

ANIMALS 9.9

Most sampling activities take place in and around areas inhabited by animals. Before a field trip, try to find out which species inhabit the area and how to deal with them. Table 9-1 summarizes guidelines on what to do if faced with dangerous animals. Note that such guidelines can vary from expert to expert; the right way to deal with encounters could well be what works at the time.

- ▶ Most animals will vigorously protect their young and should not be approached or disturbed.
- ▶ If a threat or an injury occurs, the most important action is to remain calm and focus on taking the appropriate steps to relieve, remedy, or rescue yourself or another victim. Call for medical advice before transporting the victim, if possible.

ARACHNIDS AND INSECTS 9.9.1

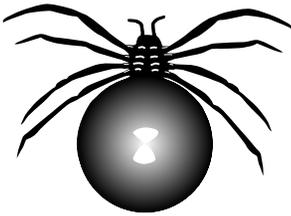
The most common remedy for bites and stings usually involves basic first aid, followed by immediate medical attention if symptoms warrant. If a member of the field team is allergic to insect bites or stings, this should be made known to all members of the team and noted in the emergency information section of the field folder. Treatment procedures should be reviewed before field activity begins. Persons with known allergic reactions to insects should wear or carry on their person medical alert identification, and carry sting kits for use in emergencies.

Scorpions, spiders, and ticks

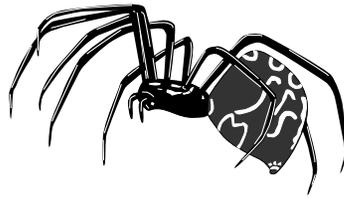
Arachnids such as scorpions, spiders, and ticks are cause for caution by the field team. Spiders and scorpions are known to inhabit enclosed, dark spaces; for example, inside shoes or the corners of well houses and shelters.

Scorpions. Scorpions are known to frequent the desert, but also have been found frozen in ice. Scorpions are not easily seen in the wild. They are nocturnal creatures that are sensitive to vibrations, either in the air or on the ground. When humans are stomping around, scorpions usually run for cover. Scorpion stings often involve an encounter between a big toe and a scorpion that has crawled into a shoe. Check shoes and boots left in the field vehicle before putting them on. **Beware of putting your hands and feet into small, dark spaces (table 9-1).**

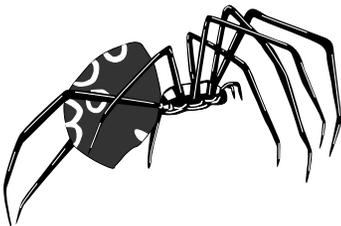
Spiders. Although few spiders in North America bite people, and the venom of most is harmless (Audubon Society, 1980), exceptions include the black widow and the brown recluse (fig. 9-3). The black widow (*Latrodectus mactans*) has a fairly large geographical range. Red and brown widow spiders are found mainly in the Gulf Coast region of the United States. The brown recluse (*Loxosceles reclusa*) frequents areas of human habitation and prefers dark spaces such as equipment shelters, as well as areas in the wild. It is advisable to be familiar with the area in which you are working and take care when walking and when reaching into small spaces.



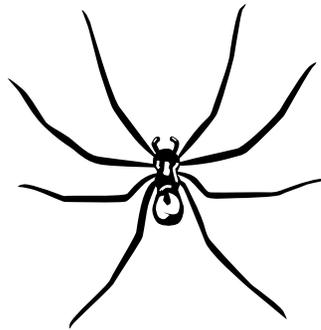
Southern black widow spider
(underside view)



Brown widow spider



Red widow spider



Brown recluse spider

Figure 9-3. Sketches of selected spiders found in North America.
(From M.H. Cox, 1994, p. 38-39.)

Ticks. Ticks are found nearly everywhere in North America, and can transmit diseases such as Rocky Mountain spotted fever, Lyme disease, human ehrlichiosis, and human granulocytic ehrlichiosis (HGE). To reduce your chances of being exposed to ticks, wear long pants and tuck the pants legs into your socks; use a repellent containing the compound DEET (N-diethyl-meta-toluamide) on exposed skin, except for the face; check your body regularly for ticks, including inspection of the neck and scalp. Remove attached ticks immediately (table 9-1).

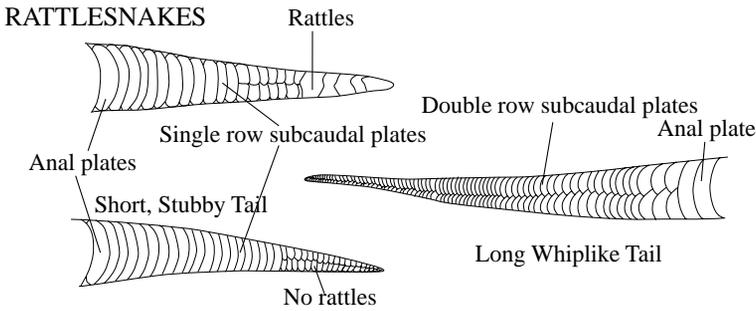
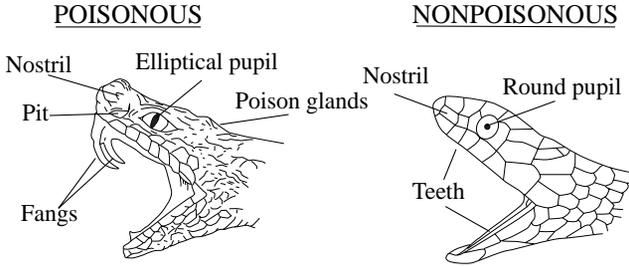
Bees and wasps

Venomous insects of common concern include bees and wasps. Bee stingers are equipped with barbs that should be scraped off if a person is stung—using forceps or tweezers to pull the stinger out can force more venom into the wound (table 9-1). A wasp stinger has no barb; the venom is injected and the stinger usually slides out. The yellow jacket (a vespid wasp) nests in the ground and will aggressively defend the nest if disturbed, particularly in the late summer and early fall. Stings in the mouth or throat sometimes result when a bee or wasp has flown into a can of soda. Seek medical attention if symptoms warrant.

**Do not disturb
bee hives or wasp nests.**

9.9.2 SNAKES

DISTINGUISHING FEATURES OF POISONOUS AND NONPOISONOUS SNAKES OF NORTH AMERICA



COPPERHEADS & COTTONMOUTHS



Figure 9-4. Sketches of selected poisonous and nonpoisonous snakes of North America. (From M.H. Cox, 1994.)

SNAKES 9.9.2

Snakes deserve our respect, but they do not have to be feared. Only about 10 percent of the approximately 3,000 species of snakes in the world are poisonous. Differences between poisonous and nonpoisonous snakes of North America are illustrated in figure 9-4.

In the event of snakebite, take the victim to the nearest medical facility as soon as possible. Call the medical facility first if time allows. Even a person who has been bitten by a nonpoisonous snake should be treated by medical personnel, because some people are allergic to the foreign protein in snake saliva. Refer to table 9-1 for procedures to follow if bitten. The best advice regarding snake bites is to prevent them in the first place.

Snake expert Maynard Cox (1994) recommends:

- ▶ Do not put your hands or feet where you cannot see.
- ▶ Never handle a snake unnecessarily, dead or alive, poisonous or nonpoisonous.
- ▶ If you come upon a poisonous snake, turn and run. A snake normally can strike up to one-half or two-thirds of its body length, but if provoked it can strike up to its full body length.

A common symptom of a poisonous snakebite from pit vipers (copperheads, cottonmouths or water moccasins, and rattlesnakes) is a burning, fiery, stinging pain at the bite site. Other symptoms could include swelling; skin discoloration; nausea and vomiting; a minty, metallic, rubbery taste in the mouth; sweating and chills. If the pain does not get any worse and remains localized, venom probably was not passed. If the pain becomes severe, venom was probably injected.

Copperheads (*Agkistrodon contortix*) have a wide distribution throughout the central, mid-Atlantic, and southern United States. They can be found on wooded hillsides or in areas near water. Although the bite of a copperhead can be painful, it is unlikely to result in an adult human death.

Cottonmouths or water moccasins (*Agkistrodon piscivorus*) are found in the southeastern United States and are never far from water. Cottonmouths usually swim with their entire body on top of the water (Huegel and Cook, undated). Cottonmouths might be seen in the daytime, but they are more active at night. They are an extremely aggressive snake and should not be approached. +

Rattlesnakes have been found in every state except Alaska, Delaware, Hawaii, and Maine. All other states have at least one species of rattlesnake, and many have three or four. Arizona, for example, has 17 species or subspecies of rattlesnakes (Kauffeld, 1970). A rattling sound usually alerts that a nearby rattlesnake has been disturbed and can be preparing to strike, but if the snake is sufficiently disturbed, it might not rattle at all.

Coral Snakes. Symptoms are different for bites from coral snakes. The coral snake's venom is extremely toxic, but little or no pain may occur from the bite. Look for teeth marks at the puncture wound. Other symptoms could include euphoria, excess salivation, convulsions, weakness, and paralysis (Cox, 1994).

The **Eastern coral snake** (*Micrurus fulvius*) is found in the southeastern United States. It is identified by wide red and black bands separated by a narrow, bright yellow band. The red and black bands never touch. The **Arizona coral snake** (*Micruroides euryxanthus*) is located in the southwestern United States. The red and black bands also never touch. +

9.9.3 ALLIGATORS

The American alligator (*Alligator mississippiensis*) is found in swamps, rivers, and lakes, primarily of the southeastern United States. Alligators are fairly inactive in the winter months when the water temperatures are cool; their metabolism slows down and there is little need for food. The breeding season is mostly during April and May; male and female move around more during this time.

Treat alligators with extreme caution. Some can become a nuisance when they lose their fear of humans and usually have to be destroyed by licensed trappers. **Never approach an alligator, either on land or in the water.** Alligators can outrun humans for short distances. If your sampling involves fish collection, get the specimens out and away from the water as soon as possible. +

BEARS 9.9.4

Bear behavior is unpredictable. According to *Guidelines for Safe Geologic Fieldwork in Alaska* (U.S. Geological Survey, May 1978), bears fiercely defend any carcasses and will often bury or partially cover such prizes for later. Contrary to popular belief, bears can see almost as well as people, but trust their noses much more than their eyes or ears.

Avoiding contact with a bear is the best defense:

- ▶ Avoid game trails that bears might use.
- ▶ Avoid carrion (dead and decaying flesh), fresh kill, or gut piles.
- ▶ Avoid berry patches, or other areas abundant with plants that bears use for food.
- ▶ Avoid willow and dry grass patches; bears sometimes use these areas for daybeds.
- ▶ Avoid areas with fresh bear tracks.
- ▶ Make noise or wear bells when moving through the woods so as not to surprise bears.
- ▶ Avoid carrying food that a bear can smell. Always keep food sealed and in a backpack, not in a pants pocket.
- ▶ Work in teams of two or larger groups to help deter a bear from attacking.

If you meet a bear on the trail, effective methods of defense can vary:

- ▶ If you see the bear before it sees you, decide on your route of escape and leave the area at once.
- ▶ If you find yourself close to a bear, give the bear all the room you can.
- ▶ Let the bear know you are human—talk in a normal voice and wave your arms. Try to back away slowly, but if the bear follows, stop and hold your ground.
- ▶ **Do not run!** Bears often make bluff charges, sometimes within 10 feet of their adversary, without making contact.
- ▶ If a bear actually makes contact, surrender! Fall to the ground and play dead. Typically, a bear will break off its attack once it feels the threat has been eliminated. If the bear continues to bite after you assume a defensive posture, the attack is predatory and you should fight back vigorously.

9.9.5 MOUNTAIN LIONS

Mountain lions (*Felis concolor*) are a species of larger cats found in North America (also called cougar, puma, and panther). The primary habitat for these members of the cat family is west of the Rocky Mountains and south of the Yukon, although Florida has a small population. Mountain lions are active during the day and night, and search a wide territorial range for food. The main food source is deer and smaller animals.

Be alert to reports of mountain lion attacks or sightings. Healthy mountain lions do not usually attack humans, but when this occurs, it is usually because the person panicked and ran. Turning and running can evoke a predatory response from mountain lions.

9.9.6 RODENTS AND OTHER SMALL MAMMALS

Rodents and other small mammals can be disease carriers as well as be a nuisance. The best policy is to avoid them; know what animals are in your particular area and take appropriate precautions. Two diseases of concern carried by such animals are hantavirus and rabies.

Mice, rats, and chipmunks are the primary hosts of hantaviruses (Center for Disease Control, 1994a and b). Known carriers include the deer mouse (*Peromyscus maniculatus*), piñon mouse (*P. truei*), brush mouse (*P. boylii*), cotton rat (*Sigmodon hispidus*), and western chipmunk (*Tamias*). Hantavirus does not cause apparent illness in the host, but the infected individual sheds the virus in saliva, urine, and feces for many weeks. Rabies infection is another hazard of contact with small animals, especially skunks, raccoons, foxes, coyotes, bats, cats, and dogs.

The best way to eliminate the chance of infection from rodents and other small mammals is to secure the areas in which you will be working against an animal population. In gage houses and recorder shelters, make sure all openings have been blocked before leaving the site. Subsequent inspections must be made on a routine basis to ensure that rodents have not found other means of access into the structure.

+ Structures with heavy rodent infestation must be treated with extreme caution and may require specific training to ensure proper precautions are used. Persons involved in cleanup should wear disposable coveralls, rubber boots or disposable shoe covers, rubber or plastic gloves, protective goggles, and appropriate respiratory protection, such as a half-mask air-purifying (or negative pressure) respirator with a high-efficiency particulate air (HEPA) filter or a powered air-purifying respirator (PAPR) with HEPA filters (Center for Disease Control, 1994b). Immediately after the clean-up operation, this personal protective equipment should be decontaminated or discarded using appropriate methods.

If the gage house or recorder shelter is suspected of being inhabited by rodents, the following steps are to be followed before entering the structure:

- + 1. Open the door or shelter lid and allow to air out for at least 30 minutes before entering.
2. Wear rubber or plastic gloves when working in the previously enclosed area.
3. Spray dead rodents, rodent nests, droppings, or other potentially tainted areas with a general-purpose household disinfectant. Soak the materials thoroughly with disinfectant and place in a plastic bag. Seal the bag and place it inside another plastic bag and then bury or burn. If this is not possible, contact the local or State health department for alternative disposal methods.
4. After removing the above items, disinfect the area with a solution of water, detergent, and disinfectant. Do not vacuum or sweep dry surfaces prior to disinfecting with a liquid solution.

DOMESTIC ANIMALS 9.9.7

+ Sampling often involves working in urban or rural areas where cats, dogs, cows, horses, and other domesticated animals can be carriers of disease or exhibit unpredictable and aggressive behavior. Before entering private property, contact the owner and obtain permission to enter. Ask about any animals that might be on or around the property. Do not pet, feed, or otherwise contact these animals.

Table 9-1. Guidelines on potentially dangerous animals

[mm, millimeter; in., inch; cm, centimeter; ft, foot; lb, pound; mph, mile per hour]

Animals	Description/ Characteristics	Procedure
Arachnids and Other Insects		
Black widow spiders (Black, brown and red widow spiders are illustrated in figure 9-3.)	Female (only one that bites) is black with abdomen almost spherical, usually with red hourglass mark below or with 2 transverse red marks separated by black. Spiderling is orange, brown, and white, gaining more black at each molt. Habitat among fallen branches and under objects, such as well shelters, furniture, and trash.	If bitten, seek medical attention as soon as possible.
Brown recluse spiders	Orange-yellow thorax with dark violin pattern. Bases of legs orange-yellow, rest of legs grayish to dark brown. Abdomen grayish to dark brown with no obvious pattern. Habitat outdoors in sheltered corners, among loose debris; indoors on the floor and behind furniture in houses and outbuildings.	
Scorpions	Nocturnal, sensitive to vibrations. Field boots are a favorite hiding place.	
Ticks	Small, less than 3 mm (<1/8 in.). Clamps to host using a dart-like anchor located just below the mouth.	Do <ul style="list-style-type: none"> • Check for ticks during and after field work. • Remove with tweezers within 24 hours. Don't <ul style="list-style-type: none"> • Leave the head imbedded. • Extract using matches or applying petroleum jelly or other coating.
Bees	Bees vary in size from 2 mm (0.08 in.) long to 4 cm (1.6 in.) long; divided into a number of family classifications which are determined by mouthparts and other characteristics that are difficult to see without dissection.	Do <ul style="list-style-type: none"> • Avoid all bee hives and wasp nests. • Scrape off the bee stinger with a knife or other flat object. • Use an over-the-counter sting ointment or a solution of baking soda, meat tenderizer, and ammonia. Don't <ul style="list-style-type: none"> • Use forceps or tweezers to pull the bee stinger out.
Wasps	Wasps vary in size from minute up to 5 cm (2 in.) long; adults distinguished by a narrow waist between the first and second abdominal segments.	
Snakes and Alligators		
Copperhead snake	Elliptical eyes; short, stubby tail.	Do not confront a snake—turn and run If bitten: Do <ul style="list-style-type: none"> • Reassure victim. • Treat for shock. Keep victim lying down; elevate feet 10 to 12 in. • Seek medical attention as soon as possible. Call medical facility while en route, if possible. Don't <ul style="list-style-type: none"> • Cut and suck affected area. • Apply ice or a tourniquet. • Leave victim unattended.
Cottonmouths or water moccasin snakes	Elliptical eyes; short, stubby tail.	
Rattlesnakes	Usually swim with their entire body on top of the water. Never far from water. Most active at night. An extremely aggressive snake.	
Eastern coral snakes and Arizona coral snakes	Elliptical eyes; short, stubby tail. The rattle is a sign of fear, but if the snake is sufficiently disturbed, it might not rattle at all.	
	Wide red and black bands separated by a narrow, bright yellow band; the red and black bands never touch; round pupils; short, stubby tail.	

Table 9-1. Guidelines on potentially dangerous animals—*Continued*

Animals	Description/ Characteristics	Procedure
Snakes and Alligators—Continued		
Alligators	Fairly inactive when water is cool. Most active during breeding season (mostly April and May). Alligators can run quickly for short distances.	Don't approach an alligator.
Mammals		
Polar bears	White, 8-10 ft in length, male 600-1,200 lb, female 400-700 lb, carnivores (primarily).	Do • Make your presence known (sing, talk, tie bells to pack).
Black bears	Brown to black, white patch in front of chest, 5 ft in length, male 150-400 lb, female 125-250 lb, herbivores (primarily).	• Travel with a group. • Give bears plenty of room.
Brown bears	Dark brown to blonde, 7-9 ft in length, male 400-1,100 lb, female 200-600 lb, herbivores (primarily).	• Play dead if attacked. Lie flat on stomach or curl up in a ball with hands behind neck. Remain motionless as long as possible, until the bear is gone. If bear continues attack long after you play dead, it is probably a predatory attack. FIGHT BACK VIGOROUSLY! Don't • Run. Bears can run up to 35 mph. • Imitate bear sounds or make a high-pitched squeal.
Mountain lions	Active during the day and night. Healthy mountain lions do not usually attack humans.	Do • Stand your ground. • Shout and wave your arms. • Throw rocks at the animal. Don't • Turn your back. • Panic and run.
Rodents and small mammals: mice, chipmunks, rats, skunks, squirrels, raccoons, bats, foxes, coyotes	Animals infected with hantavirus show no signs of illness. Virus is transmitted from being bitten, or when infective saliva or excreta are inhaled as aerosols produced directly from the infected rodent, or when dried or fresh material contaminated by rodent excreta are disturbed, directly introduced into broken skin, introduced onto the conjunctivae (mucous membrane covering the eyeball), or possibly ingested in contaminated food or water. Signs of an animal infected with rabies are nervousness, aggressiveness, excessive drooling and foaming at the mouth, abnormal behavior, such as wild animals losing their fear of humans or nocturnal animals being seen in the daytime.	Do • Wash the wound from a bite or scratch thoroughly with soap and water. • Seek medical attention. • Notify game warden or health department.
Domestic animals: cats, dogs, cows		Don't • Capture animal. • Pet or feed wild or domestic animals.