire, they were riding camels. A camel at full gallop runs at about 40 miles an hour, and presents an unforgettable sight as it is charging you. The forty camels made it to the river in the only known camel charge in US history, and continued on across the Colorado River to Arizona, in what must have been an amazing sight to all who witnessed it.

One of the reasons camels were useful as beasts of burden was their willingness to eat plants no other pack animal would eat. As far back as 1856, when the first government camels were brought into Texas, this ability was discovered. Because of a lack of wood, a corral had been built of cactus which would hold any of the regular pack animals. The camels, it was soon discovered, found the cactus quite edible, eating most of the corral and making it necessary for another of less tasty materials to be constructed.

The efficacy of the camel's use for military purposes was ultimately less than what was desired, however, and the government's experiment spanned only a few years, approximately 1855 to 1864, at which time all camels still in the possession of the US military were sold.

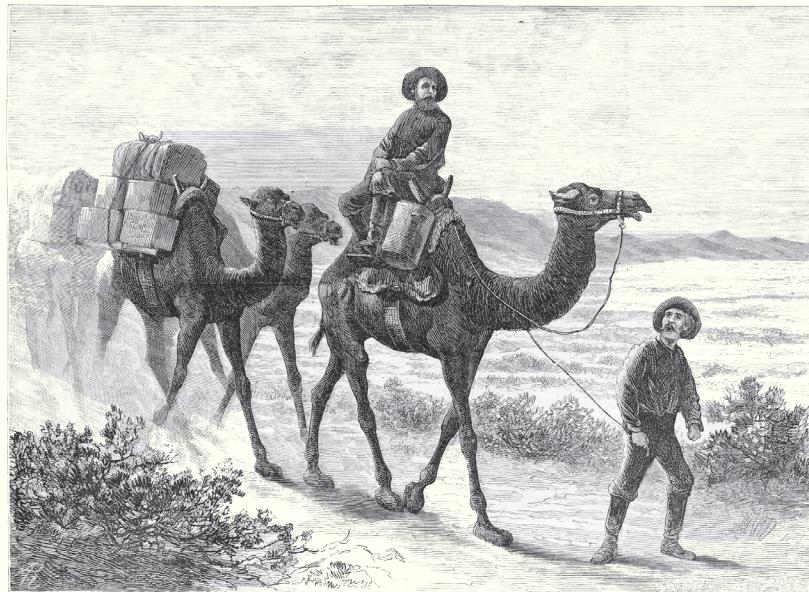
Camels were also of interest to entrepreneurs working in the far west. As early as 1859, Otto Esche, a merchant in San Francisco, saw an opportunity in their importation. Salt was needed in the mines (especially in the famous Comstock Lode) for processing ore, and since most of it was being shipped by mule train, it was quite expensive. A camel could carry significantly more than a mule, as much as 1,000 pounds vs. 400 pounds. It could forage on desert plants no other animal would eat, and could go long periods without water. With freight costs running \$120 per pound, Esche saw a decided opportunity for profit.

Esche, working with some partners, left for the Orient in 1860. His trip was long, but upon arrival in Siberia, he started out overland to buy camels. He was able to buy thirty-two camels, of which fifteen survived the trip to the Siberian coast, to be loaded on the Caroline E. Foote for transport to San Francisco.

These were Bactrian, or two hump, camels, as opposed to Arabian Dromedary, or one hump, the type the army had imported. They were shipped back to San Francisco, even as Esche went back out to buy more. The trip over the Pacific was not easy, but all fifteen survived to be off-loaded in San Francisco in July of 1860.

Eventually, Esche would be involved in importing almost 200 camels on different voyages. These would provide another source for camel entrepreneurs. Camels would be used from the Fraser River gold fields in Canada to as far south as Mexico, and as far east as New Mexico, but it would be Nevada which would be the center for their use.

Most Nevada camel lines were run by either Frank Laumeister or the Chevalier brothers. They all had originally purchased camels from Esche, and when no longer needed, were let go in the Nevada desert. When the Army sold their camels in 1864, some were also sold for commercial use, and some also eventually made it to Nevada where they would



CAMEL TRAIN IN NEVADA.—DRAWN BY FRENZENY.—[See PAGE 502.]

be released when not needed. The camels apparently found this to their liking, as they did slowly multiply, becoming a known sight to prospectors and others who frequented the deserts.

The camels were released because of their ability to live off the land, and they could be found and rounded up when next needed. In the early 1870s, Laumeister created a new camel express to bring timber from Mt. Charleston to the Eldorado Canyon mines near Nelson and later one to bring salt to Pioche. He also ran a camel express south through today's Avi Kwa Ame to bring supplies to Arizona mining areas.

When in use, camels seemed to scare other animals, like horses and mules. They smelled bad, and had a tendency to force other animals off public roads. Though those leading the camel caravans claimed that the camels were not the cause of the problems, teamsters leading mules or oxen did not like the one or two humped beasts and often complained about their use.

This led to one of the more unusual Nevada Statutes. The following law was passed on February 9th, 1875:

AN ACT TO PROHIBIT CAMELS AND DROMEDARIES FROM RUNNING AT LARGE ON OR ABOUT THE PUBLIC HIGHWAYS OF THE STATE OF NEVADA.

The People of Nevada represented in Senate and Assembly, do enact as follows:

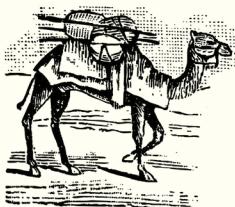
Section 1. *From and after the passage of this Act it shall be unlawful for the owner or owners of any camel or camels, dromedary or dromedaries, to permit them to run at large on or about the public roads or highways of this State.*

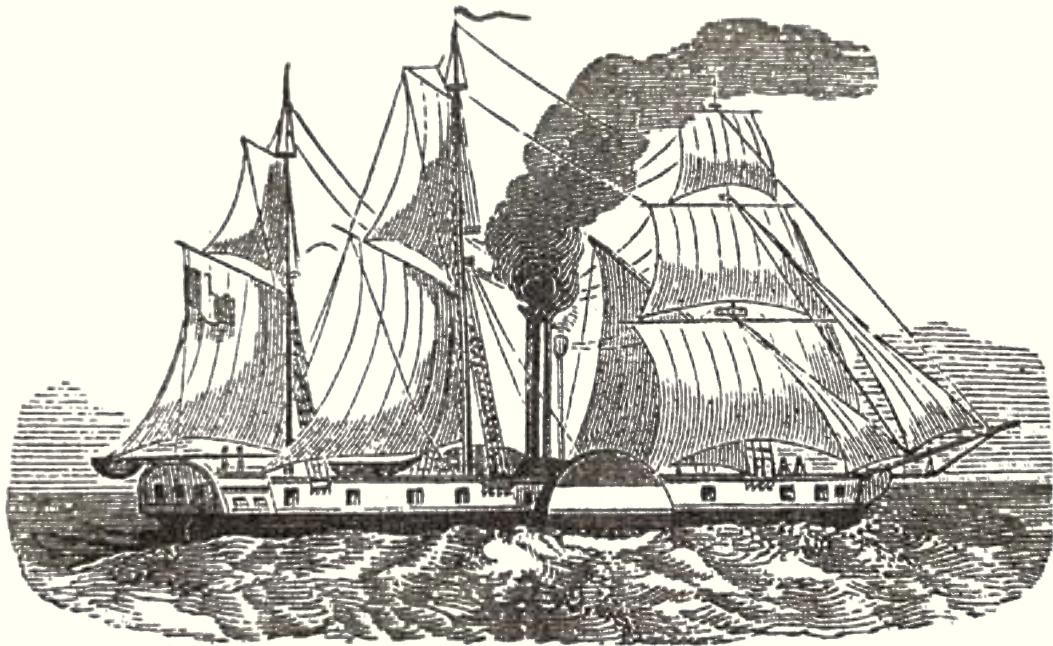
Section 2. *If any owner or owners of any camel or camels, dromedary or dromedaries, shall, knowingly or willfully permit any violation of this Act, he or they shall be deemed guilty of a misdemeanor and shall be arrested, on complaint of any person feeling aggrieved; and when convicted, before any Justice of the Peace, he or they shall be punished by a fine of not less than twenty-five (25) or more than one hundred (100) dollars, or by imprisonment of not less than ten or more than thirty days, or by both such fine and imprisonment.*

THE PUBLIC ROADS OF NEVADA WERE FINALLY SAFE FROM CAMELS.

Camels began to be phased out from regular use as beasts of burden in the later 1870s. While they still ran free, they did begin to disappear for a number of reasons. Many were caught and sold to circuses, sideshows, and zoos. In fact, the last of the army-imported camels was identified as dying in the Los Angeles Griffith Park Zoo in 1934. Others were killed for food. It turned out that many people, indigenous and settlers, found them good eating. The last known Nevada sighting of wild camels in Nevada was in 1905 near Silver Bow, a short-lived mining camp northeast of Rachel, Nevada.

The experiment was over by the early twentieth century, and further sightings of camels in Avi Kwa Ame National Monument were not to be. But their memory should not be lost. However briefly, modern camels were a part of the history and heritage of this land. They were here for a time and found the land to their liking.





AROUND THE HORN AND UP AGAIN

CYRUS NOBLE WHISKEY'S JOURNEY TO SEARCHLIGHT.

IN THE LATE 1800s AND EARLY 1900s, when Cyrus Noble was famous in mining camps across the American West, the famed whiskey traveled a circuitous route across sea and land.

After leaving the distillery in Ohio, barrels of Cyrus Noble traveled by barge to Gulf and Atlantic port cities, then by ocean-going freighter to the southern tip of South America. Here they sailed either through the Straits of Magellan or around Cape Horn to once again head northward to the port of San Francisco. In port, the whiskey was bottled and then shipped overland by train and wagon to the roaring boom towns.

The 14,000-mile journey from Ohio to San Francisco could take 9 months, during which time the whiskey inside the oak barrels rocked and tumbled as the ships rolled upon the turbulent seas. This helped the aged whiskey develop the robust flavor it was known for in the West, and built its reputation as a top shelf brand, so beloved, that one of Searchlight's most famous mines is named after it.

NATURE'S WISDOM: A DESERT HOROSCOPE

SPRING 2025

ARIES: March 21 to April 19

Birds do it. Bees do it. You can do it too. I'm speaking of spring cleaning. Out with the old and in with the new, fix up your nest, hive, body, relationships – whatever needs a good dusting off.

TAURUS: April 20 to May 20

Time to make plans for summer migration, and get reconnected to some place other than your home base. Visit family, see something new. When coyote gets restless, that's when the mischief begins.

GEMINI: May 21 to June 21

Like black-throated sparrows around a watering hole, it's time to band together and share common interests with friends. You can find like minds everywhere who are willing to have fun, be silly, or work for a cause. Just don't seek others to complain with – that is best done alone.

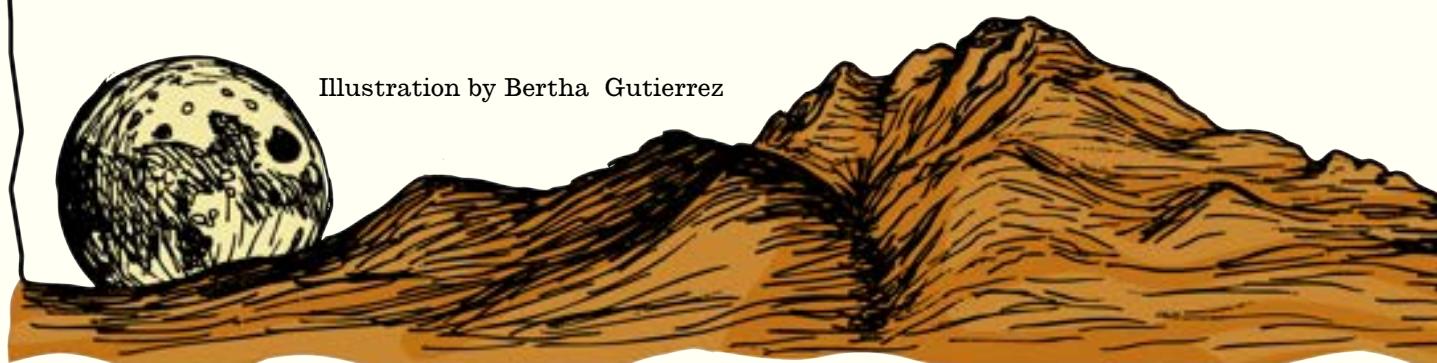
CANCER: June 22 to July 22

Conservation of energy is not laziness. It's how other creatures survive. Direct your attention to daydreaming, investigating the big picture and the small details, and gently looking for the way forward.

LEO: July 23 to August 22

You're on fire, and it's not just the heat! Ride this wave of energy and let it take you to new heights with new thoughts, feelings, and creations. Long walks at night will help you open up the creative flow, but take your snake hook just in case.

Illustration by Bertha Gutierrez



VIRGO: August 23 to September 22

It's nice to have a burrow for the summer heat and winter cold, but don't feel you need to protect it at all costs. Even badgers invite their friends over sometimes, especially those they would like to be more than friends.

LIBRA: September 23 to October 23

Freedom is at hand, but take it slow. Tarantulas that cross the road without looking both ways don't always make it to the other side.

SCORPIUS: October 24 to November 21

Set out a water dish, a bird feeder, or plant a tree. The exchange of reciprocity will leave you feeling useful and fortunate. This works with helping humans too, and being able to receive help in return.

SAGITTARIUS: November 22 to December 21

Now is a time for reflection. Water is a good reflector, so find a river, lake or stream and have a look, and a listen. You'll find what you need to proceed.

CAPRICORNUS: December 22 to January 19

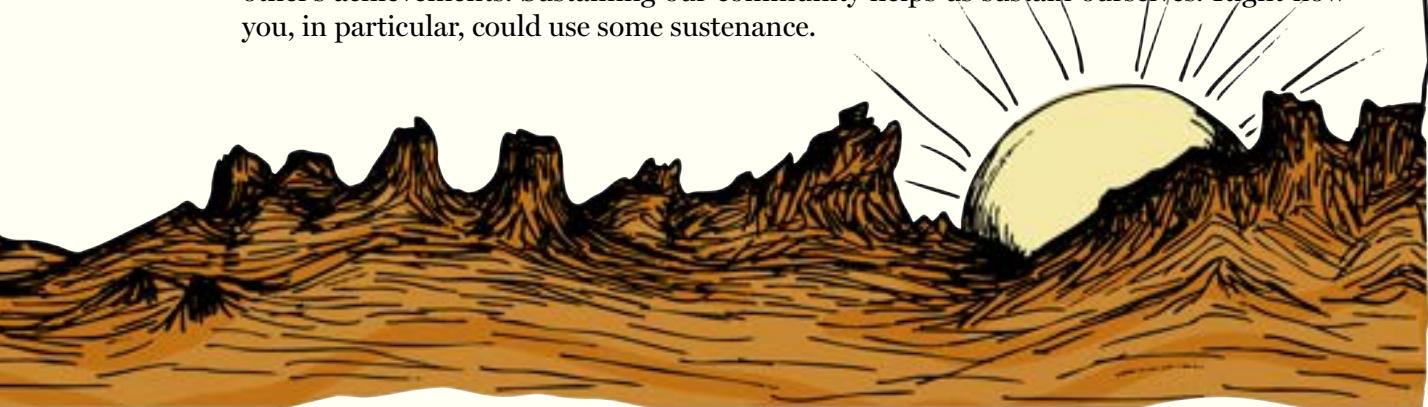
As the gears of the seasons turn, we must make new decisions and travel new paths. (One door closes and another opens and all that.) But the thing is, there is often a way to circle back to what you leave behind. As some birds traverse the earth in cycles, so we may navigate our lives.

AQUARIUS: January 20 to February 18

We all need comfort, safety and the warmth of a fire. Provide these to yourself and to others, and through the cycle of winter, spring will be reborn. Though the nights may be dark, this is when the stars, so high in the sky, are the clearest.

PISCES: February 19 to March 20

Let us all lift each other up as we grow, treasure each other's presence, celebrate one another's achievements. Sustaining our community helps us sustain ourselves. Right now you, in particular, could use some sustenance.



CASTLE MOUNTAINS GRASSLANDS TRAIL

TYPE: Loop trail
TOTAL TRAIL LENGTH: 5 miles
TRAIL SURFACES: Unmaintained gravel, sand, rock
DIFFICULTY: Easy to moderate
RESTROOMS: None
PARKING TYPE: Pull-out
VEHICLE ACCESS TO PARKING: All-types
DOGS: Allowed on Leash
GUIDES: No trail markers
ACCESSIBILITY: Not wheelchair accessible
ACTIVITIES: Walking, Mountain Biking, Horseback Riding

OVERVIEW

The Castle Mountains Grasslands Trail traverses a dense Joshua tree forest, boasts spectacular views of the surrounding landscape, and intersects the historic Barnwell and Searchlight Railroad line. The trail is actually a little-traveled, narrow backcountry road, and is easy walking with an elevation difference of only around 300 feet. The trail ends at the base of a volcanic ridge that is part of the Castle Mountains. This trail is 5 miles round trip, but can be made into a 3-mile trail by turning back at the intersection with the old railroad line.

ABOUT THE ROUTE

This trail is a biologically diverse gem and one of the best places to see rare Mojave Desert grasslands. As you walk past the corral and parking area and begin down the trail on the left, you will notice the jagged Castle Peaks to the right (south). Composed of early Proterozoic gneiss and foliated granites, overlain by thick volcanic deposits, the rugged Castle Mountains are emblematic of the Mojave landscape. Hart Peak is the prominent feature in the Castle Mountains skyline at 5,543 feet and is visible throughout the hike. As the trail opens up out of the foothills, you will also spot the New York, Eldorado and Newberry mountain ranges, with Spirit Mountain (Avi Kwa Ame) facing you to the southeast.

The terrain surrounding the trail is a hotspot of botanical diversity, and provides a critical linkage for plants, animals, and water between mountain ranges. The unique plant assemblage includes 28 species of native grasses (about half of which are rare), including galleta, burro grass and false buffalo grass. These perennial grasses are the keystone species in this part of the Mojave Desert, and play critical roles in soil stabilization, carbon sequestration, nutrient cycling, water regulation, and erosion control. The native grasses also provide shelter and food for a wide range of animals. A herd of desert bighorn sheep lives on the steep, rocky slopes of the Castle Mountains. They and other wildlife traverse the area between the Castles and the New York Mountains. Numerous bat species live in rock crevices and mine remnants in the area, and the grasses provide food and shelter for many species of insects, which are important pollinators and decomposers. Many species of birds can be spotted here, including red-tailed hawks, northern flickers, black-throated sparrows, crissal thrashers, verdins, and kestrels. Wildlife species of special concern found in the area include the Townsend's big-eared bat, California leaf-nosed bat, Swainson's hawk, golden eagle, desert tortoise, Bendire's thrasher, and gray vireo. The Castle

Mountains area contain important cultural resources that reflect a long history of human use. Prehistoric rock markings and archeological sites are found throughout the area at sites of significant cultural importance to both the Fort Mojave and Chemehuevi Tribes. At the 2-mile mark, the trail intersects with the historic Barnwell and Searchlight Railroad line which connected Searchlight, Nevada to Barnwell, California and the larger rail network of the Mojave Desert. Rather than continuing straight ahead, the trail takes a hard right at this intersection and goes 1.7 miles to the Walking Box Ranch Road. Along this section, you get outstanding views of the volcanic Castle Peaks to the northwest and pass a wash area with desert willow trees. When reaching the Walking Box Ranch Road, take a right and follow that road for 1.3 mile segment of the trail to where you started the hike at the corral.

KNOW BEFORE YOU GO

This hike is located in a remote, back-country area and cell service is spotty. The closest restrooms and services are 15 miles away in Searchlight. Fill your gas tank, bring plenty of water and snacks, and be prepared for temperature extremes. The corral parking area and trail are easy to find, but there are no trail signs. Long pants, hats, and sturdy walking shoes are recommended.

DIRECTIONS AND PARKING

- The coordinates for the trailhead are 35.397812, -115.085446.
- From Las Vegas, drive south on U.S. Highway 95 to Searchlight.
- Turn right onto Hwy 164 (Joshua Tree Highway) and drive west for 7 miles.
- Turn left on Walking Box Ranch Road.
- Drive 8 miles to the old cattle corral and park on the right.
- The trail (an unmaintained, unmarked narrow road) is on your left.
- Walking Box Ranch Road is a well-maintained, wide dirt road that will accommodate all vehicle types.

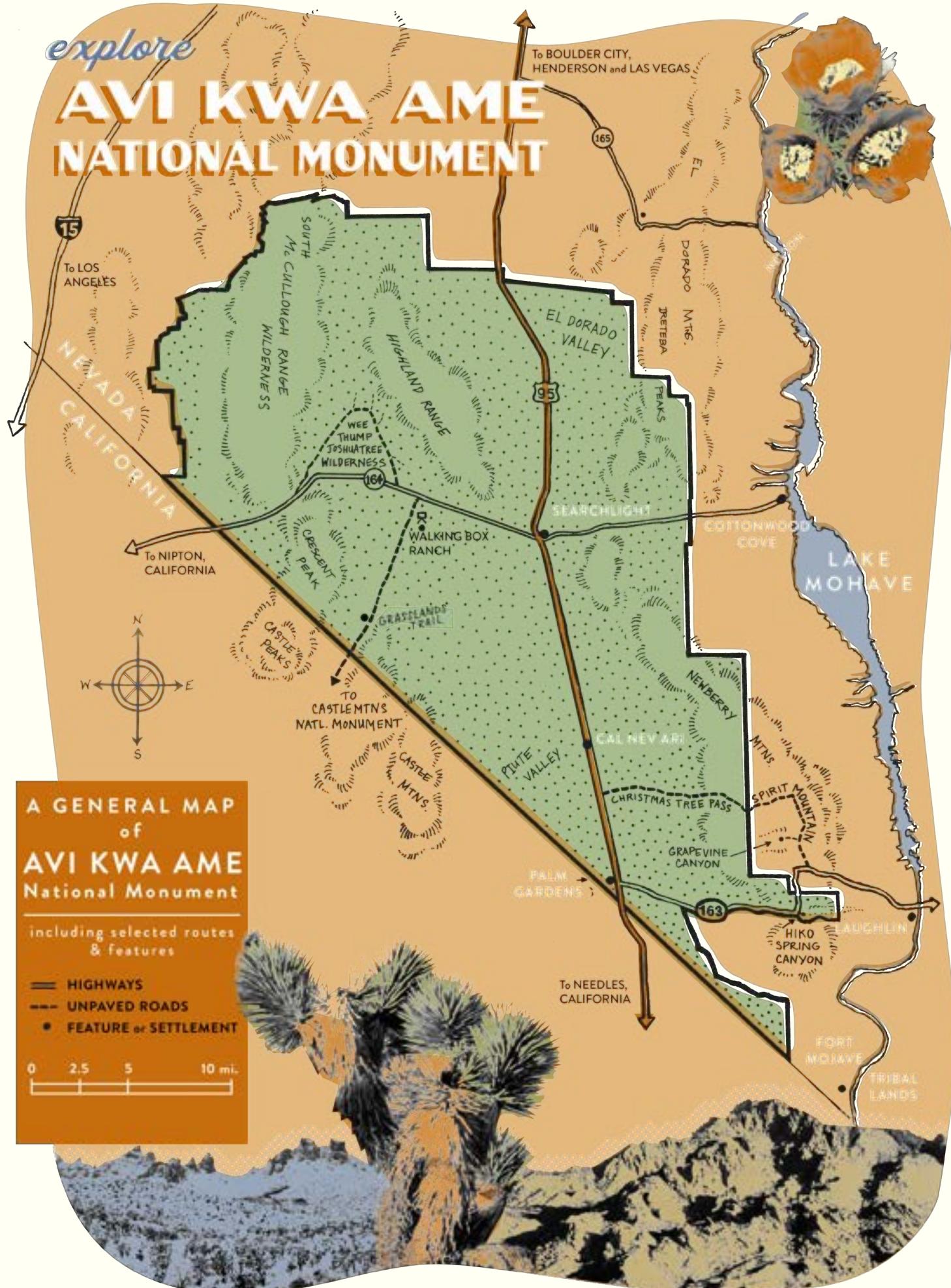
Trail map and additional resources available online.



Photograph by Alan O'Neill.

explore

AVI KWA AME NATIONAL MONUMENT





ABOUT the PUBLISHERS:

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friendsofavikwaame.org

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THIS IS A GENUINE PUBLICATION OF
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This yearly periodical shares the cultural, ecological and historical treasures of Avi Kwa Ame National Monument and beyond, providing orientation for visitors to the area, new connections within and between Southern Nevada's communities, and inspiration to all.

THIS APRIL 2025 ISSUE'S THEME:
Interconnections In Avi Kwa Ame

What unseen systems are connecting everything together in this beautiful place we call Avi Kwa Ame National Monument? What delicate influences create a Joshua tree heavy with fruit, tie a family to their home, or introduce a new species to the landscape? How are we, visitors and locals, bound to each other—to earth and sky and community, and to this time and space?

Countless elements make up what we now know of as the East Mojave. In this issue, we explore the linkages between and within this marvelous ecosystem, map movements across the broader Southwestern region, look for pathways between cultures, stories and timelines, and describe a small portion of the endless chain of influence at work on this fascinating desert world.

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