



## **Mountain Travel and Habitat**

Steward Observatory operates telescopes, labs, shops and other facilities on several mountains in Southern Arizona. Each of these sites have the potential for hazardous weather conditions year around including heavy rain, flash floods, very high winds, and ice and snow particularly in the winter months.

In its effort to minimize risk to employees and visitors who must travel in the mountain areas, the Steward Observatory has established the following policies and procedures:

1. Employees and visitors are encouraged to either stay on the mountain for the night if they must work late, or leave the mountain in time to arrive at the bottom by sunset. If emergency situations require travel after dark, they are required to carry a two-way radio and make arrangements with another employee on the mountain to monitor the radio channel until the traveling person reaches the bottom/top of the mountain. When the traveling person arrives at their destination, they must announce their arrival to the monitor at the other end.
2. Each observatory department that has vehicles which are primarily used to travel to/from mountain sites, will outfit those vehicles with proper supplies that can be used in the event of an accident or breakdown on mountain roads. The supplies should be kept in a duffel bag and will include at least the following:
  - Listing of all emergency telephone and radio contact numbers  
(This information should be updated quarterly from the MGIO web site by each department)
  - Fire extinguisher
  - Crank or shake flashlight
  - Small shovel
  - Ice scraper
  - First aid kit
  - Pocket lighter or butane mini torch
  - Emergency blanket per passenger
  - Bag of sand
  - Snow chains
  - Tool kit which includes pliers, duct and electrical tape, screwdrivers, plastic warning sign, set of jumper cables, and a 20-foot tow strap



3. It is recommended each employee or visitor traveling to mountain sites, must be given and required to read, the MGIO Orientation package or the observer guidelines, on the University of Arizona website for the Mount Lemmon, Mount Bigelow, Mount Hopkins and Kitt Peak telescopes. All employees and visitors are warned / advised to take appropriate clothing such as gloves, heavy coat, hat, boots, etc. In addition, it is advised they carry a supply of water and food.
- It is required for Mount Graham, they have a hand-held or vehicle radio that is operational and turned onto the proper channel and have established a contact to monitor travel if after hours.
  - They are trained in snow-chain application and have the snow chains mounted to all four wheels, if there is sufficient snow on the road or it has been required by MGIO Recommendation.
  - Employees and visitors are also responsible to have a full fuel tank in their vehicle before going to the Mountain. Tires are inflated properly and have an inflated spare tire. Wipers are operational and wiper fluid in the container.

### **Advice for the Mountain Traveler**

If you are an infrequent visitor or employee worker to any of the mountain sites and have a chance to share a ride to/from the mountain and leave the driving to one who is experienced, that should be your decision.

If you decide to drive yourself, you should consider and adhere to the following:

- If there is snow on the ground, or the possibility of snow or mud, you should only take a four-wheel drive vehicle and be sure you know how to properly use the four-wheel drive. Remember, going at high speed on flat land is very bad when you are in four-wheel drive. Different four-wheel vehicles go in and out of four-wheel drive with very different procedures, so know your vehicle type.
- When you are driving down steep mountain grades and find that you are beginning to “ride” your brakes, shift the transmission to a lower gear. Let your engine do the braking so that you do not damage the brake system by overheating the rotors or brake drums.
- If the road has snow cover, you should proceed slowly with chains correctly mounted to all four wheels and cautiously try to stay as close to the center of the road as possible. Remember, a plowed road may look to be much wider than it really is and the soft shoulder on either side of the road may not support the weight of the vehicle. If there are snowplows on the road, you are required to adhere to the current set of MGIO or relevant mountain instructions for passing plows. If your vehicle is on ice or slippery road and it begins to skid, you should turn your wheels in the direction of the skid, provided of course, it does not take you over the edge.
- On Kitt Peak it is not unusual to find cattle roaming across the highway and if it is dusk or nighttime, one may not have a lot of time to react and apply the brakes. Be sure to drive safely and not too fast.



## Wildlife Awareness

Employees and visitors to Steward Observatory's mountaintop observatory sites, telescopes and labs should be aware of the possibility of encountering wildlife.

Each of these sites are unique in terms of elevation, landscape, and associated wildlife. The types of animals and insects one may encounter will vary, from small stinging and venomous creatures (such as spiders, scorpions, and snakes) to small animals (such as rodents, skunks, ringtails and javelina) to large animals (such as deer, mountain lions and bears).

The following guidelines should be adhered to when visiting observatory facilities:

- When walking on site between dusk and dawn, travel in small groups when possible. If you are walking alone during these times, consider carrying an air horn and bear spray.
- Always be alert, and if you see an animal make noise, stomp, and remove yourself from the area without turning your back.
- Avoid appearing as a threat and avoid appearing as prey.
- If you sense that you are in imminent danger, fight back. Do not instigate, however, throwing stones, sticks, water bottles, etc. may deter an animal.
- Any incident involving wildlife that results in injury, or involves contact with an external agency (e.g., USFS, Fish and Wildlife, AZ Game and Fish) should be reported to the site supervisor/manager as well as the employee's supervisor. The supervisors will determine if an incident report needs to be filed and are responsible for informing the Steward Safety Committee.
- There are many deer and other animals that wander on to the highways from dusk to dawn, and there have been several accidents and near misses over the years involving employees and visitors to the observatories. Drive slowly at night, and give yourself plenty of time to avoid animals that will come onto the roadways.



## Final Note

These policies and procedures apply to Mount Graham visitors and employees. Because the roads are more heavily traveled and the weather conditions are usually less severe on Kitt Peak, Mount Lemmon, Mount Bigelow, and Mount Hopkins, there is no firm requirement for two-way radios and a standby radio monitor most of the time. Employees will have radios in the Observatory vehicles.

All employees and visitors are required to adhere to posted speed limits, or travel at slower than posted limits if conditions require slower travel.

Lightning is a major concern on mountaintops. No one should be standing near corded telephones, electrical appliances, electric sockets or plumbing during a lightning storm. Avoid water activities like taking a shower and try to get into a large, fully enclosed, substantially constructed building. The next best shelter is an all-steel vehicle with closed windows. Be sure not to touch anything but the seat. To determine the danger, use the National Lightning Safety Institute, NSSI, 30/30 Rule. When you see lightning, count the time until you hear thunder. If the time is 30 seconds or less, the lightning is 9.66 km or approximately 6 miles away and you should immediately go to a safe place.

It is not unusual to see small groups of people walking along the side of the highways. Although they usually go off in the desert, sometimes they will attempt to stop you or flag you down. If this happens, you should use extreme caution and stay in your vehicle. Be sure the doors are locked and only roll your window down part way to allow you to communicate with them but does not allow them to reach into the vehicle. If the group requests assistance, evaluate the situation and determine if you can provide assistance without compromising your own safety. Offer to contact authorities for the group to request assistance. If at any time you feel threatened, immediately drive away from the area and call 9-1-1 and report the incident (we may need to determine what the legal boundaries are between providing reasonable assistance to someone in need as opposed to what might be interpreted by law enforcement as aiding illegal immigration).

If you notice a small fire a short distance from the highway, but in the desert, you should approach the area cautiously, remaining in your vehicle if possible. A small fire may be the start of a brush fire that needs to be reported to authorities, or it may be a campsite. As fires may spread quickly and determined to be a fire rather than a campfire, it is important to note the location and contact authorities by calling 9-1-1 to report the incident immediately. If it is a campfire and it is unattended, report it to the authorities ASAP by calling 9-1-1.

If you approach an obvious automobile accident that is not attended by official authorities such as an ambulance or police vehicle, and feel qualified to be a first aid provider, you should stop and render aid within the level of your training and abilities. Call for police or medical assistance as needed. Arizona has a Good Samaritan Statute (Arizona Revised Statutes 32-1471), which provides qualified immunity from liability for a person(s) rendering aid at the scene of an emergency.

For more information and the official University of Arizona documentation and procedures on this subject, please go to <https://risk.arizona.edu/sites/default/files/fleetsafetypolicy.pdf>.