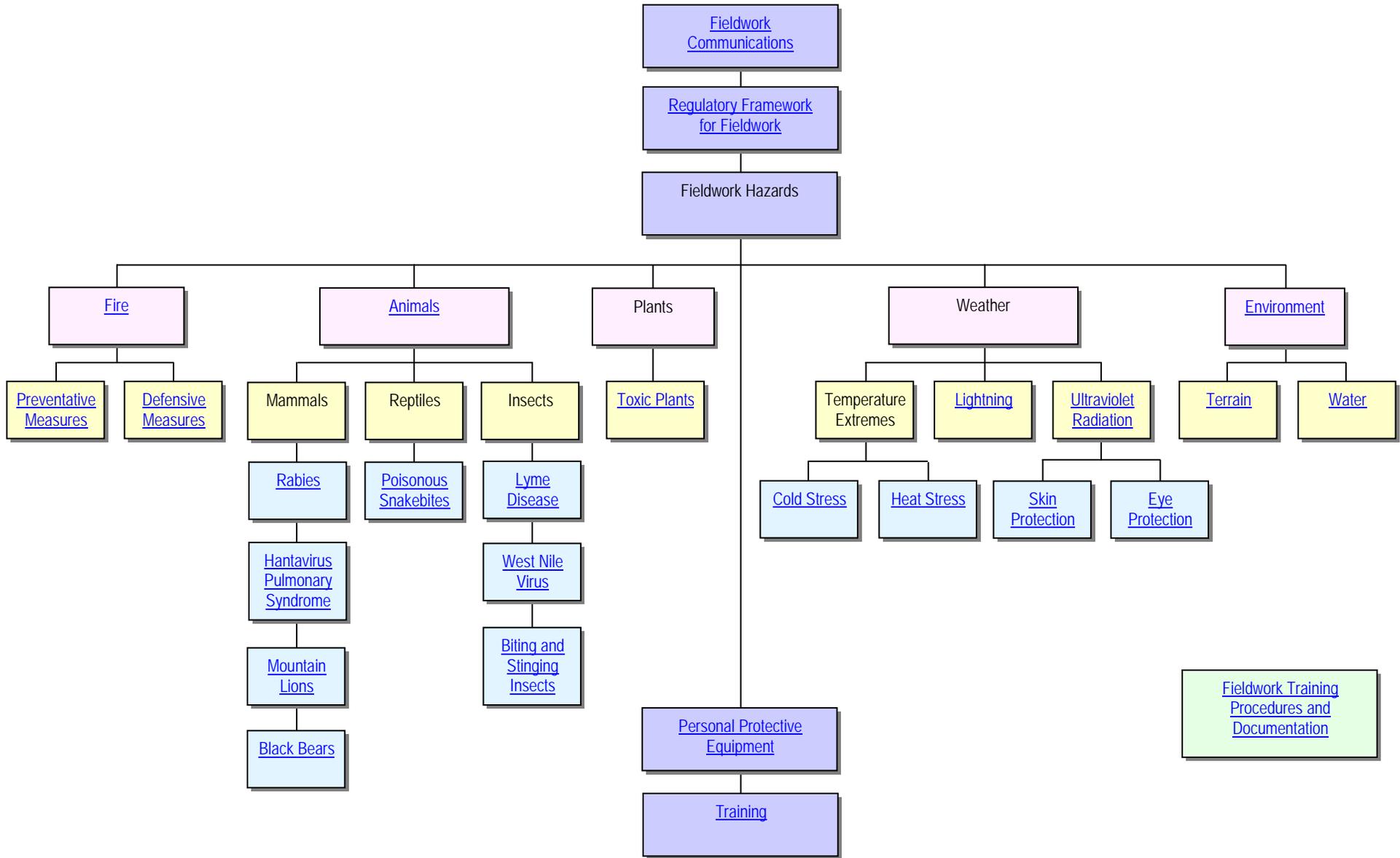


FIELDWORK IN FORESTED, BRUSH-COVERED, GRASSLAND AND WETLAND AREAS



[Link to the entire Administrative Guidelines \(20 pages\)](#)

**AGRICULTURE AND NATURAL RESOURCES
ADMINISTRATIVE GUIDELINES
FIELDWORK IN FORESTED, BRUSH-COVERED, GRASSLAND,
AND WETLAND AREAS**

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ATTACHMENT

[Attachment A](#) - Fieldwork in Forested, Brush-Covered, Grassland, and Wetland Areas Flow Chart

**AGRICULTURE AND NATURAL RESOURCES
ADMINISTRATIVE GUIDELINES
FIELDWORK IN FORESTED, BRUSH-COVERED, GRASSLAND,
AND WETLAND AREAS**

I. INTRODUCTION

As part of routine operational and research activities, Agriculture and Natural Resources (ANR) employees conduct fieldwork in forested, brush-covered, grassland, and wetland areas. Fieldwork in these types of undeveloped to relatively undeveloped outdoor areas exposes ANR employees to a variety of natural hazards and conditions that may either adversely affect or be adversely affected by fieldworkers.

The purpose of this Administrative Guidelines document is to delineate the types of natural hazards and conditions that could result in adverse interactions with ANR fieldworkers and to provide appropriate training guidance for these employees.

These Administrative Guidelines are not intended for ANR employees that conduct fieldwork in cultivated farmlands, pastures, vineyards, or orchards.

II. POLICY

ANR is committed to protecting the health and safety of its employees. Accordingly, personnel from ANR Environmental Health and Safety and affected ANR units have cooperatively developed a program that purposefully incorporates measures to reduce employee exposure to risks encountered while performing fieldwork in forested, brush-covered, grassland, and wetland areas and thereby, maximizing ANR fieldworker health and safety.

III. SCOPE

These Administrative Guidelines provide descriptions of the types of natural hazards and conditions that are likely to be encountered and precautions to take when performing fieldwork in forested, brush-covered, grassland, and wetland areas. In addition, this document provides information and references that can be used to train employees on awareness of hazards and actions that may reduce the risk of injury or illness due to fieldwork activities.

IV. FIELDWORK COMMUNICATIONS

A. Fieldwork Notification

1. ANR employees and other personnel conducting fieldwork on ANR properties shall provide written, electronic, or verbal notice to the property owner or administrative staff as to where field activities will take place

and the anticipated fieldwork duration. For fieldwork at ANR Research and Extension Centers (RECs) this usually consists of checking in at the REC office. When working at a REC, employees should inquire about site-specific notification procedures.

2. ANR employees shall notify their supervisors of the location and duration of any fieldwork, including fieldwork performed outside ANR properties.
3. Written, electronic, or verbal notification shall occur prior to conducting the fieldwork.

B. Field Communication Protocol and Devices

1. ANR employees performing fieldwork shall, where available, access and utilize wireless communication devices to allow remote contact in case of an emergency.
2. Field communication devices include “handi talkies,” vehicle radio sets, and cellular telephones. When working at a REC, consult with onsite staff to determine what communications systems may be available or functional.
3. ANR employees performing fieldwork shall become knowledgeable about wireless communication poor- or non-reception spots in the area(s) where they are working.
4. When using radio communication, ANR fieldworkers shall use appropriate communication protocols.

V. REGULATORY FRAMEWORK FOR FIELDWORK

- A. California Code of Regulations [CCR] Title 22, Section 3203 requires every employer (i.e., ANR) to establish, implement, and maintain an effective Injury and Illness Prevention Program that shall include a system for:
 1. Ensuring that employees comply with safe and healthy work practices (CCR Title 8, Section 3203 a 2); and
 2. Communicating with employees in a form readily understandable by all affected employees on matters relating to occupational safety and health (CCR Title 8, Section 3203 a 3).
- B. An ANR employee shall not do any of the following (Public Resources Code, Section 4422):

1. Willfully or knowingly allow fire to burn uncontrolled on land which is controlled (i.e., University of California properties) or escape to the lands of any person other than that of the owner (Public Resources Code, Section 4422 a).
 2. Allow any fire kindled or attended by the employee to escape from their control or spread to the land of any person other than from the land from which the fire originated (Public Resources Code, Section 4422 b).
- C. During any time of the year when burning permits are required or during designated burn bans, no person shall use or operate any motor, engine, boiler, stationary equipment, welding equipment, cutting torches, tarpots, or grinding devices from which a spark, fire, or flame may originate, which is located on or near any forest-covered land, brush-covered land, or grass-covered land, without doing both of the following (Public Resources Code, Section 4427):
1. First clearing away all flammable material, including snags, from the area around such operation for a distance of 10 feet (Public Resources Code, Section 4427 a); and
 2. At a minimum, maintain one serviceable round point shovel with an overall length of not less than 46 inches and one backup pump water-type fire extinguisher fully equipped and ready for use at the immediate area during the operation (Public Resources Code, Section 4427 b).
- Note: Public Resources Code, Section 4427 does not apply to portable powersaws and other portable tools powered by a gasoline-fueled internal combustion engine.
- D. If any fire originates from the operation or use of any engine, machine, barbecue, incinerator, railroad rolling stock, chimney, or any other device which may kindle a fire, the occurrence of the fire is prima facie evidence of negligence in the maintenance, operation, or use of such engine, machine, barbecue, incinerator, railroad rolling stock, chimney, or other device. If such fire escapes from the place where it originated and it can be determined which person's negligence caused such fire, such person is guilty of a misdemeanor (Public Resources Code, Section 4435).
- E. No person shall use, operate, or allow to be used or operated, any internal combustion engine which uses hydrocarbon fuels on any forest-covered land, brush-covered land, and grass-covered land unless the engine is equipped with a spark arrester maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire (Public Resources Code, Section 4442 a).

Spark arresters affixed to the exhaust system of engines or vehicles shall not be placed or mounted in such a manner as to allow flames or heat from the exhaust system to ignite any flammable material (Public Resources Code, Section 4442 b).

Engines used to provide motive power for trucks, truck tractors, buses, and passenger vehicles, except motorcycles, are not subject to the requirements for spark arresters if the exhaust system is equipped with a muffler as defined in the Vehicle Code (Public Resources Code, Section 4442 d).

- F. California Harbors and Navigation Code, Sections 650-680 address the safe operation of watercraft.

VI. FIELDWORK HAZARDS

A. Fire

1. ANR employees that perform fieldwork in forested, brush-covered, grassland, and wetland areas are at risk for encountering a wildfire situation or inadvertently causing a wildfire. Accordingly, ANR fieldworkers shall be prepared to take fire preventive and defensive measures.
2. Fire preventative measures encompass recognizing the flammable nature of the fieldwork area, particularly during times of increased fire danger, and employing prudent fieldwork practices as given below:
 - a. Prior to initiating fieldwork, compile a list for use in the field of telephone numbers for contacting local emergency responders and the property owner.
 - b. As part of fieldwork preparation, develop an emergency evacuation plan that incorporates methods for notifying co-workers or colleagues of an emergency and descriptions of emergency escape routes and assembly areas.
 - c. Always be aware of the fire hazard level in the fieldwork or surrounding area.
 - d. Never use open flames or create sparks as part of field tasks when the fire hazard level is “high” or “extreme” in the fieldwork or surrounding area.
 - e. Keep vehicles on roads or other non-vegetated areas to prevent ignition of wildfires by catalytic converters.

- f. Utilize equipment and tools with internal combustion engines and motors that have spark arresters and vehicles equipped with mufflers ([see paragraph V.E.](#)).
 - g. When using tools or equipment that produce flames or sparks, assure that a 10 foot diameter cleared area surrounds the work area and an appropriate shovel and water-type pump extinguisher are available at the work site ([see paragraph V.C.](#)).
3. Fire defensive measures encompass being alert to the existence or occurrence of a wildfire within the fieldwork or surrounding area and reacting to the situation as follows:
 - a. When the outbreak of a wildfire is observed, immediately notify the emergency response authority (i.e., dial 911) and property owner and alert all co-workers or colleagues working within the field and surrounding area.
 - b. When a wildfire exists or occurs within the fieldwork or surrounding area, always assure that a safe secondary-escape route is present from the area where fieldwork is being performed.
 - c. Should a wildfire encroach upon the fieldwork area, implement the emergency evacuation plan.
 - d. Never attempt to suppress an uncontrolled wildfire.

B. Animals

If the nature of an ANR employee's fieldwork **requires contact with animals**, then the employee should contact ANR Environmental Health and Safety to evaluate animal handling procedures, including the use of personal protective equipment such as gloves and respiratory protection.

1. Mammals

Mammals pose several types of hazards to ANR employees performing fieldwork. The following types of hazards are associated with mammals:

- a. Rabies is usually caused by exposure to saliva transferred during the bite of a mammal that is infected with *Lyssavirus* virus. Mammals such as bats, raccoons, skunks, coyotes, and foxes are susceptible to carrying the rabies virus; with bats and skunks the most likely carriers in California. The following fieldwork precautions should be taken for rabies prevention:

- (1) Never approach wild mammals in the field, especially if their behavior is unusual;

- (2) Always wear gloves when handling wild mammals;
 - (3) Never touch dead mammals encountered in the field; and
 - (4) If bitten by a wild mammal, wash the wound thoroughly with soap and water and cover with a sterile bandage. Then, promptly seek professional medical help and notify your supervisor.
- b. Hantavirus Pulmonary Syndrome is a disease caused by the *Sin Nombre* virus carried by wild rodents and in California, particularly by the deer mouse. Infection usually occurs when airborne particles of infectious deer mouse or other rodent droppings and/or dried urine are inhaled. Failure to wash hands after handling infected deer mice or other rodents and/or their contaminated bedding materials can also cause infection. The following fieldwork precautions should be taken for hantavirus pulmonary syndrome prevention:
- (1) Personal protective equipment (PPE) must be worn when handling dead or live deer mice and other rodents. Depending on the potential exposure, PPE may include gloves, coveralls, and an air-purifying respirator. Wash your hands after handling any rodents.
 - (2) If possible, avoid disturbing or cleaning up deer mice or other rodent nests or droppings.
 - (3) Do not work inside poorly-ventilated buildings or enclosures within a fieldwork area. Especially where deer mice or other rodent contamination is present, unless the space has been thoroughly ventilated or respiratory protection is used.
 - (4) If bitten by a deer mouse or other rodent, wash the wound thoroughly with soap and water and cover with a sterile bandage. Then, promptly seek professional medical attention.
 - (5) If you suspect you have been exposed to the *Sin Nombre* virus, promptly seek professional medical attention.
 - (6) If you need to clean an area that has been contaminated by rodents, follow these procedures:
 - (a) Open windows and doors to ventilate the contaminated area for at least two hours.
 - (b) Wear sturdy rubber gloves.
 - (c) Use a 10% chlorine bleach or Lysol® solution to wet down and disinfect potentially contaminated items (rodent droppings, dead rodents, nests, traps and surrounding areas).
 - (d) Allow at least 15 minute contact time for the disinfectant solution, then wipe up with a damp mop, sponge, or paper towels.
 - (e) DO NOT SWEEP OR VACUUM – this could cause particles of virus to become airborne.

- (f) Double-bag the disinfectant-soaked items and discard in the trash.
 - (g) Rinse gloves in disinfectant solution before removing, then wash hands in soap and water.
- c. Mountain Lions occur throughout California foothill and mountainous regions and according to the California Department of Fish and Game (DFG) about one-half of the state is prime mountain lion territory. The following fieldwork precautions and actions are recommended by DFG to prevent mountain lion attacks:
- (1) Carefully consider safety before performing fieldwork that involves walking or hiking alone. When possible, work with a partner in mountain lion country.
 - (2) Never approach or corner a mountain lion and always give the animal an escape route.
 - (3) Do not run from a mountain lion because you may stimulate their instinct to chase. Make eye contact and stand and face the animal.
 - (4) When conducting fieldwork in mountain lion country, avoid crouching down or bending over. These positions are similar to the four-legged forms of a mountain lion's prey.
 - (5) Upon encountering a mountain lion, attempt to appear larger than you are by raising your arms and opening your jacket. Throw stones, branches or other items without crouching or turning your back. Wave your arms slowly and talk firmly in loud voice. Convince the mountain lion that you are a threat to it.
 - (6) If attacked, fight back by using whatever weapons you can grab. Try to remain standing and face the attacking animal.
- d. Black Bears are present in many habitats throughout California, but typically are found in mountainous areas above 3,000 feet. The following fieldwork precautions and actions are recommended by DFG to prevent black bear attacks:
- (1) Carefully consider safety before performing fieldwork that involves walking or hiking alone. When possible, work with a partner in black bear country.
 - (2) Never approach or corner a black bear, particularly a sow with one or more cubs, and always give the bear (and cubs) plenty of room to escape.
 - (3) Never put yourself between a mother bear and her cubs.
 - (4) If a cub is observed alone, immediately leave the area because it is very likely that the mother bear is closeby.
 - (5) Do not run from a black bear because you cannot outrun the bear. Make eye contact and stand and face the animal.

- (6) Upon encountering a black bear that does not flee, attempt to appear larger than you are by raising your arms and opening your jacket. Throw stones, branches or other items without turning your back. Wave your arms and yell at the bear.
- (7) If attacked, fight back by using whatever weapons you can find, including striking the bear with branches or other objects. Concentrate on striking the bear's face, eyes, and/or nose.
- (8) Throw something onto the ground (like a camera) if the bear pursues you, as it may be distracted by this and allow you to escape.
- (9) Climbing a tree to avoid bears is popular advice but not very practical in many circumstances. All black bears can climb trees. Running to a tree may provoke an otherwise uncertain bear to chase you.
- (10) If spotted by a bear, try to get its attention while it is a good distance away. Help the bear to recognize that you are human, by talking to it in a normal voice or waving your arms. If a bear cannot tell what you are, it may come closer or stand on its hind legs to get a better look or smell. A standing bear is usually curious, not threatening.

2. Reptiles

Poisonous Snakebites pose the primary reptile threat to fieldworkers in California. Poisonous snakes occur throughout California and are restricted to six species of rattlesnake: namely the Sidewinder, Speckled Rattlesnake, Red Diamond Rattlesnake, Southern Pacific Rattlesnake (also called Western Rattlesnake), Western Diamondback Rattlesnake, and Mojave Rattlesnake. The following fieldwork precautions and actions are recommended to prevent poisonous snake bites:

- a. Carefully consider safety before performing fieldwork that involves walking or hiking alone. When possible, work with a partner in areas where poisonous snakes are prevalent.
- b. Always wear sturdy hiking boots when performing fieldwork. Do not wear sandals or sneakers.
- c. Avoid heavy underbrush where you cannot see what is in front of you. Stick to existing trails. When heavy underbrush is unavoidable, use a walking stick to first probe and rustle brush and grass that you intend to traverse.
- d. Learn to recognize the poisonous snakes in the fieldwork area by studying a reptile field guide or other similar snake identification materials.

- e. Be aware that rattlesnakes do not always shake their rattles before striking.
- f. Closely look for snakes before placing your hands on objects such as rock outcrops or trees or picking up objects from the ground (i.e., rocks, plants, leaves, remote monitoring equipment, etc.)
- g. Thoroughly inspect the area where you intend to sit, particularly around stumps, logs, boulders, or rock outcrops.
- h. Carefully examine the ground before crossing over or under fences and across logs and boulders.
- i. Never approach, tease, corner, or poke at any snake. Always give snakes plenty of room to escape from you.
- j. Consider baby poisonous snakes to be as venomous as fully-grown poisonous snakes.
- k. Do not handle recently killed snakes. Although dead, a delayed nervous system reaction by the snake may cause it to bite.
- l. If a snake bite occurs: Calm the victim, wash the area of the bite with soap and water, apply a cold dressing over the bite area, contact the closest medical facility to pre-notify that a snake-bite victim will be arriving, and immediately transport the victim to the medical facility for professional treatment. Also, remove jewelry, watches, and tight clothing in preparation for tissue swelling.
- m. A poisonous snakebite should not be treated by tourniquets, applications of ice to the wound, or incisions to the snakebite with attempts to suck venom out of the affected area.

3. Insects

- a. Lyme Disease is caused by the transmission of the bacteria *Borrelia burgdorferi* through the bite of the western black-legged tick. The following fieldwork precautions should be taken for Lyme disease prevention:
 - (1) The best defense against Lyme disease is to not be bitten by a tick. When possible, avoid conducting fieldwork in favorable tick habitat such as moist shaded portions of woody, brushy, or grassy areas.
 - (2) Wear a long-sleeved shirt and long pants with boots in the field. Tucking your pants into your boots or socks helps prevent tick access to your skin. Light-colored clothing is preferable since

dark-bodied ticks are easier to spot against a lighter-colored background.

- (3) Use insect repellants containing compounds such as DEET (repels ticks) on exposed skin and permethrin (kills ticks on contact) on clothing only.
 - (4) Frequently check yourself and help check field colleagues for ticks.
 - (5) Ticks may attach to humans almost anywhere on the body, but those that bite fully-clothed persons commonly attach to sites such as the scalp, behind the ears, or on a limb. Therefore, pay particular attention to these areas while checking yourself or others for ticks.
 - (6) Remove attached ticks as soon as they are found by using fine-tipped tweezers to grab the tick's mouthparts against the skin and steadily pulling to remove the tick. Do not jerk or twist the tick. After removal, wash the bite site, apply an antiseptic, and cover the site with a band aid.
 - (7) Do not apply alcohol, fingernail polish, heat (e.g., with a lit match), or petroleum jelly to the tick; these methods have proven ineffective for tick removal.
 - (8) Promptly seek professional medical attention and notify your supervisor if you suspect you are experiencing Lyme disease symptoms such as muscle aches, joint pain, fatigue, chills, fever, swollen lymph nodes, heart palpitations, and/or an expanding "bull's eye" rash termed erythema migrans.
- b. West Nile Virus is caused by the transmission of a flavivirus through the bite of a mosquito. The following fieldwork precautions should be taken for West Nile virus prevention:
- (1) The best defense against West Nile virus is to not be bitten by a mosquito. Therefore, avoid conducting fieldwork during peak mosquito activity times (dawn and dusk to two hours after sunset) and in favorable mosquito habitat such as wetlands, along streams, lakes, or oceans, and moist shaded portions of wooded, brush-covered, or grassy areas.
 - (2) Wear a long-sleeved shirt and long pants with boots in the field. Tucking your pants into your boots or socks helps prevent mosquito access to your skin.
 - (3) Use insect repellants containing compounds such as DEET (repels mosquitoes) on exposed skin and permethrin (kills mosquitoes on contact) on clothing only.
 - (4) Promptly seek professional medical attention and notify your supervisor if you suspect you are experiencing West Nile virus symptoms such as high fever, headache, stupor, disorientation, tremors, numbness, paralysis, swollen lymph nodes, skin rash on chest, stomach, and/or back, body aches, or nausea.

Note: A detailed discussion of West Nile virus is available at the Los Angeles County Cooperative Extension internet site, <http://celosangeles.ucdavis.edu/>.

- c. *Biting and Stinging Insects* cause nuisance bites and stings that can result in allergic reactions, tissue swelling, infections of bite and sting sites, skin lesions, itching, dermatitis, and pain or burning sensations. Common California biting and stinging insects include ticks and chiggers, mosquitoes, centipedes, black, deer, and horse flies, spiders including black widow and brown species, fire ants, midges, bees including Africanized honey bees, wasps, hornets, and scorpions. The following fieldwork precautions should be taken for preventing insect bites and stings:
- (1) The best defense against biting and stinging insects is to not be bitten by one. Therefore, avoid conducting fieldwork during peak biting or stinging insect activity times (usually early morning and evening hours) and in favorable biting or stinging insect habitat such as wetlands, along streams, lakes, or oceans, and moist shaded portions of wooded, brush-covered, or grassy areas. Also, avoid contact with insect nests, swarming insects, and ant mounds.
 - (2) Wear a long-sleeved shirt and long pants with boots in the field. Tucking your pants into your boots or socks helps prevent biting and stinging insect access to your skin.
 - (3) Use insect repellants containing compounds such as DEET (repels insects) on exposed skin and permethrin (kills many insects on contact) on clothing only.
 - (4) Closely look for insects or insect activity before placing your hands on objects such as rock outcrops or trees or picking up objects from the ground (i.e., rocks, plants, leaves, remote monitoring equipment, etc.).
 - (5) Thoroughly inspect the area where you intend to sit, particularly around stumps, logs, boulders, or rock outcrops.
 - (6) If you experience an insect bite or sting, wash the wound with soap and water, apply an antiseptic, and cover the wound with a band aid or clean dressing. Carefully remove stingers from skin by using fine-tipped tweezers to grab the stinger between the skin and bulb containing additional venom. Take care not to squeeze the stinger bulb and thereby, cause the release of additional venom. After stinger removal, clean and dress the sting wound.
 - (7) Never scratch an insect bite or sting.

- (8) Promptly seek professional medical attention and notify your supervisor if you suspect you are experiencing allergic reaction symptoms such as dizziness, nausea, headache, shortness of breath, and/or sweating.
- (9) Let your field colleagues and supervisor know in advance if you are allergic to insect bites or stings so they can respond appropriately if you are bitten or stung. More particularly, notify your field colleagues and supervisor if (and where) you carry an epinephrine or EpiPen® auto-injector to treat severe allergic reactions (anaphylaxis).

C. Plants

Toxic Plants can cause mild to severe dermatitis when plant sap, fluids, or thorns come into contact with exposed skin. California toxic plants include weeping fig, poison oak, chrysanthemum, geranium, ivy, century plant, crown of thorns, primrose, and firethorn. The following fieldwork precautions should be taken to prevent contracting dermatitis from toxic plants:

1. The best defense against acquiring dermatitis from toxic plants is not to come into contact with them. Accordingly it is prudent practice to be able to readily recognize and thereby avoid, toxic plants that may occur in the fieldwork area.
2. Wear a long-sleeved shirt and long pants with boots in the field. Tucking your pants into your boots or socks helps prevent toxic plant contact with your skin.
3. Closely look for toxic plants before touching objects such as rock outcrops or trees or picking up objects from the ground (i.e., rocks, plants, leaves, remote monitoring equipment, etc.).
4. Thoroughly inspect the area where you intend to sit.
5. If you develop dermatitis from a toxic plant, treat the affected area by: washing with soap and water; rinsing with large amounts of water; and drying with a clean cloth.
6. Promptly change clothing that has been exposed to toxic plants. Handle contaminated clothing carefully. Wash contaminated clothing several times in unmixed laundry loads.
7. Never scratch an area of skin affected by dermatitis.
8. Seek professional medical help and notify your supervisor if dermatitis induced by contact with a toxic plant does not improve or worsens.

D. Weather

1. Temperature Extremes

The primary weather extreme threats to fieldworkers are cold stress and heat stress as described below.

a. Cold Stress may cause reactions that range from mild discomfort to serious health problems such as hypothermia and frostbite. The following fieldwork precautions should be followed to prevent and control cold stress disorders:

- (1) Always dress appropriately for cold weather.
- (2) During cold and windy weather, wear a wind-resistant coat or jacket.
- (3) Wear a hat, mittens, water-resistant boots and coat, and several layers of clothing.
- (4) Always stay dry and remove/replace wet layers of clothing.
- (5) Be aware that wool, silk, or polypropylene clothing retain body heat better than cotton.
- (6) Work slowly and seek shelter in an indoor heated space whenever exposed skin or extremities begin to feel cold.
- (7) If you or a field colleague are experiencing hypothermia symptoms (i.e., confusion, slow or slurred speech, low blood pressure, weak pulse, excessive shivering, loss of coordination, difficulty moving, etc.), immediately contact 911.
- (8) Always move a hypothermia victim to a warm place and if the victim is unconscious, check airway. If necessary, start CPR.
- (9) If you or a field colleague are experiencing frostbite symptoms (i.e., tingling, stinging, or aching feeling on exposed skin, intense cold or numbness, observe gradually changing affected skin area turning from flesh colored to white or grey-white), promptly seek professional medical attention and notify your supervisor.
- (10) Do not walk on frostbitten toes or feet or massage frostbitten limbs or other areas. Cover frostbite area with clean cloth and begin slowly warming.

b. Heat Stress may cause reactions that range from mild discomfort to more serious health problems such as heat stroke, heat exhaustion, heat cramps, heat syncope, and heat rash. The following fieldwork precautions should be followed to prevent and control heat stress disorders:

- (1) Acclimatize yourself to the prevailing weather conditions.
- (2) Always drink plenty of fluids such as water and sports drinks. Avoid caffeinated drinks.

- (3) Emergency regulations adopted by the California Occupational Safety and Health Standards Board on August 12, 2005 require all employees to be trained about the importance of frequently consuming small quantities of water, up to one quart per hour, under extreme conditions of work and heat (CCR Title 8, Section 3395 e 1 C).
- (4) Make sure there is a shaded area that employees can use to rest and cool down if they are experiencing fatigue or signs of heat illness (CCR Title 8, Section 3395 d).
- (5) Wear summer hat with a brim and loose-fitting, light-colored, and lightweight clothing like cotton.
- (6) Schedule vigorous fieldwork activities during coolest portions of the work day and take frequent breaks on hot days.
- (7) If you or a field colleague experience heat stroke symptoms (i.e., confusion, fainting, seizures, hot dry skin usually reddish in color, high body temperature), immediately contact 911.
- (8) Always move heat stroke victim to a shaded and cool area. Soak the victim's clothing with cool water and fan victim to increase cooling of the body.
- (9) If you or a field colleague experience heat exhaustion symptoms (i.e., fatigue, dizziness, nausea, pale and moist skin, possibly slightly elevated temperature), promptly move victim to shaded and cool place and have victim drink non-caffeinated fluids.
- (10) If you or a field colleague experience heat cramp symptoms (i.e., muscle spasms in arms, legs, and abdomen during or following fieldwork activities), have the victim rest and drink non-caffeinated fluids.
- (11) If you or a field colleague experience heat syncope symptoms (i.e., fainting while standing still), have the victim rest in a shaded and cool place and drink non-caffeinated fluids.
- (12) If you or a field colleague experience heat rash symptoms (i.e., irritated/itchy skin with prickly feeling and small red bumps on skin), wash and dry the skin. Wear loose clothing and keep skin dry.
- (13) If treated victims do not recover from heat exhaustion, heat syncope, or heat cramp symptoms in a reasonable amount of time (i.e., 15 to 30 minutes), promptly seek professional medical attention and notify your supervisor.
- (14) Before starting fieldwork at a new location, make sure you and your co-workers know how to summon emergency medical aid (call 911 or local medical dispatch) and are able to give clear directions to your location.

2. Lightning from thunderstorms is a dangerous threat to fieldworkers if they are in proximity to the storm. The following fieldwork precautions should be followed to reduce the potential for being struck by lightning:

- a. Be aware that if you are within hearing distance of thunder, you are also within striking distance of lightning.
 - b. If you see lightning and hear the resultant thunder in less than 30 seconds, the thunderstorm is within six miles of you and should be considered dangerous.
 - c. Whenever a lightning threat becomes significant, seek shelter immediately.
 - d. Sheltering from lightning includes returning to a field vehicle, vacating ridge or hill tops and open water bodies, and occupying field buildings or facilities.
 - e. Never stand under canopies, small picnic or rain shelters, or an isolated tree in an open area to seek safety from a thunderstorm. Likewise, erecting and occupying a temporary shelter in an open area will not provide adequate protection from lightning.
 - f. If a fieldworker is struck by lightning, immediately contact 911 and notify your supervisor.
 - g. If the victim of a lightning strike is unconscious, check airway. As necessary, start CPR and apply other first aid measures.
3. Ultraviolet Radiation is that portion of energy transmitted from the sun that occurs within the wavelength range of 100 through 400 nanometers. Overexposure to ultraviolet A and part of ultraviolet B can cause damage to the skin and eyes.
- a. Skin Protection should be a major concern for those employees spending significant time outdoors while performing fieldwork. The following fieldwork precautions should be followed to reduce possible skin damage from ultraviolet radiation:
 - (1) Working outdoors exposes fieldworkers to ultraviolet radiation levels 20 times greater than those found indoors.
 - (2) Ultraviolet radiation exposure increases by about 10 percent with every 3,000 foot increase in elevation.
 - (3) Peak hours of ultraviolet radiation are between 10:00 am and 4:00 pm.
 - (4) Always wear a hat with brim, long-sleeved shirt, and long pants when performing fieldwork.
 - (5) Use a sunscreen with a skin protection factor (SPF) of 15 or greater on exposed skin.

- (6) If you observe sunburned skin on yourself or a field colleague, relocate your field activities to shaded locations out of direct sunlight.
 - (7) Remember that ultraviolet radiation exposure also occurs on cloudy days.
- b. Eye Protection should be a major concern for those employees spending significant time outdoors while performing fieldwork. The following fieldwork precautions should be followed to reduce possible eye damage from ultraviolet radiation:
- (1) Working outdoors exposes fieldworkers to ultraviolet radiation levels 20 times greater than those found indoors.
 - (2) Ultraviolet radiation exposure increases by about 10 percent with every 3,000 foot increase in elevation.
 - (3) Peak hours of ultraviolet radiation are between 10:00 am and 4:00 pm.
 - (4) When working outdoors it is prudent practice to wear sunglasses or goggles that filter 99 to 100 percent of ultraviolet radiation.
 - (5) If you are taking medications to treat psoriasis, antibiotics such as tetracycline and doxycycline, or sulfa drugs, consult your physician about potential sensitivity effects to eyes from sunlight.
 - (6) Remember that ultraviolet radiation exposure also occurs on cloudy days.

E. Environment

Fieldwork by ANR employees may take place in environments that encompass mountainous to wetland terrain and may include working on, in, or adjacent to streams, lakes, and other bodies of water.

1. Terrain. The terrain where fieldwork is conducted may range from relatively flat land to steep, rugged topography and from wetland to desert conditions. Precautions to prevent injury vary somewhat depending on the type of terrain encompassed by the field area. The following fieldwork precautions should be followed to reduce the potential for incurring terrain-related injuries:
 - a. It is a prudent practice to work with a partner in remote field areas.
 - b. Know the daily route(s) you will be taking during your fieldwork. Carry a reference field-route or -location map, if necessary.
 - c. Always treat hilly and mountainous topography with caution. Carefully pick the spots where you intend to step. Be careful of dislodging rocks onto other fieldworkers below or following you.

- d. Walk carefully in uneven terrain, especially when the ground surface may be obscured by vegetation or during twilight or at night.
 - e. Dress appropriately for field area terrain: as necessary wear a hat, long pants, boots or sturdy shoes, and eye protection (i.e., sunglasses).
 - f. Rock climbing without proper experience or equipment is dangerous and ill advised.
 - g. Be particularly alert for falling rocks, rock slides, or rock falls when working in proximity to cliff faces or steep rock outcrops. Wear a safety hat when working in areas where falling rocks are common.
 - h. When performing fieldwork in wet areas or in proximity to water, beware of stepping onto slippery rocks, slopes, or ground.
 - i. When working in wetland areas, be cautious of stepping onto unsupported vegetation, soft mud, or quicksand. Use a pole or branch to probe the path surface ahead of you when traversing wetland areas.
 - j. Be conscious of tidal cycles when performing fieldwork in coastal and estuarine wetland areas. Consult tide tables or similar reference materials and plan your fieldwork accordingly.
2. Water. Performing work from watercraft or while partially immersed or adjacent to water poses several risks to fieldworkers. Primary risks to fieldworkers include watercraft accidents, cold stress, and drowning. The following fieldwork precautions should be followed to reduce the potential for incurring injuries while working on, in, or adjacent to water:
- a. When performing fieldwork near or on water, it is a prudent practice to be capable of swimming.
 - b. Be aware of the water conditions in the fieldwork area. Know where currents, rapids, and obstructions exist and the locations of shallow and deep spots.
 - c. Be prepared for field conditions by learning the daily weather and if appropriate, tidal forecast(s).
 - d. When working from watercraft or close to water, always wear an approved personal flotation device.

- e. When using a motorized watercraft, review the operator's manual with particular attention given to descriptions of safety procedures.
- f. Know and understand basic navigational rules (i.e., "Rules of the Road"), as presented in the DBW publication *ABCs of the California Boating Law* (<http://dbw.ca.gov/Pubs/Abc/index.asp>).
- g. Before using, always inspect the watercraft for damage or disrepair and make sure all motor shields and guards are securely in place.
- h. Never overload a watercraft.
- i. Wear a wet suit or waders when entering cold water.
- j. Depart any water body when you become aware of an approaching storm.
- k. Maintain a safe distance from intake or outlet structures and spillways.
- l. Always follow all laws and regulations for waterways. For additional information, see the ABC's of California Boating Law on the Department of Boating and Waterways website at: <http://dbw.ca.gov/Pubs/Abc/index.asp>.

VII. PERSONAL PROTECTIVE EQUIPMENT

- A. When performing fieldwork, wear a field hat, clothing, and work boots appropriate for the weather and terrain and carry a first aid kit along with adequate water and food.
- B. Wear eye protection applicable to the type of field tasks to be performed (i.e., safety glasses or goggles when flying debris is generated) and to prevent damage from ultraviolet radiation.
- C. Wear ear protection when using tools or equipment that produce noise levels above 90 decibels (the level of a lawn mower engine).
- D. Wear appropriate respiratory protection when hazardous dusts, mists, or vapors are present in the fieldwork atmosphere.
- E. Wear sunscreen on exposed skin areas. Carry extra sunscreen for reapplication, as necessary.
- F. Carry insect repellent, where appropriate.
- G. When applicable, use gloves to protect hands.

H. A field first aid kit should contain, at a minimum, the following:

1. A selection of band aids and sterile dressings.
2. Tape.
3. Antiseptic.
4. Fine-tipped tweezers.
5. Eye drops.
6. Latex gloves.

VIII. TRAINING

ANR employees that conduct fieldwork in forested, brush-covered, grassland, and/or wetland areas shall be trained on the potential hazards associated with their specific work activities and local field conditions. Training may be accomplished by reviewing information given in this Administrative Guidelines or by utilizing the following Safety Notes that have been developed for this purpose:

- Safety Note #20 Heat Stress Awareness
- Safety Note #23 Eye Protection from Ultraviolet Radiation
- Safety Note #46 Skin Protection from Ultraviolet Radiation
- Safety Note #54 Cold Stress Awareness
- Safety Note #77 Fieldwork Safety: Poisonous Snakes
- Safety Note #78 Fieldwork Safety: Mountain Lions
- Safety Note #79 Fieldwork Safety: Lyme Disease
- Safety Note #80 Fieldwork Safety: Lightning
- Safety Note #81 Fieldwork Safety: Water
- Safety Note #82 Fieldwork Safety: Hantavirus Pulmonary Syndrome
- Safety Note #83 Fieldwork Safety: Rabies
- Safety Note #84 Fieldwork Safety: Black Bears
- Safety Note #85 Fieldwork Safety: West Nile Virus
- Safety Note #86 Fieldwork Safety: Biting and Stinging Insects
- Safety Note #87 Fieldwork Safety: Toxic Plants
- Safety Note #88 Fieldwork Safety: Fire Preventative and Defensive Measures
- Safety Note #89 Fieldwork Safety: Terrain