



**EMERGENCY PREPAREDNESS WORKSHOP:**

# **Desert Awareness & Survival**

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# The Desert is a Beautiful Place

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- We live in the Desert. It is easy for use to spend time in it and enjoy its wonders.
- Whenever we travel, we have to travel through it.
- Even though we have become accustom to it, the Desert can be a dangerous place if we don't take precautions.



# The Desert and Survival

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- Desert Survival is more than being an expert in desert plants so you can live off the land.
- Anyone that spends any time in the desert can find themselves in a desert survival situation, even those just driving through one.





# Scenario

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Imagine a situation where you are driving on the freeway and decide to take an exit to enjoy a scenic drive or hike. Just five miles from the freeway your car overheats or you blow a hose. Let's assume it is 115° outside. What should you do?

- A. Do you stay in your car?
- B. Do you try to walk to the freeway to get help?
- C. Do you strip down to beat the heat while walking?
- D. Do you find a shady spot and wait for evening before walking out?





# The Survival Rule of 3's

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- The Average Person Can Survive....
- 3 Minutes without Air
- 3 Hours without Warmth/Shelter (In Extreme Cold)
- 3 Days without Water
- 3 Weeks without Food





# What to Bring With You

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- Before you travel into the desert, Be Prepared.
- Make sure you plan out your trip and bring the necessary supplies in case things don't go as planned.
- Always take with you:
  - 1-2 Gallons of Water per Person per Day
  - First Aid Kit
  - Personal Survival Kit
  - Poncho & Rope
  - Car Emergency Kit (jumper cables, spare tire, radiator coolant, tools, etc..)
  - Make sure your vehicle is in good working order.
  - Bring Extra Fuel and Oil



# Personal Survival Kit

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- Sturdy Knife
- Fire Source (Matches, Lighter, etc..)
- Light (Mini-flashlight, Light Stick)
- Signaling (Signal Mirror, Smoke, Flare, Whistle)
- Tweezers, Needle, Thread
- First Aid Kit
- Button Compass, Extra Map
- Bivvy bag or Emergency Blanket
- Poncho and 50ft. Para-Cord
- Water Purification (Backpacking Water Filter, Tablets)
- Sunblock, Insect Repellant
- Solid Fuel and Metal Cup
- Food Gathering (Gun/ Ammo, Fishing Kit, Snare Wire)
- Food (MRE's, Freeze Dried, Energy Bars)
- Extra Water



# The Extreme Basics

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- The 5 C's of Survival:
- **C**utting Tool – A solid dependable knife.
- **C**ombustion – A way to quickly and reliably start a fire in all conditions.
- **C**over/Clothing- A way to get out of the elements of nature and be protected. Also how to dress appropriately for where you are.
- **C**ontainer - A way to carry, store and boil water for purification. Also for carrying food, cooking, etc.
- **C**ordage - A way to tie and lash together available resources for shelter, carrying, traps, etc.



# Driving Through the Desert





# Desert Driving

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- Before traveling on any desert road, have your vehicle thoroughly checked with special attention given to:
- Cooling System:
  - Carefully examine all belts and hoses for cracks or leaks, replacing any you may have doubts about. Be sure to carry extras and don't forget tools and water to accomplish a change if necessary.
  - Don't overlook the radiator, which should be properly filled with coolant, and while driving keep a close eye on the temperature gauge, shutting off the air conditioner if the engine heat creeps too high.





# Desert Driving

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- Tires:

- Plenty of tread and properly inflated. Don't forget the spare, making sure your jack and tire tools are in good condition.
- The extreme heat, especially at higher sustained speeds on desert highways, can take its toll not only on worn or old tires, but new ones as well.

- Electrical System:

- Check all lighting equipment, making sure it is in good operating condition. Take a close look at the battery. Are the cables tight, and is it filled to the proper level? Don't forget your windshield wipers- in case you get caught in a sudden desert storm.



# Desert Driving

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- When going off-road:
  - Let someone know where you are going and when you expect to return.
  - Carry a survival kit. Extra water, concentrated food, matches, collapsible shovel, blankets, tarps, good jack, tools and basic extra parts for your car (hoses, fan belts, extra gas) and maps of your area.
  - If the worst happens:
  - Don't Panic. If you have a breakdown, consider the alternatives. Rig a tent or tarp for shade. Collect brush for a signal fire. Inventory your resources.



# In Case of a Breakdown

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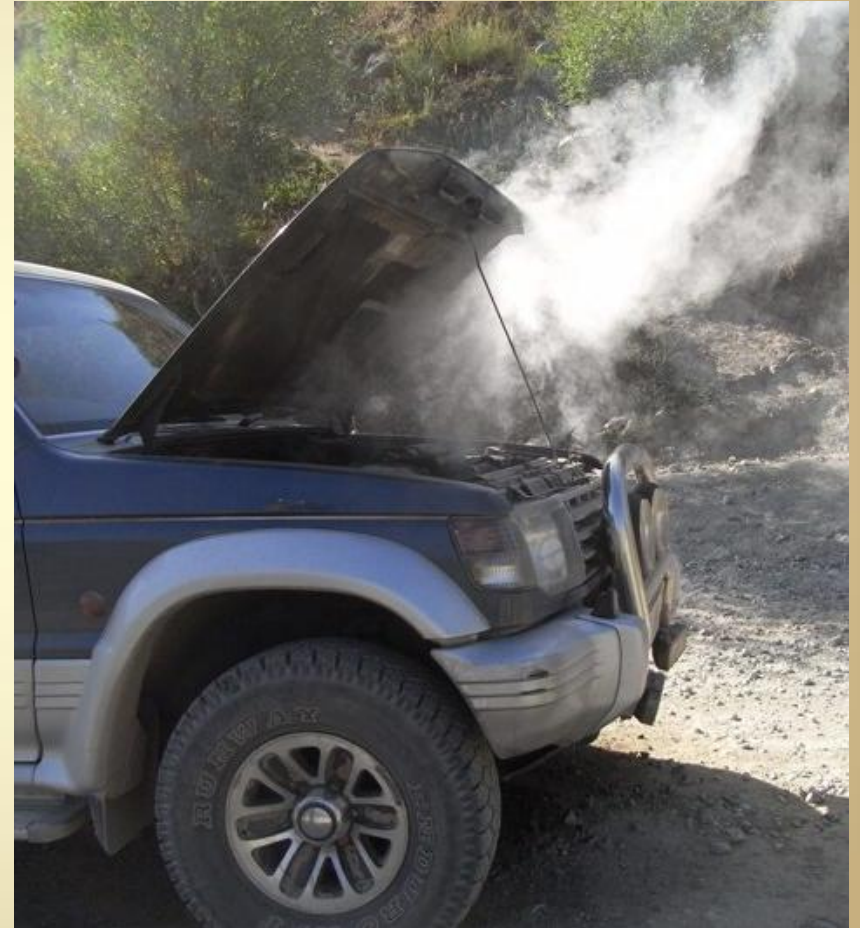
- Stay with your car. Your horn can be heard for long distances, and your lights can be seen at night. Your car provides shade and shelter. Remember it is easier for aircraft and searchers to spot a car than a person.
- Don't park or camp in dry washes. During sudden storms, these gullies become raging rivers of water and debris.
- Relax and conserve your strength. Watch for aircraft or other searchers, and be prepared to light your signal fire. Food and water will last much longer if you remain calm.



# In Case of a Breakdown

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- Stay with your vehicle.
- Raise the hood to show passers-by that you need help.
- Don't stay in in a broken vehicle. Temperatures can exceed 140° F in the Sun





# In Case of a Breakdown

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- Find Shade near the vehicle.
- Only leave the vehicle if you are positive of the route and that you can make it to your destination.
- Leave a note for rescuers stating the time you left and route taken.







# Desert Driving Survival Checklist for your Car

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- Cellular Phone
- Extra Gasoline
- Extra Water
- Concentrated Food
- Matches
- Shovel
- Jack
- Tool Kit
- Blanket
- Electrical or Duct Tape
- Tarps
- Work Gloves
- Hand Axe
- Tire Chains
- Tow Chain
- Flashlight
- Flares
- Compass
- Signal Mirror
- Firearm (if desired)
- 50' Strong Rope
- Sand Mats (metal mesh, stiff canvas or carpet)
- Extra Motor Oil
- Sheath Knife
- Plastic Spray Bottle



# Desert Hiking





# The Desert is Hot!

- Be Careful of Heat related Illnesses
  - Dehydration
    - Drink Plenty of Water
    - More often then only when you are thirsty
  - Heat Exhaustion
    - Conserve Sweat, Cool Down
  - Heat Stroke
    - Rest, Cool Down, Rehydrate



# Watch The Weather

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- We Arizonans know that Monsoons, Thunderstorms, Micro-Bursts and Sand Storms can roll-in quickly.
- Lightning can be very dangerous to hikers and mountain climbers
- Keep an eye on washes. Even though it may not be raining where you are, storms that occur miles upstream may cause flash floods where you are.
- Never try to cross a flooded wash
- Be aware that dry washes you cross may be flooded on your return, Plan an alternate route out...just in case.





# Clothing

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- Keep Clothes On!
  - This will keep your body temperature lower.
  - Reduces dehydration
  - Reduces perspiration
  - Keep your head covered
    - Improvise a hat if none are available.



# Clothing

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- Wear Suitable Clothing
  - Shorts and sleeveless shirts are not suitable for desert wear.
  - Clothing
    - Helps keep your body temperature down
    - Reduces perspiration, fluid loss and the risk of dehydration.
    - Clothing should protect the skin from direct exposure to the sun and prevent injury due to bites & scratches.
    - Lightweight, light-colored clothing is best because it reflects heat and sunlight better than darker material.



# Clothing

- The following items are recommended:
  - Wear a wide brimmed hat.
  - Protect your Neck
  - Long Sleeved Shirt
  - Long Pants
  - Boots







# Lost (Prevention)

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- Always inform someone of where you are going, your route, and when you expect to return. Stick to your plan.
- Use the Buddy System. NEVER GO ALONE!
- Always know where you are and where you are going.
- Before exploring an unfamiliar area, obtain a map of the area, study the terrain features, the road structure, the direction to the nearest habitation, location of water, etc.
- At the trailhead, look for landmarks, orient yourself with the prominent ones. GPS Mark your car's location.
- Check your back trails often, making mental pictures of the land behind you - this is what you will be looking at when you return to your starting point.
- Stay on established trails. If possible, mark your route.
- A slow, careful trip out will assure a rapid and safe return.



# Lost

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- If you think you are lost, Don't Panic!
- Sit down, survey the area and take stock of the situation.
- Try to remember how long it has been since you knew where you were.
- Decide on a course of action and stick with it.
- It may be best to stay where you are and let your companions or rescuers find you.
- This is especially true if there is water, fuel or shelter nearby.
- If you decide to retrace your course, mark your spot or leave a note before moving on. Look for your tracks; you may be able to back-track and find the way to familiar ground. Do not try to take shortcuts as this may tend to further confuse you. If possible, climb a tree or find a high point and make a mental sketch of the area before moving.



# Signaling

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3 = Distress

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Figure 19-2. Smoke generator—ground.



# Flares (Road or Aerial)

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# Whistle

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# International Ground-to-Air Signal Codes

Require doctor serious  
injuries



Require map and  
compass



All well



Require medical  
supplies



Indicate direction to  
proceed



Proceeding in this  
direction



Yes (Affirmative)



No (Negative)



Unable to proceed



Require food and  
water



Probably safe to land  
here



Not understood



Require firearms and  
ammunition



Require fuel and oil



Require engineer



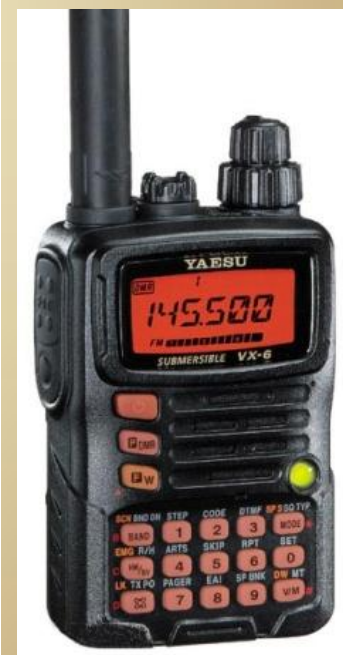
Require Radio







# Cell Phones, 2-Way or Ham Radios



# Water in the Desert





# Carrying Water in the Desert

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- When planning to travel in the desert, give your water supply extra thought.
- In the hot desert, a person needs at least a gallon of water a day.
- Drink at regular intervals rather than when you feel thirsty.
- Rationing water at high temperatures is dangerous because small amounts will not prevent dehydration.
- It is the water in your body that maintains your life, not the water in your canteen.



# Ration Sweat - Not Water

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- Keep clothing on, including your shirt and hat.
- Clothing helps by slowing the evaporation rate and prolonging the cooling effect.
- It also keeps out the hot desert air and reflects the heat of the sun.
- Stay in the shade during the day.
- DO NOT SIT ON THE GROUND as it can be 30° F hotter than a foot above the ground.
- If travel is necessary, travel slowly and steadily.
- Keep your mouth shut and breath through the nose to reduce water loss and drying of mucous membranes.
- Food intake should be kept to a minimum if sufficient water is not available.





# Finding Water in the Desert

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- If you are near water, it is best to remain there and prepare signals for rescuers.
- If no water is immediately available, look for it, following these leads:
- Watch for desert trails -- following them may lead to water or civilization, particularly if several such trails join and point toward a specific location.
- Flocks of birds will circle over waterholes. Listen for their chirping in the morning and evening, and you may be able to locate their watering spot.
- Quail and doves often congregate near water.
- Look for indications of animals, as they tend to feed near water.



# Finding Water in the Desert

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- Look for plants which grow only where there is water
- cottonwoods, sycamores, willows, hackberry, salt cedar, cattails and arrow weed.
- You may have to dig to find this water.
- Watch for windmills and water tanks built by ranchers.
- If cactus fruits are ripe, eat a lot of them to help prevent dehydration.
- Dry stream beds are possible sources for water. Just below the surface, you can sometimes find damp soil and even water which will pool in an excavated hole. Don't waste your time, however, if the hole you're digging looks unpromising. Move on and try somewhere else
- A topographical map can help Identify streams, creaks, Washes, depressions, etc...

When a River, stream or creek dries Up, your best place to dig for water is on the outer edge of a bend.





# Water Purification

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- All water found in the wild should be purified before consumed.
- Unpurified water may contain parasites, bacteria or viruses which could make you sick.
- Filtering then Purifying water will kill these organisms and make the water safe to drink.
- Always include a backpacking water filter, water purification tablets or means to boil water with you when you spend time outdoors.





Water Filtration



# Century Plant

A large agave plant, commonly known as a century plant, is shown in its natural habitat. The plant has a dense rosette of thick, pointed leaves with serrated edges. A red arrow points to the base of the leaves, where water might be trapped. The background consists of dry, brushy vegetation.

Look for water trapped  
between leaves



# Fish Hook Barrel Cactus

Inner pulp can be chewed for water, Alkali levels can give you nausea or diarrhea if consumed on an empty stomach or in large quantities.

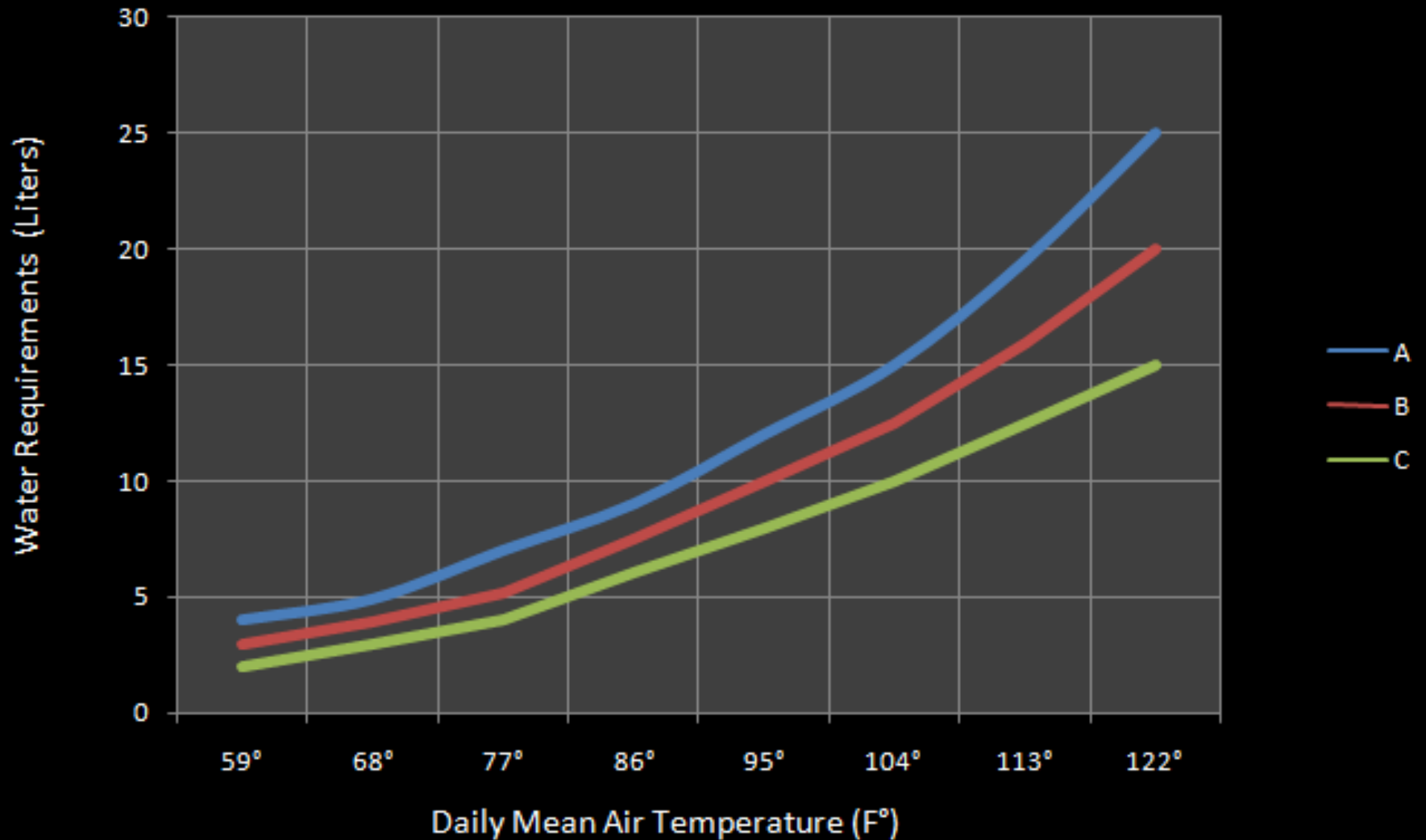


# Fish Hook Barrel Cactus



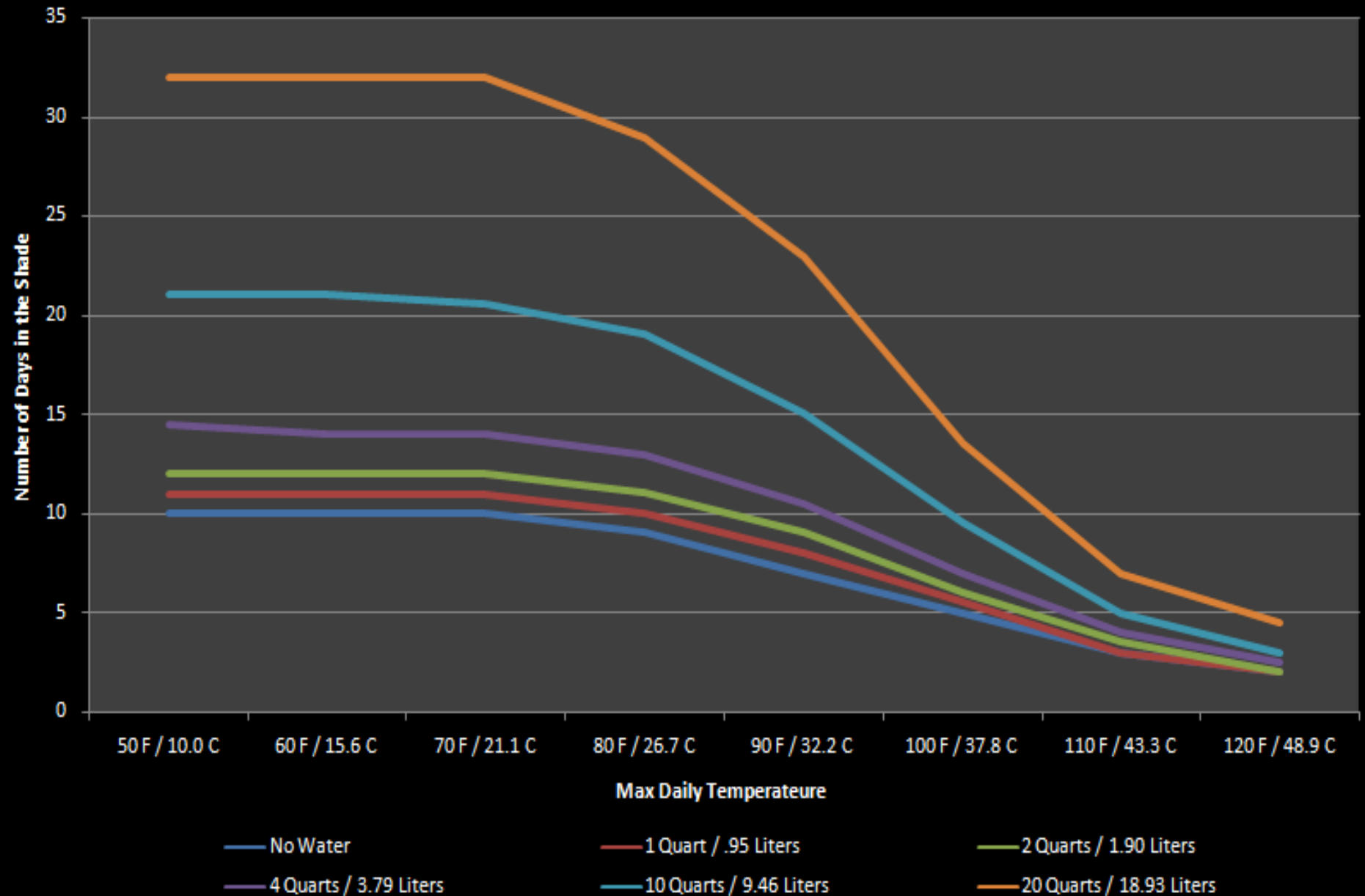


## Daily Water Requirements for 3 Activity Levels



A - Hard Work in Sun B - Moderate Work in Sun C - Rest in Shade

# How Long Can You Survive Without Water?



# Edible Plants





# Edible Plants

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- The Arizona-Sonoran Desert region has more wild edible plants than anywhere else on the planet according to ethnobotanists.
- We have cactus fruit, beans from mesquites and palo verde trees, yuccas, agaves, and nut trees, to name just a few edible plants.





# Cactus Fruit

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- All cactus fruit is edible, none are poisonous, but not all are palatable.
- The best cactus tasting fruit comes from the saguaro, prickly pear, and fishhook barrel cactus.



# Prickly Pear Cactus





# Saguaro Cactus





# Barrel Cactus





# Mesquite





# Palo Verde







# Poisonous Creatures



# Poisonous Creatures

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- The poisonous creatures in Arizona are for the most part shy or not often seen.
- Learn the facts about these creatures so you don't fear them, just give them the respect they deserve.



# Poisonous Snakes







# Poisonous Snakes

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- There are many types of poisonous snakes in the southwest.
- The rattlesnake and coral snake are the most famous
- Despite there being more poisonous snakes in Arizona besides these, their toxicity levels are so low they are not dangerous to humans.
- Snakes hibernate during the colder months, but it is not unusual to see some species all months of the year.
- During the spring and fall, they will be out in the daytime, in the summer they will generally be found out at night, since they don't enjoy excessive heat.



# Rattlesnakes







# Rattlesnakes

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- There are 13 species of Rattlesnakes that live in Arizona.
- Usually sandy in color.
- broad arrow-shaped head
- blunt tipped-up nose
- rattles on the tail.
- Look for them mostly where food, water, and protection are available
- They do not always give warning by rattling, nor do they always strike if someone is close.
- Usually they are not aggressive and will not "chase" people.



# Rattlesnakes

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- If bitten, the strike results in immediate pain accompanied by swelling.
- The venom primarily causes local and internal tissue destruction and nerve damage.
- If traveling in areas where rattlers may be found, wear protective footgear and watch where you put your hands and feet.
- If you hear one, stop and try to locate it, move slowly away from the sound and leave it alone.
- Most strikes are on individuals attempting to catch, kill or play with the snake. (On Hands or Arms)



# Arizona Coral Snake





# Arizona Coral Snake

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- Small, rarely over 20 inches long
- Small blunt, black head and tapering tail.
- Wide red and black bands, separated by narrower yellow or white bands
- All bands completely encircle the snake.
- There are many look alikes to this species; the key to identification is the "red band" which will not touch the "black band".
- Corals must chew rather than strike to introduce venom, but due to the very small mouth are unable to bite any but the smallest extremities.
- Coral snakes will attack only under severe provocation.
- The venom affects the nervous system, causing failure of the heart and respiratory muscles.





# Treatment of Poisonous Snakebite

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- While not all snake bites result in envenomation (venom injection), it is still best to seek medical attention as soon as possible. Contact the nearest medical emergency facility or the **ARIZONA POISON CONTROL CENTER** at 1-800-222-1222. Not all medical facilities carry antivenin (venom antidote) so it is important to call ahead.

## What TO DO in case of snake bite:

- Wash the bite with soap and water.
- Immobilize the bitten area.
- If the wound is on an arm or leg, remove any restrictive clothing or accessories (watches, rings, etc).
- Keep the affected area lower than the heart.
- Seek medical attention.



# Common Symptoms of Snake Bite Envenomation

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- Bloody wound discharge
- Fang marks in the skin and swelling at the site of the bite
- Severe localized pain
- Diarrhea
- Burning
- Convulsions
- Fainting
- Dizziness
- Weakness
- Blurred vision
- Excessive sweating
- Fever
- Increased thirst
- Loss of muscle coordination
- Nausea and vomiting
- Numbness and tingling
- Rapid pulse





# What NOT TO DO in case of snake bite

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- Though US medical professionals may not agree on very aspect of what to do for snakebite first aid, they are nearly unanimous in their views of what not to do. Among their recommendations:
- DO NOT allow the person to over-exert themselves.
- DO NOT apply a tourniquet or cold compresses to a snake bite.
- DO NOT cut into the wound with a knife or razor.
- DO NOT suck the wound by mouth.
- DO NOT give the person pain-relievers unless directed by a physician.



# Gila Monster







# Gila Monster

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- Our only poisonous lizard
- Seldom over 20 inches long, with a beaded black and coral colored skin.
- They move slow but can snap ends and snap rapidly.
- The poison seems to be an anticoagulant and the wounds bleed freely, accompanied by swelling.
- If bitten, grab the Gila Monster behind the head and yank it off. The teeth are not set in sockets and come out easily.
- Bite Symptoms: pain, swelling, discoloration, dizziness, excessive perspiration, tissue hemorrhage, and hypotension.
- There has not been a recorded death from the bite of a Gila Monster in Arizona in over 130 years. The treatment is the same as for a poisonous snake bite.

# Rock or Bark Scorpion







# Rock or Bark Scorpion

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- Small very slim, light straw colored.
- The stinger, in the tip of the tail, injects a minute amount of powerful venom.
- Dangerous to all ages but most dangerous to small children, the elderly and those with high blood pressure, heart or respiratory ailments.
- There will be pain at the site, numbness, restlessness, fever, fast pulse, and breathing difficulty.
- Sting can be fatal.

# Black Widow







# Black Widow Spider

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- Shiny black with red hourglass marking on the abdomen.
- Will bite if provoked.
- Bite can be dangerous to all ages, but is seldom fatal.
- Pain spreads throughout the body, accompanied by headache, dizziness and nausea.
- Extremities become cramped, the abdomen becomes rigid, pupils dilate, and spasms may occur after several hours.

# Brown Recluse Spider







# Brown Recluse Spider

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- Light brown colored, about 1/4 inch in length, active at night.
- Easily identified by the violin-shaped marking on the head and back.
- Rare in the desert.
- The bite causes severe tissue destruction which may take weeks to heal.
- Bite can be fatal.

# Honey Bees



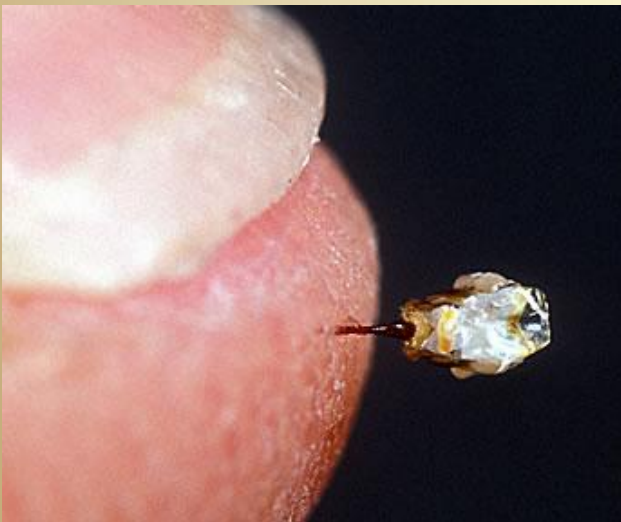




# Honey Bees

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- There are more deaths annually from honey bee stings than from all other poisonous creatures combined.
- Honey bee stingers are barbed at the tip and remain in the victim.
- The venom sacs are torn from the bee's body and remain attached to the stinger.
- Do not try to pull out stingers as pinching them injects additional venom.
- Scrape stingers out with a knife or other thin edge.





# Honey Bees

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- Africanized honey bees or “Killer Bees” look exactly like domestic honey bees but differ in temperament.
- Africanized honey bees defend their colonies more vigorously and in greater numbers and may respond with minimal or no provocation.
- Their venom is no more harmful than that of domestic honey bees.
- Bothering a nest is the best way to get stung.
- If attacked, run away as fast as you can. Keep going until they stop following or you can get inside a house, car or other shelter. If far from shelter, try to run through tall brush.
- Do not flail or attempt to swat the bees.
- Bees target your head and eyes; therefore, try to cover your head as much as possible without slowing your progress.





# Prevention

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- In places where venomous species are expected, carefully inspect all clothing and bedding before use, especially items that have been on or near the ground during the night.
- Dampness attracts these creatures.
- Put your hands and feet only where you can see.

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