That visitors flock to Joshua Tree National Park in exponentially increasing numbers is not news to anyone. To meet the demand, a shuttle bus program has begun. The idea started many years ago.

Former Superintendent Mark Butler, who came to Joshua Tree National Park from Yosemite, was familiar with the shuttle buses at Yosemite, and initiated negotiations with the Morongo Basin Transit Authority (MBTA) back in 2012.

In 2014, a partnership was created between the UC Irvine, Transportation Engineering School and Joshua Tree National Park. Students came to the park to discuss conditions, and shared their knowledge of trends and technologies of different types of buses. Visitors were surveyed and routes were identified. The students broke into several different work groups and provided recommendations and an overall project summary. Key points from this research concluded that the park lacks the infrastructure to accommodate visitors during peak seasons; there are lengthy wait times at both entrance stations on most weekends and all holidays between Labor Day and Memorial day throughout the winter months. Their survey showed that 57% of visitors would use a bus system if it were available. A natural gas bus system was determined to be the most environmentally friendly and cost effective for Joshua Tree.

In 2015, MBTA contracted with transportation consultants to do a feasibility study and determine initial route opportunities and proposed a business plan. Mobility Planners LLC and Ronny Kraft Consulting were hired to prepare the report. What has grown out of this has become the Joshua Tree National Park Roadrunner Shuttle Bus. The shuttle will run as a pi-

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KEYS VIEWS

The Keys Views newsletter takes it’s name from Keys View, the scenic point in Joshua Tree National Park that overlooks the Coachella Valley from an elevation of 5,185 feet. It is named for Bill Keys, an early pioneer, rancher and entrepreneur who lived in the area now contained within the park.

Desert Institute Schedule - Spring 2018

February
Rocks and Minerals of Joshua Tree National Park, Summit Monument Peak, Rock Art of Southern California, Explore the Wonderland of Rocks, Explore Ruby Lee Mill

March
Geology of Amboy Crater, Wildflower Wanderings, Joshua Tree Through the Lens, Flora of Joshua Tree National Park, Intaglios Along the Colorado River, Desert Invertebrates, Springtime Camping in Joshua Tree National Park, Desert Tortoise Conservation Biology, Capturing Joshua Tree Landscapes with Acrylics, Biological Soil Crusts of Joshua Tree National Park, Native American Plant Uses, Explore the Coxcomb Inner Basin, Fine Art Photography in Joshua Tree National Park, Ecology of Joshua Tree National Park, Route 66 Photography Workshop

April
Wildflower Wanderings, Hike to Desert Queen Mine, “How-To” Navigate with Map and Compass, Geology of the Mojave National Preserve, “How-To” Survive in the Desert, Salton Sea Photography Workshop, Geology of the Marble Mountains, National Parks at Night Photography Workshop, Women’s “Get-Away” Weekend, Birds of Joshua Tree National Park, Discover Pine City, Advanced Mammal Tracking in Joshua Tree National Park

May
Citizen Science:  Phenological Monitoring in Joshua Tree National Park, Night Sky Photography, Desert Night Sky:  Planets to Galaxies

For more information, please call 760-367-5535 for a program catalog, or visit joshuatree.org. Remember, as a JTNPA member you will receive a $10 discount for each class.
lot program starting February 1, 2018 through April 30, 2018, and again, in the fall of 2018 through the spring of 2019.

MBTA’s goals include alleviating congestion in gateway communities, serving new audiences, and providing services to underserved communities. The NPS’s goals include decreasing entrance station congestion, reducing overflow parking, improving a negative visitor experience, environmental sustainability, and addressing point source air pollution. Joshua Tree National Park is using entrance fee funds to provide half of the costs of running the Roadrunner Shuttle Bus, with the MBTA using local transit funds and a small portion of their operating budget. MBTA will hire and manage all bus operators. Students at OTIS College of Art and Design in Los Angeles created the Roadrunner logo and color scheme.

Following some unforeseen delays with logistics and approvals the Roadrunner Shuttle Bus is ready to move forward as planned.

Visitors will be able to board the bus every two hours at the southeast corner of Highway 62 and Quail Springs Road in Joshua Tree, or at any of several locations in Twentynine Palms including the bus stop on the west side of the Stater Brothers parking area, the Holiday Inn, the Rite Aid, or the Oasis Visitor Center. Buses will depart from these external locations every two hours. Riders will not have to pay to ride the bus but will need to have a park pass or paid receipt.

Once inside the park, visitors will have access to the Boy Scout trailhead, the Hidden Valley trailhead and day use picnic area, Intersection Rock (a particularly busy area for rock climbers and boulderers), and Barker Dam trailhead where hikers can also access the Wall Street Mill trail, Ryan Mountain trailhead, and Jumbo Rocks Campground where hikers can start hikes to the Skull Rock Nature Trail or the extensions to the Split Rock trail area. The plan is to have a Roadrunner Shuttle Bus at each trailhead every 30 minutes. For campers inside the park, the Roadrunner Shuttle Bus can be used to travel to Joshua Tree or Twentynine Palms for showers, groceries or to meander through downtown shops and art galleries.

In time the MBTA and the NPS intend to make the Roadrunner Shuttle Bus the best it can be, with additional stops and buses with bike racks and racks for outdoor gear also being planned.

Comments, questions or suggestions can be directed to Karin_Messaros@nps.gov, or 760-367-5512.
“Just as we expected, 2017 has been a record breaking year for visitation at Joshua Tree National Park”, said David Smith, Superintendent, Joshua Tree National Park. “For the last five years, we have consistently experienced annual jumps in visitation anywhere from 15-30%. Although most of our visitation occurs during fall and winter holidays as well as the spring break rush, the park has seen consistent increases throughout the year, including the summer!”

The Desert Institute realizes that people are passionate about Joshua Tree and want to come to the California desert. This year, in addition to offering programs at the park, Desert Institute is helping people discover the hidden gems of the Mojave and Colorado Desert. These intimate classes, hikes and tours offer access to some of the most interesting adjacent public lands and monuments. The beauty of Joshua Tree does not stop at the park’s door but continues on throughout the California desert.

If you have a chance, take advantage of the public lands around the park and join a Desert Institute class. Consider a trip to study the Geology of the Amboy Crater or Mojave National Preserve or check out the Rock Art of Southern California or Native American Plant Use. The Route 66 and Salton Sea Photography Workshops are extremely popular classes that explore some of the most iconic images of the California desert. Whether you end up in one of the monuments, the preserve or the park, Desert Institute is the key to lifelong learning.

Students of the Desert Institute become the stewards who help protect America’s treasures, our national parks. Thank you your passion and energy in protecting what is truly “America’s Best Idea!”

Two community presentations will be conducted by the Desert Institute at the Bell Center at Copper Mountain College in Joshua Tree. On Friday, March 16 from 7 pm - 8:30 pm, Don Liponi, the author of *La Rumorosa Rock Art* will give a presentation on the La Rumorosa Rock Art site in Baja California. The Kumeyaay and their ancestors have lived on the Baja-California border at least 10,000 years in accordance with a recent excavation near Jacumba. The striking red, black and white pictographs were painted in caves and on rocks along the southern California border, up the Gila River and along the Colorado River, ranging from the lower Grand Canyon to the Sea of Cortez.

The second presentation will take place on Thursday, March 29 from 7 pm - 8:30 pm. Join Sandi Wheaton in this presentation of her photographic images taken on Route 66—yes, she traveled the full length of the “Mother Road.” She will also introduce you to her work on the Salton Sea. She has been documenting the Salton Sea and its changes annually since her first visit in 2004.

**Save the date:** The Joshua Tree National Park Association’s 26th Annual Art Festival will be held on April 6, 7 and 8, 2018.
News from the Association: The Joshua Tree Visitor Center has seen unprecedented numbers of visitors over the past years. In December 2013, the Hi-Desert Star wrote an article on the visitor center and the “Holiday Rush.” They reported, By Tuesday afternoon, the Joshua Tree Visitor Center had already logged 350 people passing through its doors. The day before, more than 900 people had stopped in for maps, park passes and information. “We were swamped”, Lorna Shuman, public information officer for the national park, said on Monday.

Oh, how times have changed! On Christmas Day, 2017, the Joshua Tree Visitor Center engaged with over 4,500 visitors in just one day! We now consider 2,000 visitors before noon a “slow day.” With the increased visitation came many more infrastructure issues, including long lines for toilets.

The building which houses the visitor center is owned by the Joshua Tree National Park Association and the Association invested in new interior toilet facilities and replacing the leach lines. Unfortunately, the village of Joshua Tree, like most of the desert communities, does not have waste water processing. Here are some construction and completed project photos.

Prior to August, 2017, all of the inventory that was shipped to the four visitor center gift shops was transported in the association’s staff’s personal cars. And, as the sales of the gift shop inventory increased, so did the volume of merchandise that was stuffed into the staff’s cars.

The Joshua Tree National Park Association’s Board of Directors recently approved the purchase of a mini van for transportation of inventory and staff.
Darrell Shade Receives “Volunteer of the Year” From the Basin Wide Foundation

Darrell Shade is a remarkable man whose passion for our communities is strong, and yet, he is quiet about the achievements and his level of commitment. Tasha La Doux of the Science and Resource Stewardship Division of Joshua Tree National Park said, “Darrell is a tireless volunteer who has contributed endless numbers of hours to assisting the Vegetation Branch with a variety of tasks. He is an avid hiker and keen field assistant. These two qualities have made Darrell an invaluable addition to our botany team. For the last six years, Darrell has spent countless hours in the field assisting the botany crew with documenting the park’s flora: he has assisted the botany team with over 500 species specimens, assisted with rare plant surveys and monitoring, and he championed taking high-resolution photos of the Joshua Tree National Park herbarium collection so that the park’s specimens could be used by researchers worldwide. In addition to his tangible efforts, Darrell’s breadth of knowledge about our local desert is an inspiration for all natural history enthusiasts.”

Darrell Shade attended California State University, Fullerton, and graduated with a Bachelor's Degree in Music Education; during his college time he played the pipe organ. Darrell taught severely handicapped children for a number of years. Darrell also created an Environmental Research Station at Palm Vista Elementary School on a voluntary basis during his years there before moving up to secondary schools. He was the director of the Morongo Basin Special Olympics from 1973 - 1988. He served a variety of churches as the choir director. Darrell volunteers with the Hi-Desert Cultural Arts Center playing in the symphony. He has volunteered with Sky's the Limit since 2008 and has been a board member of the Joshua Tree National Park Association as well. Since 2010, Darrell has volunteered to teach classes with the Desert Institute.

“Darrell Shade is a retired high school teacher and a recognized botanist/desert naturalist for Joshua Tree National Park. Darrell has a deep love for the desert and its enormous variety of plants and animal life as well as being a master teacher,” said Kevin Wong, Director of the Desert Institute. “We are proud to have such dedicated instructors in our educational program.”
Meeting Visitor Expectations

Jerry and Connie Seaburg, Information Specialists, Joshua Tree Visitor Center

Connie and I have been volunteering at Joshua Tree National Park for eight and a half years. We have enjoyed our time in the park and our contributions to the park. We have conducted inspections of Keys Ranch for the archaeological division, we have monitored photo clubs and art clubs at Keys Ranch, we have “roved” the campgrounds and trails picking up trash, answering visitor’s questions and handing out brochures and maps. In addition, we work at the Joshua Tree Visitor Center which allows us to meet people from all over the world. Last year, we spoke to over 2,500 visitors. In 2011, our great-granddaughter, Allison Welch became a park volunteer. At the time, she was 6 years old. She became the youngest volunteer for the park while Willis Keys was the oldest.

Cathy Johnson, Manager, Black Rock Visitor Center

This is my third season working for the Joshua Tree National Park Association at the Nature Center in the Black Rock campground. During this time, I have been able to greatly increase the amount of merchandise in the gift shop. Because of the increased assortment of merchandise and that the Black Rock campground caters to families, we have increased the gift shop sales by 300%. Working in the gift shop has enabled me to meet and talk to people from around the world and share with them what I have learned about the park. This is my best job ever!

Janice Morrow, Ranger at Black Rock Nature Center/Campground say this about Cathy, “I work with Cathy Johnson at the Black Rock Nature Center. It has made big a difference having a full-time Association person take ownership of the gift shop. Cathy is good at maximizing the space and bringing in more merchandise. She also has a good sense of what customers would like, because of this she has greatly increased our sales here at The Black Rock Nature Center. The Nature Center has become increasingly busy in the last few years and having Cathy here is invaluable. She has the ability to help out where ever she can and fits seamlessly into the NPS team. I often call her “Ranger” Cathy as she jumps in and assists visitors assimilating information when I am with another visitor or in the campground. Having lived locally for many years she has insight into the local area and the park that not everyone would have. On a personal level, I really enjoy working with Cathy. She has a positive attitude and a great work ethic that creates a wonderful work environment!”

Patty Somerville, Administrative Assistant, Joshua Tree National Park Association

I started working for the Joshua Tree National Park Association a year and a half ago as an Information Specialist at the Joshua Tree Visitor Center. Sharing my love and knowledge of the park to all of the national and international visitors was a great experience. Recently, I was promoted to work in the Association’s headquarters where my new duties include working as the Desert Institute assistant and I manage the Association’s membership programs, among other projects. I still get to work in the visitor center at the Oasis of Mara so that I can continue to serve the visitors!
The National Park Service (NPS) supports scientific inquiry within the boundaries of protected areas, recognizing the unique values parks can provide as learning centers and laboratories. Joshua Tree National Park (JTNP) further acknowledges this opportunity, stating the park “… offers unparalleled opportunities for research of arid land ecosystems and processes, adaptations of and to desert life, sustainability, and indications of climate change. The proximity of the park to urban regions of Southern California and Nevada enhances its value for scientific research and education.” (Foundation Statement 2015).

Here are four research programs that the Science and Resource Stewardship Division are actively pursuing:

**Analysis of Site Specific Microclimate Variability in Joshua Tree National Park** with Ryan Heintzman, Arizona State University. This project is supported by the Joshua Tree National Park Association’s Robert Lee Scholarship Program, a competitive grant supporting priority park research. This project examines localized changes in temperature, humidity, and wind and associated impacts inhibiting and altering the movement and growth of plants, animals, and visitors. This research will determine the variability and intensity of microclimates within Joshua Tree National Park, using both available climate information and new climate monitoring stations. Findings will illuminate distinct effects of environmental change for use in cultural and ecological stewardship.

**Wilderness Rock Climbing Indicators and Climbing Management Implications in the National Park System** with Kate McHugh, Northern Arizona University. Grand Canyon and Joshua Tree National Parks serve as case study areas for climbing impact monitoring in wilderness. This research is signifi-
cant because it contributes baseline information about climbing use in parks and identifies climber-caused changes to the landscape, such as increased erosion, placement of fixed anchors, and loss of vegetation along travel routes. Land managers can utilize this research to make informed decisions about management actions by understanding the actual, quantifiable effect of climbing activity on the landscape. The goal of this study is to develop a simple and adaptable climbing impact monitoring program for application in other park units, and provide data for management decisions regarding climbing use in National Park Wilderness. Ms. McHugh is also participating as a 16-week Wilderness Fellow at the Joshua Tree and in between school and research serves as a backcountry ranger at Grand Canyon.

**Understanding Strain Accumulation and Transfer Between the Southern San Andreas Fault, San Gorgonio Pass, and the Eastern California Shear Zone: Geologic and Geodetic Observations Along Faults of the Eastern Transverse Ranges, CA** with Katherine Guns, University of Arizona. The Southern San Andreas Fault is a critical component of the North America-Pacific plate boundary deformation, yet, its behavior as it enters the San Gorgonio Pass region along the Mission-Mill Creek section at the northern end of the Coachella Valley remains enigmatic. Even more perplexing is the lack of recent seismicity in Coachella Valley, compared with the recent seismic activity within the Eastern California Shear Zone, including the 1992 Mw7.3 Landers, Mw6.1 Joshua Tree, and the 1999 Mw7.1 Hector Mine earthquakes. This study will calculate never-before gathered geologic slip rates for two of the left lateral faults focusing on the Blue Cut and the Smoke Tree Wash faults. Twelve semi-continuous GPS stations will be deployed to collect position information for sites of the Joshua Tree Integrative Geodetic Network. By incorporating both geologic slip rate information and updated geodetic modeled velocities and positions we will be able to create and test multiple possible fault block models for the region, in order to better understand the regional kinematic system, as well as shed light on the possibility of strain transfer through Joshua Tree National Park.

**Preserving Park in a Changing World: Management Challenges, Visitor Choice, and Preservation Policy at Joshua Tree National Park and Beyond** with Michelle Sullivan, Arizona State University. Joshua Tree National Park has become somewhat of a poster child for environmental change that threatens the park’s focal species. The park is also threatened by pollution, invasive species, fire, and habitat destruction. The first step is collecting qualitative data regarding management options and responses to environmental change in the park. The second stage involves a second focus group with visitors to Joshua Tree National Park to discuss the impacts of environmental change, including how visitors perceive impacts. Research questions include: 1) how will park visitors respond to potential changes imposed on the park by expected Anthropocene conditions? 2) how will park visitors respond to potential changes imposed on the park by expected management actions? and 3) how will visitors make tradeoffs among proposed management strategies and scenarios of environmental change?

To learn more, visit the NPS Research Permit and Reporting System at irma.nps.gov/rprs/ where you can find links to over 500 research projects permitted at JTNP since 2000.

Article by Jane Rodgers
Division Chief, Science and Resource Stewardship
Thank You to Our Supporters!

The Board of Directors and staff of Joshua Tree National Park Association extend our gratitude to the following supporters for their recent donations and memberships of $50 or more (as of December 31, 2017):

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JOIN US IN SUPPORTING JOSHUA TREE!

Your support is critical to maintaining the beauty and integrity of Joshua Tree National Park's unique ecosystems. The Joshua Tree National Park Association has been the park's non-profit cooperating partner since 1962, with a mission to assist with natural and cultural resource preservation and educational activities of Joshua Tree National Park. Programs and projects that cannot be achieved through federal funds and personnel are made possible through the Joshua Tree National Park Association. We offer several ways for friends of Joshua Tree National Park to get involved and make a valuable contribution toward preserving this national treasure for future generations.

**MEMBERSHIP**

As a member of the Joshua Tree National Park Association, you will help the park achieve its education, interpretive and research goals. Your membership supports education materials for students, the park’s library and historical collection, and scientific research.

**Membership benefits include:**
- 15% off merchandise at Joshua Tree National Park Association Visitor Center bookstores
- $10 off Desert Institute classes
- Invitations to special events
- Reciprocal discounts at association bookstores at most other National Parks
- Membership sticker to show your support
- *Keys Views* newsletter

Additional premiums come with our appreciation for your support as a Supporting, Patron, Contributing, Sustaining and Benefactor levels. Full details are available on our website and membership brochure, or by calling our office at 760-367-5535.

**THE LEGACY FUND**

Your donation to the Legacy Fund goes to fund expenses that have been identified as priorities by the Park Superintendent. We are happy to help donors select a project that matches their interests - possibilities range from support for the Artist In Residence program or Junior Ranger education, to trail and exhibit construction or purchase of equipment for the park’s popular Night Sky program. Fully 100% of your tax-deductible donations to the Legacy Fund benefits Joshua Tree National Park.

**VISITOR CENTER BOOKSTORES**

Joshua Tree National Park Association operates bookstores in each of the Park’s four Visitor Centers. Sales in our stores account for a significant portion of the Association’s revenues, and our non-profit mission means that proceeds from our sales support natural and cultural resource preservation and educational activities of Joshua Tree National Park. Revenues from the very popular Legacy collection go directly to support the Legacy Fund.
The Joshua Tree National Park Association is a not-for-profit organization formed to assist with preservation, education, historical and scientific programs for the benefit of Joshua Tree National Park and its visitors.

Nowhere else we’d rather be!