Planning your Kitt Peak visit

Kitt Peak’s telescopes may be your incentive to plan a visit, but there are lots of other things to know and see. By taking time to plan, you can make your trip even more interesting, educational, and fun. Spectacular sights around nearly every bend on the winding road to Kitt Peak National Observatory make the trip truly enjoyable. The road is banked by steep walls of bright granite that seasonally sport torrents (or trickles) of runoff from rain and snow. A variety of mountain mammals, birds, reptiles, and insects all congregate around water, and scour the landscape for food.

How to get there
Kitt Peak National Observatory is 56 miles southwest of Tucson in the Quinlan Mountains (70–90 minutes total driving time, depending on your point of departure in Tucson). From Interstate 10 near Tucson, take Interstate 19 South to Exit 99 (Ajo Way/Highway 86). Follow Highway 86 southwest through the Tohono O’odham Reservation, past Three Points. Continue to Junction 386 (Kitt Peak road); turn east to travel up the mountain to the Visitor Center.

Photo by GBA.
2 A Visitor's Guide to the Kitt Peak Observatories

Special considerations

Hours. The mountain road up Kitt Peak is open from 9 a.m. to 4 p.m. daily, except on Thanksgiving, Christmas, and New Year's Day. All visitors except those in scheduled observing programs must depart the mountain by 4:00 p.m. Visitor Center hours are 9 a.m. to 3:45 p.m.

Health and high elevations. The elevation in southeastern Arizona increases steadily south toward Mexico, then rapidly in the 12-mile drive from the junction, SR 386, to Kitt Peak Visitor Center at 6800 feet. People with respiratory and/or cardiac difficulties or concerns should contact a physician before visiting mountaintop elevations.

Recognize and respond to symptoms of possible elevation-related health risks including shortness of breath, dizziness, nausea, lack of appetite, fatigue, listlessness, confusion, or difficulty in decisionmaking: descend immediately to a lower elevation. Avoid heat-related illnesses by drinking plenty of water, staying cool, and not overexerting. Some paths to telescopes may include steep or uneven footing. Wheelchairs are available at the Visitor Center. For emergencies, dial 911.

Restrictions. Respect quiet zones around dormitories as most Kitt Peak astronomers work during the night and sleep during the day. Please respect restrictions on public access. No cellular phone or radio transmissions are permitted on Kitt Peak, because they interfere with the sensitive electronic equipment.

No services on Kitt Peak. No medical services, food, or gas are available on Kitt Peak, but small stores on SR 86 at Three Points and at the junction of the road north to San Pedro on the Tohono O'odham Reservation have both; business hours may vary, so plan well ahead. Many people bring
lunch to enjoy outdoors at the Visitor Center, or at the picnic grounds adjacent to the Very Long Baseline Array (VLBA) telescope. A group picnic area, restrooms, and potable water are located on the picnic grounds. No camping or campfires are allowed anywhere on the mountain at any time.

*Driving the roads.* Be a defensive driver, alert, focused, and aware of the additional hazards of mountain driving, as well as the usual highway hazards. Loose rocks often fall on the road. Turn on your headlights. Highway 86 has a speed limit of 65 mph, and runs through Pima County and onto the Tohono O’odham Reservation. Local law enforcement includes the Tohono O’odham Tribal Police, the Arizona Department of Public Safety (DPS), and the Pima County Sheriff’s Department. Watch for wild and domestic animals along roadways. “Open range” country means cattle may wander into your path. Slow down and be prepared to stop, but keep an eye on your rear-view mirror for drivers behind you who may not see the hazard. Coyotes, deer, javelina, and even an occasional bear or fox may dart across the road, especially during the early morning and dusk hours. Rains can trigger flash flooding. Snakes and other reptiles often warm themselves on still-warm highways as air temperatures drop during the night. The speed limit on Kitt Peak goes from 45 mph to 25 mph, but be prepared for vehicles who expect to pass. Accommodate them by using pullouts, but don’t stop in undesignated areas or on “blind” curves. Trucks, vans, and other large vehicles use the single road to the top, so use caution and stay on your side of the road. Roadside memorials on Route 86 commemorate many people who have died on Arizona highways. Don’t be part of this sad legacy.

**Things to do on Kitt Peak**

*The Visitor Center* is a great place to start your visit. Inside are exhibits on astronomy and telescopes, regular showings of astronomy videos, and a gift shop that features Tohono O’odham native crafts including basketry and jewelry, astronomy items, books, posters; and Kitt Peak souvenirs.

*Docent guided tours* are offered at the Kitt Peak Visitor Center three times daily, at 10 a.m., 11:30 a.m., and 1:30 p.m. Tours last about an hour, beginning with a brief introductory discussion in
the Visitor Center, a half-mile walk on moderate-to-steep paths to one of three telescopes (McMath–Pierce Solar Telescope, 2.1-meter Telescope, and Mayall 4-meter Telescope). Group tours are available through advance reservation by calling (520) 318-8732. Donations of $2 per person are recommended, and well worth it. The Kitt Peak docent tours provide up-close views of telescopes; interesting information about the purpose of telescopes, their construction, capabilities, and achievements; and insight into the challenges of managing a “city of telescopes” on a dry mountaintop.

*Self-guided tours* are a fun way to see the mountain at your own pace. There is specific information about telescopes and vistas in the *Telescopes and vista/interest points* section of this book. The Visitor Center also has walking tour maps.

*School programs* (both day and night-time) are available. Call the Program Coordinator at 520 318 8440 for more information.

*Private tours* are available with advance notice for groups of 15 or more. Call the Visitor Center at 520 318 8732 to arrange them.

*Night-time public observing programs* feature two “state of the art” telescopes, available for public viewing every evening. Visitors can view planets, nebulae, and galaxies. Warm clothing is a must, even in the summer. Public observing program hours vary through the year based on sunset and weather. Fees for adults are $36, students and senior citizens (over 55 years) are $31. Reservations are required. Call the Visitor Center at (520) 318-8732 to schedule.

**“Watch outs” for motorists**
- Pedestrians and bicyclists
- Distracted, impaired, or speeding drivers
- Livestock, pets, and wildlife
- Fallen rock, especially on mountain roads
- Lightning, flash floods, “micro bursts” with high winds and rain, hail, dust storms; and winter snow and ice
- Wildfire hazard year-round
Mountaintop weather
Many people think “desert” means “hot” all the time. In fact, it freezes on mountaintops throughout the Desert Southwest during winter. This is especially important information for people who participate in night-time observing programs. Many visitors are not prepared for the much cooler evening temperatures on Kitt Peak, or the winds that kick up around and after sunset. To make your evening visit comfortable, pack layers of clothing and consider bringing a hot beverage to sip after the night program.

Lightning and rainstorms occur during the monsoon, usually early July through September. If you are caught outdoors during an electrical storm, take refuge inside a building or car. Retreat from high ground immediately.

Clothing and gear checklist
• Drinking water
• Snacks or lunch
• Layered clothing (T-shirt, long-sleeved shirt, vest)
• Brimmed hat
• Sunscreen

• Sunglasses
• Comfortable shoes
• Warm coat, hat, and gloves (especially for evening observers)
• Insect repellent
• Camera and film
Telescopes and vistas/interest points

The vistas/interest points and self-guided tour routes are color-coded to help you locate these places and telescopes more easily. A few telescopes have visitor’s galleries; most do not. Public access may be restricted at many telescopes, but visitors can use this book as an alternative to being inside. Remember that people and vehicles share the road so heed pedestrian travel signs where posted. The interpretive text begins at the base of the mountain at the first vista/interest point and ends at the picnic area on the way back down the mountain.
VIP–1 Kitt Peak and beyond
Kitt Peak lies at the north end of the Quinlan Mountains. From Kitt Peak, the Quinlan range extends southward 40 miles to the Pozo Verde Mountains, in northernmost Sonora, Mexico. Most of the Baboquivari Quinlan chain is made up of Jurassic granitic, volcanic, and sedimentary rocks, ranging in age from 190 to 145 million years. The Coyote Mountains, the small, rugged range to the east of Kitt Peak, are composed mostly of light-colored early Tertiary granite, 58 million years old. From this viewpoint, the scene is dominated by the north face of Kitt Peak, made of Jurassic granites. The Kitt Peak road climbs rapidly from the junction at 3220 feet elevation, to the mountaintop’s Visitor Center at 6800 feet elevation, winding past sheer walls of gleaming granite and affording spectacular vistas of the Sonoran Desert.

Even though the telescopes on Kitt Peak dominate the landscape, astronomers are not the only ones who frequent the mountain. The high granite peak is home to numerous plant, animal, and insect species, too. In fact, the Sonoran Desert, in spite of its “youthful” age (no more than 10000 years old), is the most diverse of any of the American deserts. Life in the Sonoran desert is dependent upon the frequency of rain, which averages around 10 inches per year at the lower elevations. However, the time at which the water is delivered also is important. The biseasonal pattern of rainfall – gentler, winter rains and more active, summer monsoons – provides not just one, but two opportunities for annual plants to grow and produce seed for the next cycle.

As you ascend the Kitt Peak access road (SR 386), the air temperature drops by 3.5 degrees Fahrenheit for every 1000 feet. In addition, the higher the elevation, the damper the climate, as the moist, ascending air cools and forms clouds that produce rain. This is the reason for changes in plant life. Kitt Peak itself receives about 18 inches of precipitation each year, both as rain and snow. It may be surprising to visitors who, comfortable in sandals and shorts while in the valley below, find themselves ill-prepared for sight-seeing in a snowstorm! Those who doubt that Kitt Peak experiences seasons other than summer need only note the
wooden chests labeled “sand” near sloping sidewalks adjacent to buildings on the mountain. These seasonal contrasts produce interesting variations in life forms, and provide some interesting challenges for astronomers who find themselves isolated on snowy, icy mountain tops (especially when trying to make their way to the cafeteria at night).

Much wildlife inhabits Kitt Peak and the surrounding area, including javelina, mule deer, black bear, coyotes, bats, and numerous birds, reptiles, and insects; however, the coatis may be one of the most interesting of all Kitt Peak mammals. Looking somewhat like long-nosed raccoons without the raccoon’s ringed tail, coatis are usually found near water, like to climb trees, and travel in groups. Not picky eaters, coatis dine on grubs, lizards, snakes, carrion, rodents, nuts, and fruits of native trees, as well as prickly pear cacti and yucca. They are probably the most visible mammals on the mountain. Even though enticed to touch them, it is not appropriate to harass wildlife, for their protection and yours!

The Saguaro, king of the Desert
Arizona’s official state cacti, the saguaro (Carnegia gigantea), can grow to 40 feet or more, and first flowers when about 6.5 feet tall (36 – 69 years old, depending upon the site). While there is no exact way to tell how old a cactus is just by looking, most saguaros produce their first branches at a height of 15 – 16 feet (approximately 55-100 years old, depending upon the site). They reach full height between 175 and 200 years, making them among the most venerable and beloved plants in the Sonoran Desert.
VIP-2 Road to the top of Kitt Peak

Now an easy drive for passenger cars, no such summit road existed in 1956 for scientists who conducted site tests for the country’s first National Observatory. Truck access during the early years of telescope construction was funded by Pima County, and consisted of bulldozing a trail from the mountain’s base at Alambre Valley to the summit.

This proved to be a dangerous route even during favorable weather. In 1959, a contract was let for new access road construction, and in 1963, Kitt Peak’s new highway, State Route 386, was opened for public use. The 12-mile journey from base to summit includes grades to 6 percent, a breezy drive indeed, considering the old access road’s steep grade but don’t be lulled into complacency; road crews keep busy clearing away rock that falls onto narrow stretches and blind curves.

VIP-3 Kitt Peak Visitor Center

The Visitor Center, completed in 1964, is a great first stop after you reach the top of the mountain; it provides a chance to get oriented, learn more about astronomy on the mountain, pick up souvenirs, and check out guided tours.
The giant "donut" west of the Visitor Center, in the public parking lot, is a concrete double of the 4-meter Mayall telescope mirror. During assembly of the telescope, the concrete "mirror" served as a safe surrogate for the real one, mimicking its dimensions and weight. The real mirror, cast by Corning glass engineers, was the largest disk of its kind to be produced at that time by the then-new "sagging" method in which large pieces of glass were placed into a mold and then melted. The 4-meter mirror was the second largest in the world at the time of its first light in 1973.

Mosaic. The colorful tile mosaic on the southern exterior wall of the Visitor Center, created by Juan Baz of Mexico City, represents two distinct Mayan aspects of ancient astronomy. Our solar system is depicted above a schematic of the El Caracol (the snail) observatory (c. AD 850–950) located in Chichen Itza, Yucatan, Mexico. The observatory's round stone dome has open niches skyward, designed for humans without telescopes who undoubtedly spent much time observing their god, Venus. Stylistic sun, moon, and planets grace the skies, as does a circular disk, a bird's eye view of the dome. The cardinal directions are depicted in Mayan glyphs (south to the right; east to the top).

The mosaic's top left corner contains an exact replica glyph from a stela erected in Yucatan's southern lowland city of Yaxchilan, proclaiming the end of the Mayan period around 766 AD. Two cartouches containing the ruler Bird Jaguar (left) and his wife Lady Ik Skull (right), are separated by a "jester" god. In the torches' flames appears the face of Shield Jaguar, Bird Jaguar's deceased father, an hallucination likely brought on through ceremonial blood letting. The top half of these "ancestor"