Central America to Alaska via Joshua Tree
By Dennis Vasquez

Cycles in nature are a reassurance that all is well with the world. The sun rises, the sun sets. Leaves and flowers bud, leaves drop off and flowers ripen into fruit or seed pods. Orion appears every winter in the night sky. Fall and Spring arrive on the wings of flashy colored birds, like warblers, orioles, and tanagers.

These flashes of color are a refreshing sight in desert environments that usually display more subdued tones. Many of these birds are neotropical migrants, species that spend ten to twelve months of the year on their wintering grounds in Latin America and the Caribbean. Even though we sometimes refer to these species as "our" birds, these migrants spend almost two-thirds of their lives south of the United States. Studying them within this global perspective can provide remarkable insight.

One example of a neotropical migrant is the Townsend's Warbler, a bird that can be found nesting high-up in fir trees and other conifers from Washington to southern Alaska. This small bird, identifiable by the black and yellow pattern of its head and with a black cheek patch and yellowish underparts, is a fairly common migrant through Joshua Tree National Monument during the spring.

In the 1950's, Fr. Alexander Skutch, the preeminent authority on Central American birds, described the Townsend's Warbler as the most abundant of all birds in the higher elevations of the Sierra de Tocpan in west-central Guatemala. It was also considered abundant in the "mountainous and unsettled parts" of Washington during this period.

During migration, Townsend's Warblers are frequently seen at lower levels in trees and shrubs. As Townsend's Warblers stop to rest and feed on insects at Joshua Tree, they can be found in pinyons and oaks at Black Rock Canyon and Barker Dam, and in mesquite and cottonwoods at the Oasis of Mara in Twentynine Palms. Most observations of this species at Joshua Tree have been in April and May as the birds are about mid-way along their north-bound migratory route. In the fall, they may take a different course that would provide more food.

It's been said that migratory birds are a shared biological and cultural heritage of every country though which they pass. The condition of migratory bird populations provides clues to the quality of the earth's environments. As bird habitat worldwide is further threatened by development, national parks and other refuges for wildlife will become more important as stopover places for migratory birds to feed and rest.

In our attempts to understand the workings of the world, we sometimes need to focus on the small things in order to gain an insight on the larger things. Pull out your binoculars this fall and spring season and focus on one of the most fascinating cycles in nature — bird migrations.
New nature trails and amphitheaters

Park Superintendent Rick Anderson announced the completion of two nature trail rehabilitation projects and the construction of two new amphitheaters. With the combined effort of the California Conservation Corps and the Youth Conservation Corps crews at Joshua Tree National Monument, the rehabilitation of the Skull Rock Nature Trail and the Arch Rock Nature Trail have been accomplished within the last year. Over the summer, the monument maintenance staff completed the construction of amphitheaters at Jumbo Rocks Campground and Indian Cove Campground.

The Arch Rock Nature Trail, a quarter of a mile loop, begins at the White Tank Campground and goes to a granite arch before returning to start. The trail signs interpret the geological processes in action at Joshua Tree. The Skull Rock Nature Trail, a 1.7 mile loop, begins from the back loop in Jumbo Rocks Campground, goes to Skull Rock, crosses the road and parallels the road to the entrance of the Jumbo Rocks Campground. The new interpretive trail signs illustrate the rich biological diversity of Joshua Tree.

Two new amphitheaters will be in operation this fall and spring at Jumbo Rocks Campground and Indian Cove Campground as park naturalists present evening campfire programs.

Superintendent Anderson invites you to take the self-guiding walks or join a ranger for an evening program and make use of the new facilities.

Naturalist exchange

On Saturday, November 10, Joshua Tree Naturalist Rick McIntyre and State Park Naturalist Mark Jorgensen of Anza-Borrego Desert State Park will exchange assignments. McIntyre will present interpretive programs at Anza-Borrego, and Jorgensen will present a nature walk and an evening program at Cottonwood Springs.

Joshua Tree National Monument and Anza-Borrego Desert State Park are units of the Mojave and Colorado Deserts International Biosphere Reserve. This naturalist exchange program is being conducted in a spirit of cooperation between the two agencies so that park visitors can better understand the ecological significance of the California desert region.
SOME HIKING TRAILS IN JOSHUA TREE NATIONAL MONUMENT

<table>
<thead>
<tr>
<th>TRAIL DESCRIPTION</th>
<th>TRAIL</th>
<th>STARTING POINT</th>
<th>ESTIMATED ROUND TRIP HIKING DISTANCE, TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geologic processes in action at Joshua Tree National Monument</td>
<td>Arch Rock Nature Trail</td>
<td>White Tank Campground</td>
<td>0.4 miles 20-30 minutes</td>
</tr>
<tr>
<td>Several stands of fan palms, evidence of past fires, and pools of water are found at the Oasis. Moderately strenuous.</td>
<td>49 Palms Oasis</td>
<td>Parking area in Canyon Road, 4 miles west of 29 Palms off Highway 62</td>
<td>2.8 miles 2-3 hours</td>
</tr>
<tr>
<td>Elev. 5,470 feet. View of Lost Horse, Queen and Pleasant Valleys. Strenuous.</td>
<td>Ryan Mountain</td>
<td>Ryan Mountain Parking Area or Sheep Pass Campground</td>
<td>3.0 miles 2-3 hours</td>
</tr>
<tr>
<td>Elev. 5,178 feet. Ten stamp mill and foundations. Moderately strenuous.</td>
<td>Lost Horse Mine/ Mountain</td>
<td>Parking area 1.2 miles east of Keys View Rd.</td>
<td>3.5 miles 3-4 hours</td>
</tr>
<tr>
<td>A canyon with many groups of palms. A side trip to Victory Palms and Munsen Canyon involves boulder scrambling. Strenuous.</td>
<td>Lost Palms</td>
<td>Cottonwood Spring or Campground</td>
<td>7.5 miles 4-6 hours</td>
</tr>
<tr>
<td>Rich biological diversity</td>
<td>Skull Rock</td>
<td>Back loop in Jumbo</td>
<td>5 miles 1 hour</td>
</tr>
<tr>
<td>Elev. 3,371 feet. Fine views of Hexie Mts., Pinto Basin and Salton Sea. Moderately strenuous.</td>
<td>Mastodon Peak</td>
<td>Cottonwood Spring or Campground</td>
<td>3.0 miles 2 hours 4.0 miles</td>
</tr>
<tr>
<td>Scenic trail through the westernmost edge of the Wonderland of Rocks. Strenuous.</td>
<td>Scout Trail</td>
<td>Indian Cove Area or ½ ml. east of Quail Springs Picnic Area</td>
<td>13 miles 1-2 days</td>
</tr>
</tbody>
</table>

Thirty-five miles of the California Riding and Hiking Trail pass through the Monument. Access to the trail is available at its junction with Covington Flat, Kay's View, and Squaw Tank (Geology Tour) roads, at two places along Park Route No. 1, and at Ryan Campground. This allows for shorter hikes of 4, 6.7 or 11 miles. Two to three days are required to hike the entire length of the trail.

Joshua Tree Weather
Bob Raver

Weather patterns around Joshua Tree National Monument usually differ from those experienced on the California coast; however, they are closely related. We often get call from people living in the Los Angeles area inquiring about the status of the weather in Joshua Tree National Monument. Usually these calls are made during periods of stormy weather when people are looking for a place to escape to drier conditions.

Lying just a few miles west of Joshua Tree National Monument is the San Bernardino Mountain Range. This 11,000 foot range (located just east of San Bernardino) effectively reduces the amount of moisture that passes east of its peaks. Precipitation west of the San Bernadinos averages 13 inches per year, but east of the range is reduced to 4 inches.

The weather experienced in the Los Angeles area can be used to predict the weather at Joshua Tree National Monument. If Los Angeles receive a light to moderate storm, most likely Joshua Tree National Monument will remain dry. Whereas, if Los Angeles experiences a heavy or prolonged storm system, the Monument will get rain or possible snow in the winter.

| THE WEATHER |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Month          | Average Maximum Temperature | Average Minimum Temperature | Average Precipitation | Average Humidity |
| JAN             | 62.0             | 35.1             | .49              | 30.7            |
| FEB             | 67.2             | 38.3             | .31              | 25.0            |
| MAR             | 72.5             | 42.0             | .35              | 21.2            |
| APR             | 80.7             | 48.9             | .10              | 17.8            |
| MAY             | 89.9             | 56.6             | .07              | 14.5            |
| JUN             | 99.1             | 64.2             | .02              | 13.2            |
| JUL             | 104.7            | 71.5             | .66              | 17.9            |
| AUG             | 102.8            | 70.2             | .73              | 20.0            |
| SEP             | 96.7             | 63.4             | .46              | 17.2            |
| OCT             | 84.5             | 52.7             | .36              | 19.9            |
| NOV             | 71.2             | 41.5             | .31              | 29.9            |
| DEC             | 63.1             | 36.0             | .51              | 35.8            |

The above data were compiled from records maintained over a fifty year period ending in 1988. Readings were taken at Twentynine Palms Oasis (elev. 1960 feet) and at higher elevations in the Monument where temperatures average approximately 11 degrees lower and precipitation 3.5 inches greater annually.
Inholdings: Private islands within public lands

By Caryn Davidson, JNHA

The smallest non-federally owned parcel of land within the monument is the 1/12 acre inside the Keys Ranch (which is itself now owned by the National Park Service), containing the Keys family cemetery. This fenced-off land is owned by San Bernardino County, pursuant to regulations that stipulate when and who the country must provide such facilities. The largest privately-owned inholding is called the Cohn Ranch, which lies north of the Lost Horse Ranger Station, just beyond those "Private Property" signs. This working ranch, which operates without many modern conveniences (it has no telephone lines and relies heavily on electricity acquired from photo-voltaic cells), once belonged to Harry Cohn, the founder of Columbia Pictures. This ranch, along with the Randolph property, is the only inholding currently housing year-round residents.

Although these inholdings may be sold to buyers other than the federal government, the National Park Service is an understandably avid pursuer and purchaser of any lands lying within the monument which may be put up for sale. It has a clear advantage over other prospective buyers because it has several means of acquisition at its disposal. Besides outright fee title purchase, the Park Service may acquire inholdings through exchange (of like-valued federally-owned land outside the park for land within the park); "friendly condemnation" (whereby the landowner is cleared of any payment obligation, and the land becomes the property of the National Park Service); occupancy right (which pays the living owner/occupier 1% of the land's appraised value multiplied by the number of years the owner is expected to live; when the owner dies, the land becomes the property of the park); donation (to the National Park Service by the landowner); and, finally, by a "declaration of taking" (perhaps the most contentious means, used only in extreme cases, whereby the National Park Service takes over ownership outright without any payment involved.)

This gives the Park Service six discrete ways in which it may acquire inholdings, which may explain why between the years 1936-1990, the size of inholdings within our park has shrunk from 52,000 to 10,000 acres.

For those individuals fortunate enough to own land within the monument, restrictions apply as to how that land can be used. Unimproved land must remain so. However, pre-existing structures which are damaged or lost (due to fire, rain, etc.) may be replaced. Interestingly enough, this land may be used for commercial purposes (the Keys family intended at some point to open a dude ranch on their property) unless the owner insists on making illegal improvements to it, in which case the land may become vulnerable to a "declaration of taking." This is a risk few property owners care to take.

When an individual owner decides to sell an inholding, it may be purchased by another individual. If the National Park Service is a potential buyer, it contracts with an independent appraiser who determines the property's "fair market value" and is required to pay a specified percentage over and above this amount, which usually assures a satisfactory deal for both parties. This process generally takes one year to complete. In some cases, the Nature Conservancy acts as an intermediary between a private seller and the Park Service, because the Conservancy is able to act quickly — it has the assets readily available to purchase property, with an eye to reselling it to the National Park Service at no profit.

The next time you notice those "Private Property" signs within the monument you will better understand what lies behind them — and, possibly, what the future may hold for these anomalous inholdings, the non-federally owned lands within our national parks and monuments.

THE BIG CAT

Have you ever seen a big cat? The real big one? Yes, it could be possible to see a mountain lion in Joshua Tree National Monument, but it would be a rare, special sighting. The tawny, grey-brown mountain lion (Felis concolor), also known as the puma, cougar or panther, inhabits Joshua Tree National Monument and the surrounding region. On occasions, while making its rounds from food source to water supply and back again, these chiefly nocturnal animals, will occasionally be abroad during the day and have been observed by park visitors and employees.

On May 24th of this year Resource Management Rangers discovered the remains of three dear killed by a mountain lion over a period of several years in one of the remote canyons of the Monument. This is an area where there is a constant water supply and obviously an ideal spot to lie in wait for a mule deer. These deer are usually located within an easy walking radius of springs or water supplies and in this desert environment water sources are limited, which makes the few good sources ideal spots for mountain lions to visit. Another park visitor reported hearing a cat cry in the Willow Hole area of the Monument in May of this year also.

Over the past twenty years an average of about two observations a year have been turned in on mountain lion sightings in the Monument, and often reports are received of large 4 inch long cat tracks being spotted. For comparison, a bobcat track is usually only about 2 inches in length. Another comparison is that a walking mountain lion track will usually be about 20"-22" from one foot print to the next, whereas bobcat tracks will be about 10"-12" apart. Standing about 26" to 31" high at the shoulders and measuring 42" to 54" in length, adult mountain lions will weigh between 80 and 150 pounds. An adult bobcat usually weighs less than 35 pounds.

Since mountain lions are here, why don't we see them more often? We know that they are present. However, their range within individual territories may often be more than one hundred miles, which means that one individual could be in the San Bernardino National Forest one week, in Joshua Tree National Monument the next, and in the Sheep Hole Mountains the next. In 1986 there was a call from a Wonder Valley resident (10 miles east of 29 Palms) reporting a family of mountain lions in the mountains north of his home. This individual was concerned for his pets. Even though mountain lions primarily feed on deer, small rodents and hares and rabbits, they will take a domestic animal if one is found roaming free. These big cats are a part of the natural scene. However, they are opportunistic feeders. The Cottonwood Springs area and the Little San Bernadino Mountains are areas of frequent sightings. Visitors have reported big cat sightings from almost all areas of the Monument. Wildlife populations know no boundaries. They are free to roam, following prey throughout the Monument and beyond its boundaries.

Visitor Center hours and naturalist activities

The Oasis Visitor Center in Twenty-nine Palms is open from 8:00 a.m. to 4:30 p.m. daily except Christmas Day. The Cottonwood Visitor Center is open year round with occasional closures. The Black Rock Canyon Visitor Center is only open October through May.

Beginning October 26, ranger guided activities will be offered on weekends. Evening camping programs will be presented on Friday and Saturday nights at Cottonwood, Jumbo Rocks, Indian Cove, and Black Rock Canyon. Ranger guided walks and talks will also be conducted on weekends. Consult campground bulletin boards and visitor centers for current schedules.

Guided tours of the Desert Queen Ranch will be offered on Saturdays and Sundays at 9 a.m., 11 a.m., and 1 p.m. beginning on October 21. The tours are provided by the Joshua Tree National Historical Association at a cost of $2.00 for adults and $1.00 for children ages 6 to 15. Tours meet at the gate to Key's Ranch, a short distance from the Hidden Valley Campground.

Astronomy programs featuring telescope viewing of the desert night skies will be held at the Cottonwood Campground Amphitheater and the Hidden Valley Picnic Area. See the star program schedule in the article entitled "Searching the Night Sky for Comets" in this issue.

For current program schedule and topics during the fall and spring, contact the Visitor Centers or check campground bulletin boards.
Searching the night sky for comets

By Roger Howell

When Comet Austin was first seen in December 1989 by New Zealand amateur astronomer and comet hunter Rodney Austin, no one thought it was going to be anything special. But as continued sightings of Comet Austin poured in and professional astronomers computed the new comet’s orbit around the Sun, it quickly became apparent that Comet Austin would be visible to the unaided eye in the Spring of 1990. Sure enough, Comet Austin Fever afflicted the sky watchers of Joshua Tree National Monument this past April and May. Many sightings were reported and of the people gazing upward were pleased. However, sometimes over-

COMET HALEY, MARCH, 1986

heard was the phrase, “Is that all there is?” How reminiscent of that vintage Peggy Lee classic! Well, what did you expect? What does a comet look like anyway? Better still, what is a comet? Have you ever wondered?

People often confuse comets with shooting stars, but they are quite different things. Whereas a shooting star (an astronomer would call it a meteor) appears as a brief streak of light blazing across the sky, a comet looks like a hazy smudge hanging in the sky. Luiss star-gazers wishing to achieve heightened levels of pure excitement have to be aware of how to best view a comet. Have you ever wondered?

As the comet-ary snowball of frozen gas and dust that move on highly elongated orbits around the sun, usually taking hundreds of years to complete one circuit. A comet’s movement across the starry background of the sky is so slow that it is noticeable only from night to night. At least a dozen comets are seen each year all over the world. About half of these are previously known comets returning toward the sun, while the others have never been charted before.

Most comets are too faint to be seen with a telescope. Only rarely, perhaps every ten years or so, does a comet become bright enough to be seen with the naked eye. Bright comets like Comet Austin, Comet West or Comet Haley can be awesomely beautiful. As the cometary snowball nears the sun, it begins to melt. The melting bits of comet stuff form the tail which always points away from the sun. As the dusty tail begins to spread out in space, some of it eventually is swept up by the Earth and enters the atmosphere! These bits of comet tail dust burn up immediately due to friction upon entering Earth’s atmosphere. This is what causes most of the shooting stars that are spotted nightly at Joshua Tree National Monument.

If you would like to do some comet hunting, planet watching, or shooting star gazing, astronomy programs will be presented during the fall and spring.

Star talks at Cottonwood Campground Amphitheater:
- Sat., Oct. 27, 7 p.m.
- Sat., Nov. 24, 7 p.m. Thanksgiving weekend.
- Sat., Feb. 23, 7 p.m.
- Sat., Mar. 16, 7 p.m.
- Sat., Apr. 13, 8 p.m.
- Sat., May 4, 8 p.m.

Stargazing sessions at the Hidden Valley Picnic Area:
- Sat., Oct. 9, 7:30 p.m.
- Sat., Nov. 24, 7 p.m. Thanksgiving Week.
- Sat., Feb. 9, 6 p.m.
- Sat., Mar. 9, 7 p.m.
- Sat., Apr. 13, 8 p.m.
- Sat., May 25, 8 p.m. Memorial Day weekend.

Monument rock climbers cooperate

Almost every visitor to Joshua Tree has seen rock climbers on the numerous rock formations found throughout the park. It may come as a surprise to the average visitor however, that the Joshua Tree Monument is one of the most popular climbing areas in the country, if not the world. With moderate temperatures eight months of the year, and the 3,500 different climbs to try, Joshua Tree is a climber’s paradise. While no formal survey has been done (one is in the planning stages now), it is acknowledged that a large percentage of Joshua Tree’s visitors are climbers.

Parks throughout the country have been faced with dramatic increases in visitation in recent years, and the Monument is no exception. As popularity increases, the resources for which this park was set aside become more impacted. The Access Fund, a non-profit climbers’ organization, has been working across the country to address issues of concern to land managers and climbers.

Recently, Joshua Tree National Monument has cooperated with the Access Fund to complete the following projects.

Joshua Tree Climbers’ Brochure.

To inform climbers of ways to reduce impacts on park resources, the Access Fund and Monument staff have written an informational brochure to be handed out at park entrance stations, visitor centers, and local climbing shops. The Access Fund is paying for the initial printing of 35,000 copies of this handout.

Climbers’ Access Trails.

In an effort to reduce damage to plants and soil, the Access Fund has purchased a supply of Carosite trail marking posts. Park staff will install the trail markers to identify primary routes from climbing areas to the base of rock formations, and eliminate the numerous social trails which have been developed. It is hoped these markers will keep everyone on designated paths, and allow the vegetation to grow back in the disturbed areas.

Additional Outhouses.

Three outhouse units have been purchased by the Access Fund and have been installed at Echo Tee, Wonderland Ranch, and Saddle Rock, all popular climbing areas. All three sites were approved by park archaeologists, plant specialists, and the maintenance staff. After bids were gathered, a local contractor was awarded the project, which included installing three 750 gallon tanks, pouring cement slabs, and installing the outhouse structures. All work was done under the supervision of park staff, to insure that the work met National Park Service standards.

Park managers are pleased with the help climbers have provided through the Access Fund and look forward to continuing cooperation. In the meantime, park visitors can rest assured that steps are being taken to preserve the special qualities of Joshua Tree, both by park staff and concerned groups.
TARANTULAS of Joshua Tree National Monument

By Thomas R. Prentice

(Tom Prentice is a graduate student at the University of California-Riverside doing research work on tarantulas.)

Tarantulas are among the most primitive of all the spiders. They include the largest members of the spider family. All U.S. tarantulas are burrowers, either utilizing existing holes or excavating their own burrows. These tarantulas range in body size from small species of 11 or 12mm (less than 1/2 inch) to very large species of nearly 75mm (3 inches). Approximately 30 species from this country, all of a single genus, *Raorchestes*, are currently cataloged, three of which reside in Joshua Tree National Monument. All lead a solitary life. Females have been known to live up to 25 to 30 years. Males, who mature at roughly the same age as females (8 to 10 years of age), generally die within a year of maturation. If undisturbed, a female may occupy a single burrow for a lifetime, gradually enlarging it to accommodate her increasing size. Males, on the other hand, become vagrants when mature, wandering in search of females during their breeding season.

Tarantulas are nocturnal in habit, emerging from their burrows shortly after dark. They move only short distances from their burrow, relying on ground and airborne vibrations to detect prey items wandering by. Their diet mostly consists of insects, especially ground beetles, the husks of which are often found in their burrows.

All spiders increase their size through a molting process in which the hardened exterior skeleton is shed and replaced by a new one which will swell and harden. Lost appendages, hairs, and spines will be regenerated through this process.

Tarantulas are very striking in appearance, both in size and hairiness. Due to these factors, they draw a good deal of attention, much of which is negative. Misconceptions have arisen concerning the potency of their venom, their disposition, and their athletic ability, creating attitudes which still prevail in much of our population. Their bite, although physically painful, generally produces little else than minor irritation, providing there is no allergic reaction, such as occurs in some cases of bee stings. However, all U.S. tarantulas possess a patch of poisonous, irritating hair on the posterior half of the abdomen. When disturbed by vertebrates, including man, they scrape these hairs off into clouds with their hind legs as a defensive measure. Upon contact with mucous membranes, such as eyes, nose, and throat, these hairs are extremely irritating and can temporarily blind a mammal. Contact with human skin can cause welts, swelling, hives, and intense itching. Tarantulas are not running spiders, nor can they leap great distances. Due to their body structure, jumping more than one or two inches is physically impossible, and although the long-legged males can run very rapidly for short distances, these dashes are reserved for escape behavior alone. Much shorter dashes of less than six inches are all that are needed to capture prey.

Tarantulas do have enemies besides man. The most notable of the tarantula hawk is this solitary wasp which is a member of a family of wasps which exclusively hunts spiders. Wasps of different species often hunt tarantulas of different species. The wasp paralyzes the spider with its sting, lays an egg on the paralyzed body then seals the spider in the spiders burrow or in one of its own making. The wasp larva consumes the entire parasitized spider during its growth to the pupal stage of its metamorphosis.

Joshua Tree National Monument contains three known species of tarantulas: *R. radinum* and *R. marxi* which breed in the fall months and can be seen during the day from mid-September until December, weather permitting. Eggs are laid by all three species generally in spring or early summer, with young emerging from the egg case 5 to 8 weeks later. Egg sacs of the large species may contain more than 500 eggs, while at least 50 eggs have been counted in the sacs of small *R. radinum* females and at least 30 young have been counted in the burrows of *R. marxi* females. This estimate for *R. marxi* is probably conservative.

Joshua Tree National Monument creates most of the northern boundary for *R. radinum* and probably is one of the few refuges for this species in the U.S. The Monument also forms the extreme southeastern range of the *R. marxi* population. The ranges of these two small species do not appear to overlap. The large species is found outside the Monument extending in all directions and its range inside the Monument overlaps the ranges of both small species.

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