



Hazards of the Outdoors



Hazards of the Outdoors

By
Terry S. Price
Retired Entomologist
(Edited by the Forest Health Staff)
Revised - January 2013

Foresters and others who work outside and those who enjoy being in the outdoors are often confronted with hazards that can cause sickness, injury, or death. This booklet provides a brief description of those hazards to help you avoid an unpleasant encounter.

Insects, scorpions, spiders, and ticks are members of a group of animals known as arthropods. Several species can sting or bite, transmit disease causing organisms, cause serious allergic reactions and are considered harmful to humans.

Bees and wasps can also be the cause of injury without stinging. When accidentally disturbed or encountered, these insects can create so much excitement that people often panic and become careless while trying to escape. Individuals have been known to jump from ladders and scaffolding, abandon running machinery (bulldozers, tractors, chainsaws, etc.), throw tools, and even lose control of their automobiles. The injuries sustained while trying to avoid a sting can be severe to fatal.

Mosquitoes are not only annoying when they bite, they can also transmit the disease organisms that cause malaria, yellow fever, dengue fever, West Nile virus, and encephalitis.

Deer flies are vicious biters as well as vectors of the bacterium that causes tularemia.

Ticks are vectors of many diseases some of which are Rocky Mountain spotted fever, Lyme disease, ehrlichiosis, and tularemia. Tick paralysis is caused by a neurotoxic substance injected by an engorging tick.

These medically important arthropods and the other hazards mentioned in this booklet can be avoided if one will stay alert and be wary of their presence when outdoors.

Georgia Forestry Commission
1-800-GA-TREES
GaTrees.org

Funding for printing of this publication is provided by the USDA Forest Service

Allergic Reactions

Venom and saliva of arthropods can cause allergic reactions in humans. The severity of reactions varies and depends on the nature of the venom/saliva and the individual's sensitivity to it. Most allergic reactions to stings and bites are brought about by the body's own immune system. Antibodies are produced to attack the intruding allergen. The antibody most closely associated with allergies is immunoglobulin E (IgE). We all possess IgE antibodies as part of our immune systems; however, some individuals appear to produce larger quantities. When these IgE antibodies collide with the allergens, chemical substances are released one of which, is histamine. Histamine can cause a number of reactions in humans. These reactions may affect the circulatory, respiratory and other body systems. The reactions vary in severity depending on the amount of histamine released. Persons whose immune systems are producing large quantities of IgE antibodies will exhibit more intense allergic reactions and are considered to be hypersensitive. Until first exposed to an allergen, the body has not developed any allergen-specific IgE antibodies; therefore, the first exposure to a venom is usually not life threatening. After the body has been exposed to a particular allergen, it becomes sensitized to it and future stings may result in similar reactions or even more severe reactions. The venom of honey bees and certain wasps contains histamine. Therefore, when histamine is injected directly into the body, reactions can occur immediately and are not antibody mediated as described above. **Honey bee stings and those of some wasps (social and solitary) contain histamine.** Fortunately only a small percentage of the human population is hypersensitive. The typical response to a single sting is intense pain and burning for 10-15 minutes. A wheal often forms soon after the sting (*Figure 1*). Some local swelling around the sting site may occur. Generally, after a day or so only an itchy spot remains at the sting site.

Non-hypersensitive individuals receiving many stings often experience the same symptoms as with a single sting except the pain and swelling are more intense and last for longer periods. These reactions are referred to as large local reactions but are not considered life threatening and require no medical attention (*Figure 2*).

The reactions of medical concern are referred to as systemic or generalized reactions. Systemic reactions

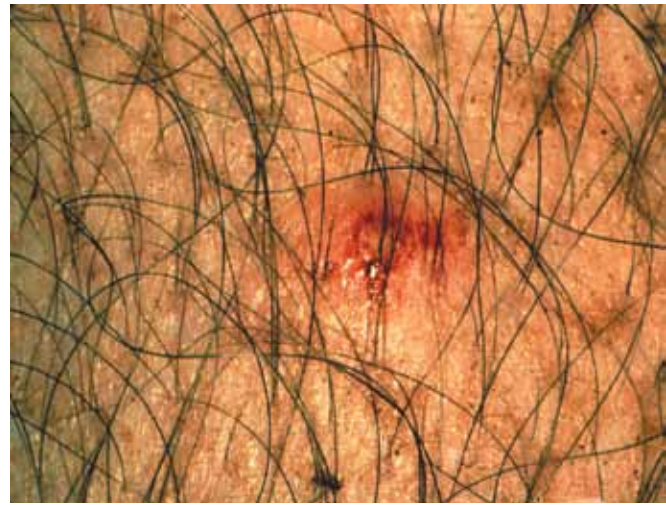


Figure 1

can be classified as cutaneous, vascular, or respiratory. Cutaneous reactions involve only the skin and consist of rashes, itchiness, swellings, hives, and general reddening. Vascular reactions may lead to dizziness, fainting, and unconsciousness. Respiratory reactions consist of swellings and/or massive buildup of fluids in the respiratory system. This causes difficulty in breathing, sneezing, tightness in the throat and chest, or frothing from the mouth. Respiratory reactions are terrifying to the victim because he or she perceives they are suffocating.



Figure 2

Other reactions often involve the gastrointestinal tract and result in nausea, vomiting, diarrhea, headache, chills or fever, weakness and a feeling of impending fear. Reactions involving the vascular and respiratory systems are of major medical concern. The inability to obtain air or a very low or absent blood pressure means oxygen deprivation is occurring to the brain that may result in

possible death. Reactions, which cause congestion in the heart, brain or lungs, are anaphylactic in nature and are very serious.

Hypersensitive persons can be desensitized by receiving injections of venom preparations from the arthropod species to which they are allergic. The injections are gradually increased in strength until the patient can tolerate a few stings without having an allergic reaction. This procedure is known as immunotherapy and is done by a physician (allergist).

Immunotherapy is a complicated and lengthy procedure and the patient will require numerous injections. The entire program must be completed as prescribed by the physician. Recent studies indicate venom immunotherapy is highly effective in reducing the reoccurrence of a systemic reaction and is recommended for hypersensitive people. However, people who have undergone immunotherapy should continue to avoid stings and be aware that they may be one of the unfortunate



Figure 3

few who may react to a sting at some later date. Insect sting kits are available by prescription and come highly recommended for those who are hypersensitive to stings even following immunotherapy. These kits contain a pre-measured dose of epinephrine that can temporarily halt the onset of severe systemic reactions. Sting kits do not replace expert medical care but should be carried by hypersensitive individuals and those who work in remote places far away from emergency medical aid (*Figure 3*).

The Social Wasps and Bees (Order Hymenoptera)

The social Hymenoptera includes the fire ants, honeybees, bumble bees, paper wasps, yellowjackets, and hornets. These insects are social in that they live in colonies in which individuals perform certain functions. The individuals of a colony are of three types - queens, workers, and males. The queens and workers are **females that possess stingers**, which are capable of delivering a painful, venomous jab. The stinger is a modified egg laying tube that is used for defense and for paralyzing prey during food gathering. **Some colonies may contain several hundred stinging members. This increases the likelihood of multiple stings when a nest is disturbed.** Hymenoptera venom is protein-based except in the fire ants, which is composed of potent alkaloids.

The paper wasps, yellowjackets and hornets construct their nests out of materials that consist of wood or leaves that have been chewed and worked into a papery substance. These nests can be found in many places and are frequently encountered by people and pets. Nests are abandoned before winter and only the queens survive the winter. In the spring she emerges from hiding to start a new nest and colony.



Figure 4

The **yellowjackets** are medium sized wasps marked with black and yellow bands or stripes that build nests below or above the ground (Figure 4). Subterranean nests are often built in rotten stumps, under landscape timbers and firewood piles, and in the sides of terraces, gullies or ditches. Above ground nests occur in barns between



Figure 5

stacks of baled hay or straw, under porches, in block voids and wall voids of buildings (Figure 5). The eastern and southern yellowjackets are two common species found in the South. Both species are very aggressive when nesting sites are approached and intruders are often stung repeatedly before they can retreat. People are often stung by yellowjackets while mowing grass, walking behind tractors that are plowing or excavating dirt or walking through wooded and brushy areas. Nests located in wall voids may threaten people inside the home when individual yellowjackets enter a room through openings around electrical outlets.

The **bald-faced hornet** (aerial yellowjacket), is not a true hornet. It's an aerial nesting yellowjacket that prefers to build nests in trees, bushes, and shrubs (Figure 6). The bald-faced hornet is marked with a white face and is considerably larger than the other yellowjackets. The nest is very similar in size and shape to a yellowjacket's nest and it can pose a serious threat to people when built close to the ground.



Figure 6

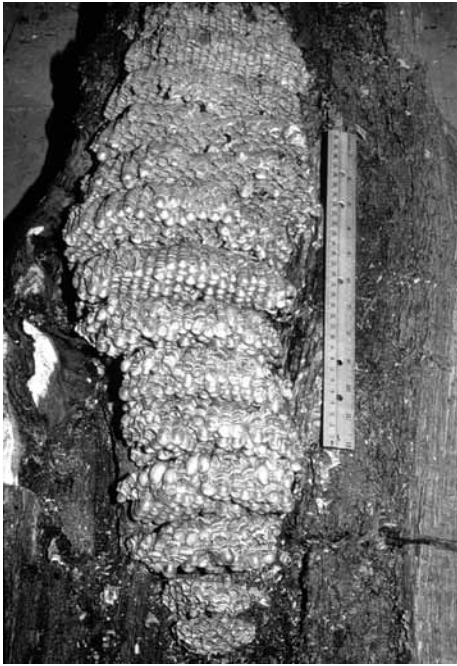


Figure 7

The **European hornet** is the only true hornet in North America. It was unknowingly brought to the U.S. around 1850 from Europe and prefers to build its nests in tree cavities, chimneys, wall voids, and hollow porch posts (Figure 7). This hornet is attracted to lights at night and is often a nuisance to people who like to sit on the porch and “chew the fat”. It is a relatively large wasp and is reddish brown with lighter markings around the head and abdomen. It is reluctant to sting when encountered away from the nest. However, do not swat at the one buzzing your head, you may provoke a sting. The nests are large and may be protected by several hundred stinging wasps.

The **guinea wasp** is often confused with the yellow-jacket because of similar black and yellow markings (Figure 8).



Figure 9



Figure 8

It is probably encountered more than any other paper wasp. It will nest under mailboxes, propane tank tops, above doorways, under decks and porches; on playground equipment and in shrubbery and brush piles. The nest is usually small (<20 wasps) and is attached by a single pedicel.

The **red wasp** is found more often along river and creek banks in trees and bushes. However, large nests are common around barns and other out buildings. Several nests containing over 500 wasps were removed from an idle chimney. This wasp is larger than the guinea wasp and is reddish brown in color (Figure 9). The nest is usually larger than the guinea wasp’s.

The **bumble bees** and **honey bees** are easily recognized. The bumble bees are represented by several species; some large and others only slightly larger than the honey bee (Figure 10).



Figure 10



Figure 11

Bumble bees nest underground in pastures, orchards, yards and parks; under clumps of matted straw or grass and in abandoned bird houses and animal burrows. Most bumble bees are covered with black and yellow hairs over much of the body. They are often confused with the not-so-hairy carpenter bee. Bumble bees are very aggressive and may often pursue an intruder for hundreds of feet. People who mow large fields, pastures or orchards are often stung by bumble bees. Otherwise, most stings occur around flowers while bees are feeding.

Honey bees naturally nest in trees with cavities, but when such sites are limited, they will choose attics or walls in houses and other buildings. Rarely they will build a hive in the open air attached to a tree branch (Figure 11). A honey bee stings only once. The stinger has inverted barbs down the sides and when it's thrust into the skin, the barbs catch the skin. As the bee attempts to fly away, the stinger is pulled from the body along with the venom sac (Figure 12). The *Africanized honey bee* is sure to spread



Figure 13



Figure 12

throughout the southeastern U. S. over the next 10 years. The venom of this bee is not any more treacherous than that of our familiar honey bees; however, the African bee is very aggressive and attacks with a vengeance.

Fire ants have become a major nuisance throughout much of the South. The red and black imported fire ants were introduced into the United States from South America (Brazil and Uruguay). The southern fire ant is a native species. Their mounds are common in pastures, lawns, parks, golf courses, and along roadsides (Figure 13). Stings from the red imported fire ant always cause intense burning and produce necrotic pustules that itch for days (Figure 14). Fire ants can be distinguished from most other ants by having two nodes on the pedicel. The venom contains a potent alkaloid and only a trace of protein.



Figure 14

Solitary Wasps and Bees (Order Hymenoptera)

This group includes those bees and wasps that do not have a social structure and are only occasionally encountered by people. Among the more common ones are the velvet ants, sweat bees, spider wasps, cicada killers, mud daubers, and carpenter bees.

The **velvet ants** are wasps and not ants. In the southeastern U.S. they are called "cow killers." The females are wingless and scurry along the ground alone in search of prey. They can inflict painful, repeated stings. They are brightly colored and have a velvety texture. A common species throughout the south is red and black (*Figure 15*). Female velvet ants like to roam in open places where the ground cover is sparse. Males



Figure 15

can fly and are often a nuisance to golfers around greens. Remember that males can't sting. Velvet ants are predacious on spiders and other insects and are very beneficial, discounting of course, their painful sting. Wearing shoes when outdoors and being careful where you sit can help prevent stings from velvet ants. Sitting on the ground is really a poor practice for a number of reasons (chiggers, ticks, velvet ants, fire ants, spiders, and scorpions ad infinitum).

Carpenter bees look like bumble bees except their abdomens are smooth and void of hair (*Figure 16*).



Figure 16

The females can sting but rarely do. Carpenter bees nest in seasoned wood and can be damaging to log homes and other wood in use (*Figure 17*). The males have a white marking on the face and often buzz people into intimidation, but we now know those male insects can't sting, so why get upset? Carpenter bees visit flowers often and blend with bumble bees quite effectively.

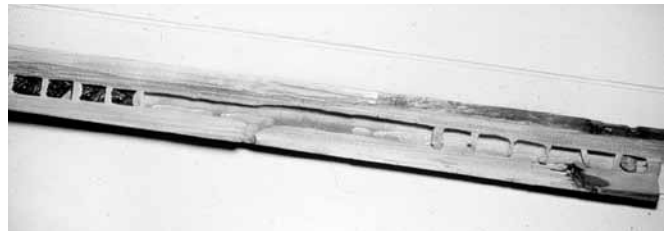


Figure 17

Treatment of Hymenoptera Stings

Warning: If stung, remove all rings and bracelets immediately. Arms and hands may swell twice their normal size in a matter of minutes. If you are known to be hypersensitive, wear a medical alert bracelet in the event you are stung and lose consciousness.

Local Reactions:

- A honey bee stinger should be scraped off with a knife blade, credit card or long fingernail. If the stinger is lifted with fingers or forceps, the venom sac, which is attached, could get mashed, forcing more venom into the victim.
- Wasps and other bees do not leave stingers in the skin. There is no need to try and scrape for stingers.
- Wash the sting site with soap and water or disinfect the site with an antiseptic to prevent infection. Elevate the affected limb to about heart level.
- Several topical creams or ointments are available that contain benadryl which will relieve itching and reduce local swelling. If these are not available, **wet table salt** placed immediately on the sting site will lessen the swelling and pain (*Figure 18*). None of these remedies will prevent a systemic reaction in hypersensitive persons.
- Be aware of systemic reactions developing within 10-30 minutes.

Systemic Reactions:

- Use an insect sting kit if available. Follow the directions provided in the kit. Transport the victim to the nearest physician or urgent care center. **One study indicated that 70% of all deaths related to Hymenoptera stings were from respiratory failure caused by massive secretions and/or swelling resulting in blocked airways.**
- If a sting kit is not available, place an ice pack on the sting site and transport the victim to the nearest medical facility. Remember, most systemic reactions occur within 10-30 minutes. **One study indicated that 58% die in less than 1 hour and that one-half of the deaths from Hymenoptera stings occur in victims over 50 years of age.**
- A sting kit is not a substitute for a physician. Even after the administration of epinephrine, a victim may experience a second phase of anaphylaxis hours after the initial reaction. **Always see a physician and make sure family members know how to use the sting kit.**



Figure 18

Avoiding Stings and Other Injuries

- Wear dull colored clothing when outdoors. Brightly colored clothing attracts certain Hymenoptera. **Remember**, flowers are brightly colored and many bees and wasps feed on the nectar and pollen of flowers.
- Wear long sleeves and long legged pants outdoors where practical. Sweat bees can sting and are attracted to sweaty skin.
- Do not wear sweet smelling cologne or perfume when outdoors. Sweet odors attract bees and wasps.
- Before you smell the roses make sure a bee hasn't beat you to them. Flowers that are big and showy can harbor a bee deep inside.
- Don't swat at flying bugs. If you hear a buzzing sound around the head, stay calm and retreat slowly.
- If you encounter a nest, don't panic and don't forget where you are. Tree surgeons have let go of ropes high above the ground and painters have jumped from scaffolding.

Spiders

All spiders are considered venomous but most species do not cause serious reactions in people. The **black widow** and **brown recluse** are exceptions. The brown recluse is easily recognized by a violin or fiddle-shaped mark on the top of its body (*Figure 19*).



Figure 19

Three other species of spiders frequently found in the forests are the golden silk spider, garden spider, and spiny-bellied spider (*Figures 20-22*).



Figure 20 - Golden Silk Spider

Brown recluses are shy spiders that prefer quiet, undisturbed places. People are often bitten while cleaning out closets, basements, or other storage areas. Shoes and clothing in storage are often infested.

Reactions to brown recluse venom may be mild to very severe. The venom is classified as a necrotoxin. The



Figure 21 - Garden Spider



Figure 22 - Spiny-Bellied Spider

bitten area becomes painful and swollen in a short period. Blisters often form on the skin around the bite site (*Figure 23*). The next day the skin at the bite begins to turn purple. During the next week or more the skin turns



Figure 23



Figure 24

black as the cells die (Figure 24). Later the blackened area sloughs off leaving a depression in the skin (Figure 25). The depression slowly fills with scar tissue. Many times the bite site has to be repaired by a surgeon to promote healing otherwise an unsightly scar often remains (Figure 26). Brown recluse spiders can become a nuisance in untidy areas at home or on the job. Closets, basements, and other storage areas should be periodically cleaned and straightened to discourage spiders from taking up residence there. Work gloves, shoes, boots, and coveralls should be sealed in plastic bags when not in use to inhibit the invasion of spiders.



Figure 25



Figure 26

The **black widow** is considered an extremely poisonous species. The mature female is easily identified by a red hourglass mark on the underside of the abdomen (Figure 27). Younger females will be variously marked with white and red on the upper abdomen (Figure 28).



Figure 27



Figure 28

Outdoors, black widows build their webs close to the ground under houses, stones, wood, tin, in tall weeds and grasses, in water meter boxes, around playground equipment, and many other unlikely places. Indoors, the spiders often are found in attics, basements, and under cabinets.

Reactions to a black widow bite are unique and usually follow a similar pattern among all victims. The venom is classed as a neurotoxin. The bite itself is very seldom felt but immediate pain soon follows. Victims suffer with severe muscular pain, stiffening of abdominal muscles, weakness, tremor, sweating, and salivation. Convulsions may occur in small children. Death is rare but does occur more frequently in children and older persons. In one study, large, muscular adult men seemed to be affected the most. Local treatment of the bite site is usually not effective. The victim should get immediate medical attention. Try to capture the spider so physicians can make a positive identification. This will aid in treatment.

Rubbish piles, old boards, and tin should be removed from around buildings. Grass and weeds should be mowed frequently. Children's play areas should be inspected weekly during the warm months for spiders. It is not uncommon to find black widows under sandboxes, around playhouses, benches and tables, and various types of homemade and commercial playground equipment.

The golden silk spider is chiefly a Coastal Plains spider. It inhabits dense bottomland woods and can number many hundreds per acre. The bite is painful but severe reactions are not reported.

The spiny-bellied spiders are probably the most commonly encountered spiders in the forests. Their webs can be obnoxious when they get entangled in the hair and face area. Their bite is nothing to fear, however.

The arboreal orb weavers (not pictured) are common in forests too. They often suspend silk threads across wide areas such as roads and fireline breaks. An orb web is then spun in the center of the silk strand in the evening hours and then removed before daylight. The strand of silk remains attached between two objects during the day and then again in late evening the spider crawls out and reconstructs the orb web in hopes of catching a night flying prey. During the day, these spiders hide in folded leaves in trees.

Scorpions

All scorpions are nocturnal and are usually not seen during daylight hours unless their hiding places are disturbed. They nest and hide under objects on the ground outside and crawl spaces under buildings, and in attics and walls indoors. Scorpions enter homes through weep holes in brick, plumbing and electrical holes in flooring and walls and under doors. If a scorpion is spotted indoors it should indicate to the homeowner that some caulking is needed (*Figure 29*).



Figure 29

Scorpions can be discouraged from nesting in and around buildings by removing harborage such as piles of wood and debris. Firewood should be stored off the ground and several feet from buildings.

People working outdoors should wear gloves when raking leaves or removing old boards, bricks and rocks and other rubbish.

Campers should rake leaves and other ground litter away from the areas where tents or sleeping bags will be used.

Since scorpions are mainly nocturnal, people should not walk around barefoot at night in homes where scorpions have been seen or around camp sites and cabins.

In the U.S. the most dangerous species is **Centruroides sculpturatus**. It occurs in Arizona and eastern California. Scorpions found in the southeastern U.S. are not considered dangerous species. However, if a person is stung they should be watched carefully for signs of a systemic reaction.

Ticks

Ticks are important vectors of organisms causing disease in humans. Some common southeastern species are lone star tick (Figure 30), American dog tick (Figure 31), brown dog tick, and blacklegged tick. Among the diseases that



Figure 30



Figure 31

are transmitted by ticks, Rocky Mountain spotted fever (RMSF), Lyme disease (LD), and ehrlichiosis are the most noted. Symptoms of RMSF include fever, headache and rash. The rash usually develops a few days after infection, around the wrist, ankles and on the back. Initial symptoms feign those of the common flu and many victims often delay going to a physician. A bacteria-like organism called a rickettsia causes RMSF. Not all ticks are infected with the organism but it only takes one infected tick bite to contract it.

Lyme disease is caused by a spirochete and is characterized by a distinctive skin lesion in about 65% of the cases. The skin lesion is called erythema migrans



Figure 32

(EM) and appears from 3 days to 1 month after the bite (Figure 32). Victims usually suffer with headaches, fever, arthritic-like pain, and a stiff neck. Several tick species in the South can transmit RMSF and LD, but the blacklegged tick is most often associated with LD (Figure 33).



Figure 33

A group of biology students from Mercer University in Macon, Georgia have been screening lone star ticks captured from 6 middle Georgia counties for the presence of the causative agents of Lyme Disease and human ehrlichiosis. So far, 17% of the lone star tick population has been infected with **Borrelia burgdorferi**, the causative agent of Lyme disease and 3% with the causative agent of ehrlichiosis.

Human monocytic ehrlichiosis (HME), and human granulocytic ehrlichiosis (HGE) are transmitted by ticks. Both types cause fever, headache, chills, sweating, muscle aches, nausea and vomiting. Antibiotic therapy is effective if started early in the course of infection. The lone star tick is suspected of being the primary vector in the southeastern U.S.

Foresters and others who must work in tick infested areas should practice the following preventative measures to reduce their exposure to ticks: (1) wear light colored clothing so that ticks can be seen crawling, (2) keep clothes buttoned, tuck legs of pants in top of socks to prevent ticks from crawling underneath where they can't be seen, (3) use a repellent containing permethrin to spray on boots and outer clothing; repellents containing DEET can be applied to exposed skin areas (**do not apply permethrin to the skin**), (4) inspect the outer clothing several times a day for ticks, (5) once home remove clothing immediately and place directly into washer, (6) if working out of town and staying in a hotel remove clothes and seal in a plastic bag, (7) children who have been playing in tick infested areas or with pets should be inspected thoroughly all over for ticks (including hair and groin areas).

Immature ticks are called larvae or "seed ticks" and have only six legs while adults have eight. Both stages are capable of transmitting disease organisms.

Ticks should be removed with tweezers or forceps. If parts of the mouth are left in the skin, local irritation can persist for weeks. The mouth is anchored in with barbs and cemented saliva. It is not an easy job to remove an imbedded tick. Unattached ticks can be lifted with adhesive tape. **If a tick(s) is found on your body or a family member's and you feel it has been attached for six or more hours, you need to be wary if any flu-like symptoms or rashes appear over the next few days. If so, call your physician and get an examination. Ticks are more likely to vector a disease organism after being attached for six or more hours (some experts argue 24 hours, but don't take a chance). So quick detection and removal is very wise. Children often lose their appetites and are irritable if infected, so be a nosy parent and ask questions and always think tick in the active season.**

A vaccine has been developed against Lyme disease. LYMERix is a noninfectious vaccine that has been developed by SmithKline Beecham. Persons who habitually encounter ticks should discuss LYMERix with their physician.

Stinging Caterpillars

Some common stinging caterpillars are the saddleback, tussock moth, puss moth, hag moth, lo moth, Isa moth, and spiny oak slug (Figures 34-40). All feed on the leaves of various trees and shrubs between March and September and are capable of causing severe reactions in certain people.

The caterpillars are equipped with stinging spines located over their bodies. Each spine is connected to a poison gland that injects venom when touched. Children should be taught not to handle caterpillars unless they are recognized as harmless species. Wearing long-sleeved shirts and long pants will prevent many brushes with these caterpillars while pruning trees and shrubbery or just taking a stroll through the woods.



Figure 34 - Saddleback caterpillar



Figure 35 - Tussock moth caterpillar



Figure 36 - Puss caterpillar



Figure 37 - Hag moth caterpillar



Figure 38 - Lo moth caterpillar



Figure 39 - Isa moth caterpillar



Figure 40 - Spiny oak slug caterpillar

Biting Flies

Deer, stable, and horse flies are bloodsuckers that can cause grief and misery to humans, pets and livestock when they bite. They usually buzz incessantly around the head. Reports from foresters working in coastal areas have described deer fly swarms so thick that they actually ingested flies when trying to breathe. One woods crew had to wrap handkerchiefs over their mouths to keep from ingesting the obnoxious, persistent blood-suckers. Most species inhabit moist areas rich in organic matter. Most human reactions resulting from fly bites are initial pain, local irritation and swelling. Large local and systemic reactions do occur in hypersensitive people.

Deer flies, yellow flies, and horse flies are collectively called Tabanids (*Figure 41*). Many of the Tabanids have large, brilliantly colored eyes. Over 3000 species occur worldwide. Deer flies prefer wet breeding sites and horse



Figure 41

flies prefer wet soil near water. Tabanids depend on vision and odors to detect hosts. Carbon dioxide emissions from humans and animals are probably the single most attracting element to many Tabanids. Feeding varies with species. Some Tabanids attack the upper parts of walking man and others prefer the lower limbs, however, most are day biters.

Stable flies resemble house flies. They are day-biting flies and are numerous during summer and autumn around domestic animals. Stable flies are vicious biters often flying from host to host until their appetites are whetted. This habit of flying to many hosts makes them potential vectors of organisms causing diseases in humans. They

will take blood from many animals including rats, cattle, horses, rabbits and man. They often bite man around the ankles causing many wheals.

Black flies are minute, stout bodied and humpbacked. Preferred habitats are wooded coves along fast flowing streams. The larvae are aquatic and feed on microscopic organic material in streams. Black flies swarm mainly in the early morning and evenings oftentimes completely surrounding people who are unfortunate enough to be in close proximity. Long distance host finding begins with flies detecting odors upwind. As they near the host, they orient to carbon dioxide emissions and within six feet they use vision. Black flies can discriminate between colors often preferring black, blue and green. These flies are more common in hilly and mountainous areas where shallow, fast flowing streams occur. The bites from black flies can be very irritating. Many bites are the rule and not the exception. A small, bloody spot develops at each bite site and itching is intense. Headaches, nausea and swelling of lymph nodes are common reactions. Severe systemic reactions may occur.

Biting midges also known as “no-see-ums” or “punkies,” are tiny gnats that bite fiercely. A common species resembles a pepper speck on the skin, thus the name “no-see-ums”. The larvae develop in water logged soils high in organic matter.

Prevention and Treatment of Bites

Wear loose fitting clothing to prevent midge bites. Always wear long pants and long sleeved shirts when outdoors in fly infested areas. Swelling is a common symptom associated with numerous black fly and midge bites. Rings and other snug fitting jewelry should be removed. Repellents containing DEET are very effective in repelling most biting flies. Always read the label before applying repellents. Bites should be cleansed with soap and water. Topical antihistamine lotions and antibiotic ointments are helpful in reducing discomforts from fly bites.

Mosquitoes

Adult female mosquitoes are bloodsuckers and can be extremely obnoxious and potentially dangerous to humans. Immature stages of mosquitoes are aquatic, living in many habitats such as tree holes, marshes, swamps, rain puddles, ditches, discarded tires and other man made containers that trap water. Worldwide, mosquitoes transmit more diseases than other insects. Adult female mosquitoes vary in feeding habits. Some feed throughout the day while others feed at night and sporadically in the morning or afternoon. The day feeders are naturally the most obnoxious to foresters.

In the southern U.S., mosquitoes are important vectors of the viruses causing encephalitis. These viruses occur naturally in wild bird populations and are transmitted to man and horses by female mosquitoes.

The eastern salt marsh mosquito *Aedes sollicitans* is common in coastal areas and is a fierce biter. It migrates many miles from its breeding site and is known to transmit the eastern equine encephalitis virus. Breeding takes place in salt marshes flooded by tides or rain.

The southern house mosquito *Culex quinquefasciatus* is a major vector of the St. Louis equine encephalitis virus. This mosquito breeds in water in ditches, mudholes and storm sewers and water collected in tires, cans, and other items.

The Asian tiger mosquito *Aedes albopictus* until the 1980's was found only in Asia and many islands in the Pacific Ocean, including some of the Hawaiian Islands. However, by 1986 it was discovered in Florida at a tire dump site in Duvall County. Now this mosquito is believed to be widely distributed throughout the southern and eastern U.S. (*Figure 42*). This mosquito transmits the virus causing dengue fever.

Filarial worms that infest animals and occasionally man are also transmitted by mosquitoes. The dog heartworm *Dirofilaria immitis* and the raccoon heartworm *D. tenuis* are transmitted by mosquitoes and very rarely infest humans (*Figure 43*).

Prevention and Treatment of Bites

Forestry workers should wear protective clothing and a repellent to avoid mosquito bites. Repellents containing



Figure 42

DEET (N,N-diethyl-M-toulamide) are very effective in repelling mosquitoes. Read all label precautions before applying repellents. Some of the bath oils and skin creams have gained fame in the last few years as being great mosquito repellents. Bites can be cleansed with soap and water. A topical antihistamine lotion will relieve itching temporarily. Bites should not be scratched to avoid secondary infections. If severe biting occurs watch for symptoms indicating fever or encephalitis.



Figure 43

Chiggers

Chiggers or redbugs belong to a group of arthropods called mites. They are closely related to ticks. Chiggers are notorious pests of humans. The six-legged larva is the attacking stage and is barely visible to the unaided eye (*Figure 44*). Chiggers live outside in the moist humus layers of woods, meadows and grassy areas.



Figure 44

Some areas are more “chigger” ridden than others. Out-of-bound areas of golf courses are ideal places for chiggers to live. Pine straw and other decaying woody materials provide rich environments for chigger development plus the occasional meal from a wandering golfer. Chiggers feed on many species of animals and like to bite humans around the waistband of underwear and any other place where the clothing fits tightly. Chiggers actually feed on lymphatic fluids and rarely consume blood.

Chiggers stay attached for only a short period and then drop off. Itching continues due to the irritation from the chigger’s saliva. Itching can be relieved with most over-the-counter ointments. Warm soapy baths are effective in removing most chiggers. Infested clothing should be washed immediately to prevent chiggers from finding you or a family member to bite. Repellents containing DEET are very effective in keeping chiggers off of the body.

Wheel Bug

The wheel bug *Arilus christatus*, is a member of the assassin bug family. It feeds on many species of soft-bodied insects like aphids, often ambushing them with the accuracy of an assassin. They only bite humans when they are handled or feel threatened. Wheel bugs are easily recognized by the wheel-shaped crest on their backs (*Figure 45*).



Figure 45

Bites from the wheel bug are painful and are usually localized without any serious effects. Often small cutaneous growths occur at the bite site and may last for several months. Seed orchard workers are sometimes bitten when the bugs are shaken from trees during cone collecting. Most bites occur when the bugs land down the shirt collars or on exposed skin areas.

Prevention and Treatment of Bites

Wear long-sleeved shirts and hats when working in pine seed orchards. Bites should be cleansed with soap and water.

Centipedes and Leeches

Centipedes are not insects. They are multi-segmented elongated arthropods with a distinct head and one pair of legs per segment. Most species are harmless, however, the large centipede *Scolopendra viridis*, can inflict a painful pinch with its two poison claws located underneath the head (*Figure 46*).

Centipedes are active at night when they prey on insects and other arthropods. They nest outdoors under stones, boards, bark and other moist protected places.

Bites from the large centipede are rare. The pain associated with the bite from *S. viridis* can be intense, lasting for several hours.



Figure 46

Leeches are members of a group of segmented worms that live in fresh water ponds, marshes, lakes and streams. About 44 species occur in the U.S. Collectively, leeches are called bloodsuckers; however, most species feed as scavengers or predators and only a few actually take blood from animals and humans (*Figure 47*).

Leeches prefer shallow water and waders are more likely to become infested than swimmers. One rare undocumented encounter with leeches occurred in central Georgia in 1993. A young man was walking across a recently drained lake bed and became infested with many black inchworm looking creatures. The "worms" attached to his lower legs through the socks and bit like chiggers.

Leeches are not a medical concern but people working or recreating in aquatic habitats may encounter leeches occasionally.



Figure 47

Snakes

Georgia and the southeastern U.S. have a high diversity of snakes due primarily to the warm, moist climate and a wide variety of habitats. Some snakes are habitat specific and others can be found in almost any habitat. The majority of snakes are harmless. However, there are

several species dangerous to humans. In the southeastern U.S. these are the copperhead, *Agkistrodon contortrix*; eastern coral snake, *Micrurus fulvius fulvius*; timber rattlesnake, *Crotalus horridus*; cottonmouth, *A. piscivorus*; pigmy rattlesnake, *Sistrurus catenatus catenatus*; and eastern diamondback rattlesnake, *Crotalus adamantus* (Figures 48-53). These snakes are grouped as pit vipers



Figure 48 - Copperhead



Figure 49 - Coral snake



Figure 50 - Timber rattlesnake



Figure 51 - Cottonmouth



Figure 52 - Pigmy rattlesnake



Figure 53 - Diamondback rattlesnake

(except the coral snake); that is, snakes that have a heat sensitive opening or pit between the eyes and nostrils. The pit also guides the direction of the strike.

The venom of the pit vipers is a complex mixture of proteins that affect almost every organ system in humans.

Statistics on the number of snake bites that occur in the U.S. each year are not accurate since poison control centers are not required to report them. Based on a 1991 voluntary report to the American Association of Poison Control Centers in the U.S., a total of 76,941 animal bites occurred. Of these, 4,408 were attributed to rattlesnakes.

Recommended first aid for venomous snake bite include: (1) keep the victim calm and minimize their physical activity, (2) get the victim to the nearest medical facility immediately. It would be helpful to identify the snake, but be careful to avoid being bitten.

Foresters and others who work outdoors in snake infested areas should wear protective boots or leggings.

Plants Causing Contact Dermatitis

Poison ivy, poison oak, and poison sumac are plants that can cause intense itching and dermatitis when contacted by sensitive persons (*Figure 54*). The poisonous



Figure 54 - Poison Ivy

ingredient of these plants is urushiol and it is found in the sap of bruised plant parts (roots, stems, flowers, fruit, leaves, and pollen). Contact may be direct or indirect such as touching an animal or item that came in contact with the

plant. Droplets of sap can even be contacted from burning the plants. Persons should become familiar with the plants and learn to avoid them. If contact is accidentally made with one of the plants the area of the skin affected

Miscellaneous Hazards

There are many hazards of the forest other than creepy, crawly things and poisonous plants. Awareness of these hazards will often suffice in preventing an accident. Common man made hazards are abandoned water wells that were left uncovered, and downed fencing (*Figure 55*). Natural hazards would be stump holes, exposed roots and



Figure 55 - Abandoned, uncovered water well

dead trees and snags. Old rubbish piles in the forest may indicate an abandoned house site. If so an abandoned well may be nearby that is still open. Stump holes roots and fencing can be avoided by watching where you step. Standing dead trees and snags are common hazards in the forest. They should be avoided particularly on days when the wind is gusting above 20 miles per hour.

Lightning strikes to trees are very common throughout the South. People should avoid going into the forest whenever thunderstorms are looming. However, if caught, one should not seek shelter under a lone tree.

References

- Ebeling, Walter 1975. Urban Entomology. Univ. Cal. Div. Agri. Sci.
- Goddard, Jerome, 1993. Physician's Guide to Arthropods of Medical Importance. CRC Press, Inc.
- James, Maurie T., Howard, Robert F. 1971. Herms' Medical Entomology. The MacMillan Co., London.
- Kettle, D. S., Medical and Veterinary Entomology. John Wiley & Sons.
- Piek, Tom, Editor, 1986. Venoms of The Hymenoptera. Academic Press.
- Wasserman, Gary S., Anderson, Philip C. 1984. Loxoscelism and Necrotic Arachnidism. J. Toxicol.-Clin. Toxicol., 21 (4&5), 451-472.
- Weathersby, A. Burns 1984. Wet Salt for Envenomization. J. Ga. Entomol. Soc. 19(1): 6-8.

Photo Credits

- Cover - Black widow spider (James O. Howell, University of Georgia); Black legged ticks (CDC, Atlanta, GA); Cottonmouth (Jeffrey J. Jackson, University of Georgia); and Saddleback caterpillar (CDC, Atlanta, GA).
- Murray S. Blum, University of Georgia - *Figure 14*
- CDC, Atlanta, GA - *Figures 25, 28, 30, 33, 34, 38*
- Clemson University, USDA Cooperative Extension Slide Series - *Figure 41*
- Hansell F. Cross, Georgia State University - *Figures 26, 44*
- Susan Ellis, www.insectimages.org - *Figure 42*
- William K. Fitt - *Figure 47*
- John S. Heiss, University of Arkansas - *Figure 22*
- James O. Howell, University of Georgia - *Figures 19, 27, 29*
- Jeffrey J. Jackson, Extension Wildlife Specialist, Professor of Wildlife Management, University of Georgia - *Figures 48, 49, 50, 51, 52, 53*
- James A. Jarrett, Mississippi State University - *Figure 21*
- Gerald J. Lenhard - *Figure 45*
- Robert W. Matthews, University of Georgia - *Figure 7*
- Jerry A. Payne, USDA - *Figures 1, 4, 6, 8, 9, 15, 37, 40*
- Matt Pound, USDA Agricultural Research Service - *Figure 31*
- Harry Pratt, CDC - *Figure 10*
- Terry S. Price, GFC - *Figures 5, 11, 13, 16, 24, 54, 55*
- Richard R. Schulze - *Figure 43*
- Ray Simons, CDC - *Figure 20*
- James D. Solomon, USDA Forest Service - *Figures 2, 33, 34*
- Beverly Sparks, University of Georgia - *Figures 23, 39*
- Allen C. Steere, MD - *Figure 32*
- USDA Forest Service, Wood Products Lab, Gulfport, MS - *Figure 17*
- A. Burns Weathersby, University of Georgia - *Figure 18*

GEORGIA FORESTRY
COMMISSION



P. O. Box 819
Macon, GA 31202
1-800-GA-TREES
GaTrees.org

An Equal Opportunity Employer and Service Provider

