Sharing Florida with its Six Venomous Snake Species

Florida Master Naturalist Program
Uplands Final Project Presentation
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Sharing Florida with its Six Venomous Snake Species

- Eastern Diamond Back Rattlesnake
- Timber Rattlesnake
- Pygmy Rattlesnake
- Southern Copperhead
- Florida Cottonmouth
- Eastern Coral Snake
Similarities

• Pit viper: Heat-sensing (infrared) organs on head, between eyes & and behind nostril.
  - Temperature +/- 2 degrees
  - Range & direction of movement
  - Thick, blocky head
  - Thick body
  - Rough looking “keeled” scales

Elliptical-shaped pupils

• Fork-shaped tongue, odor detecting
• Hollow fangs
• Hemotoxic venom
  - Destroys blood cells and tissue
  - Reduces blood coagulation: bleeding
  - Some venoms have neurotoxic component
Similarities

• Birth live young
• Lifespan 15-25 years

Eastern Coral Snake

• Not a pit viper, head same size as body, round eyes, smooth body, small hollow fangs
• Related to cobra family
• Neurotoxic venom
  - Affects nervous system
  - muscle paralysis, cardiac & respiratory
• Young hatched from eggs
• Lifespan 7 years
• Largest rattlesnake and most dangerous venomous snake in North America
• Average length 3-6 feet, up to 8 feet.
• Weigh up to 10 pounds.
• Diamond pattern outlined in white, on brown, gray or tan body.
• Range statewide, including the Keys. Prefer high & dry areas among hammocks, sandhills and flatwoods, and along edges of swamps and marshes, golf courses, and wooded lots. Gopher tortoise burrows favorite hiding places.
• Diet of mice, rats, ground dwelling birds, rabbits and squirrels
• Usually active during the day or dawn/dusk, not usually active at night
Timber (Canebrake) Rattlesnake
• Average length 3-5 feet, up to 6 feet.
• Average weight 2 pounds, up to 10 pounds.
• Irregular red stripe on spine, narrow “v” brown-black bands, on yellow-gray, pink-tan, brown, or black body.
• Small range in northeastern area of Suwannee River Basin: Bottomland hardwoods, pine flat woods, cane thickets, edges of marshes and wet prairies.

• Diet of rabbits, squirrels, gophers, other snakes, lizards, frogs, small birds

• Active at night, enhanced sensitivity to vibration
Pygmy Rattlesnake

J.D. Wilson
• Most common venomous snake in state
• Small rattler, soft whirring sound (barely audible), often breaks off, tail used as lure
• Average length about 1 foot, up to 2.5 feet
• Weight about 5.4 ounces (0.34 pounds)
• Gray-black blotches over red-orange stripe on gray body
• Range throughout state except the Keys in dry upland forests, sandhills, seasonal flatwoods, marshes, suburban yards
• Diet of lizards, frogs, rodents, insects, centipedes
• Active day and night
• Small very aggressive snake
• Bite more people in North America than any other venomous snake ... but not in Florida
• Average length 2-3 feet, up to 4 feet
• Copper-colored head and reddish brown coppery body, dark brown to dark gray hour-glass-shaped bands along the body
• Small range along the Apalachicola River and tributaries, and in the western tip of the panhandle
• Diet of small rodents, climb trees to eat emerging cicadas
• Active during the day, in summer heat active at night
• Social snakes, hibernate in group dens with snakes
• Near one another when denning, sunning, courting, mating, eating and watering
• Reuse dens
Florida Cottonmouth

Daniel Parker/sunshineserpents.com
• Display fangs and a white-lined mouth
• Younger snakes, reddish-brown bands with a pale center on a tan body.
• Aging snakes, banding darkens and fades, becomes blackish.
• Copperheads and younger cottonmouths mistaken for one another
• Nonvenomous water snakes mistaken for cottonmouth
• Average length 3.5-4 feet, up to 6.2 feet.
• Average weight 3-4 pounds
Range statewide and the Keys, near streams, springs, rivers, lakes, ponds, marshes, swamps, sloughs, reservoirs, retention pools, canals, and roadside ditches. Sometimes far from water.
• Diet of fish, frogs, rats, mice, lizards, salamanders, baby alligators, small turtles, other snakes, and dead animals
• Active at night
• Body temperature lowered in cool water
  - Warm temperature necessary for digestion
  - Sun basking on branches, stones, logs
Eastern Coral Snake
• Venom most potent of NA venomous snakes
• Average length 1.6-2.5 feet, up to 4 feet
• Narrow bright yellow rings separate wider red and black rings. Yellow ring behind black snout. Tail ringed in black and yellow, no red
• Red touches yellow, kills a fellow
• Scarlet king snake and Florida scarlet snake mistaken for coral snake
• Diet of lizards, frogs, other snakes
• Range statewide, except southern Keys - pine and scrub oak sandhills, sometimes hardwood areas, pine flatwoods that undergo seasonal flooding. Hide underground among rotting logs, decaying vegetation, and humus
Prevent Snakebites!

Shelter in place when possible.

Use duct tape to seal all openings.

Avoid going outside ... but if necessary ... 

Wear hip-length snakebite-proof boots.

Be afraid ... be very afraid!

WHOOPS!
Prevent Snakebites

- Be cautious around shrubs, tall grass, and areas surrounding canals, lakes and swamps.
- Walk firmly, slowly.
- Look before sitting, stepping or reaching near or around rocks and logs.
- Avoid placing hands in areas that are hidden or concealed.
- Use caution when cleaning up debris after natural disasters (i.e. hurricanes, tornadoes, floods) for displaced and frightened snakes.
Venomous Snakebite calls by County 2010-2014
Florida Poison Information Center Network
# Venomous Snakebite Calls to the Florida Poison Information Center Network

<table>
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<tr>
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<th>2010</th>
<th>2011</th>
<th>2012</th>
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<td>Total Venomous</td>
<td>296</td>
<td>320</td>
<td>374</td>
<td>373</td>
<td>323</td>
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</table>

Total venomous calls for the period 2010-1014: 1686

Total nonvenomous/unknown snakebite calls for the period 2010-2014: 1683
United States Fatality Statistics

Approximate Number of U.S. Deaths per Year

- Lung Cancer: 1,624,600
- Car/Motorcycle Accident: 375,940
- Lightning Strike: 5,453
- Hornet, Bee or Wasp Sting: 2,147
- Dog Bite/Attack: 71
- Spider Bite: 6
- Snake Bite: 6

University of Florida
Wildlife — Johnson Lab
Envenomation Factors

- Dry bites
  - Venom for prey, not predator
  - Venom expended
  - Medical attention required
- Size of snake
- Location of bite
- Multiple bites
- Coral Snake
  - No quick strike. Venom delivered slowly, hanging, chewing
  - Blood signals possible envenomation
Snakebite — Immediate “DO” Actions

- Remain calm.
- Move slowly away from snake.
- Call 911.
- Immobilize the bitten area.
- Keep affected area at or below the heart.
- Limit movement.
- Remove all jewelry (rings, bracelets, watch, etc.), and restrictive clothing before any swelling occurs.
- From a distance, try to observe snake’s identifying colors, patterns and size.

Miami-Dade Fire Rescue Department
Venom Response Bureau
Snakebite — Immediate “Do Not...”

- Don’t use a tourniquet.
- Don’t drink or apply alcohol.
- Don’t cut or suck the wound.
- Don’t apply ice.
- Don’t attempt to catch the snake.
- Don’t attempt to kill the snake.
- Don’t touch/handle a dead snake.
Snakebite Symptoms — Viper

• Terror common (even for nonvenomous bite)
  - Actuates autonomic responses
  - Excessive heart rate, nausea, vomiting, diarrhea, dizziness
• Minor pain and redness in many cases
• Serious envenomation, severe pain, tender tissue, and swelling within 5 minutes
• Progresses to external and internal bleeding, low blood pressure, severe high heart rate, rapid breathing
• Wound infection, necrosis
• Kidney failure and respiratory failure
Snakebite Symptoms — Coral Snake

• Terror common (even for nonvenomous bite)
  - Actuates autonomic responses
  - Excessive heart rate, nausea, vomiting, diarrhea, dizziness

• Delayed symptoms misleading, delay aid

• Neurotoxic effects
  - Muscle weakness, blurred vision, paralysis
  - Difficulty speaking, swallowing, breathing
  - Tongue switching, respiratory arrest
  - Patient could face weeks of ventilator support, and associated impairments

• Antivenin prevents these symptoms
General symptoms of Snakebite

Central
- Dizziness
- Fainting
- Increased thirst
- Headache

Vision
- Blurriness

Heart and vessels
- Rapid pulse
- Low blood pressure
- Severe shock

Systemic
- Fever
- Severe pain

Respiratory
- Breathing difficulty

Wound site
- Bleeding
- Fang marks
- Discoloration
- Burning sensation
- Swelling

Muscular
- Convulsions
- Loss of coordination
- Weakness

Gastric
- Nausea
- Vomiting

Intestinal
- Diarrhea

Other skin sites
- Bleeding spots
- Numbness
- Tingling
- Sweating

“Medical gallery of Mikael Häggström 2014”
Snakebite Treatment

- Crofab U.S-made antivenin approximately $2,500 (wholesale) per 1-gram vial
- Two Florida hospitals charged $13,000 and $20,000 per vial retail in 2013
- Antivenin, a serum created with horse or sheep antibodies and snake venom
- Wyeth Laboratories Inc. stopped coral snake antivenin production in 2003 because of low demand and high costs.
  - Remaining stock recertified annually
  - Supplies limited
  - Pfizer lab start-up
Snakebite Treatment

- Neurotoxin antivenin from SA
  - About 85% of patients require 10-18 vials
  - Antivenin within 12 hours of bite
  - Additional costs
    - Emergency room
    - Shock, anaphylactic shock
    - Fluids, tetanus, antibiotics, other drugs
    - Multi-discipline medical staff
    - Multi-day/-week hospital stay
  - Prompt medical attention
    - Reduces medical complications
    - Deaths rare
Snakebites & Pets

- Treated with same/similar antivenin
- Prompt treatment essential
- Head, snout bites more serious
- Viper bites bites visible
- Coral snakebites difficult to see
- 24-hour Emergency Clinic, St. Lucie County
  - DVM 18-years experience
  - 4-8 snakebites per year
  - Rattlesnakes and coral snakes, 50-50
  - Initial treatment $2k-4k, status
  - Some owners elect to spend more
  - Plan ahead, few DVMs stock antivenin
Snakebites & Pets

- Red Rock Biologics Rattlesnake Vaccine
  - Cross-reactivity with eastern diamondback rattler, timber rattlesnake, copperhead.
  - No protection against Cottonmouth and Coral Snake venoms.
- Serum protective antibodies
- Antivenin might be required
- Three injections per year, annual booster
- Estimated cost $20-$45 per injection
- Dogs and horses
- Behavior training against rattlesnakes
Wound from non venomous bite by water snake. Venomoussnakes.net
The sources below provided material that was used in this presentation in addition to citations that appear in specific charts and photos.

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Additional sources for this presentation are cited below:

- February 24, telcom, & two e-mails March 4, 2014 from: Dawn R. Sollee, Pharm.D., DABAT Assistant Director, Florida/USVI Poison Information Center-Jacksonville At UF Health Jacksonville, sollee@poison.ufl.edu (904)244-4465

- March 26, 2015, telcom, with: Dr. Michael Geraghty, DVM, and owner, Veterinary Medical Center of St. Lucie County, 7790 S. US Highway 1, Port St. Lucie, Fl34952. 772-337-8570, vetmedcenterslsc.com


- March 27, 2015, telcom, with: Customer Service Specialist, Cori, Red Rock Biologics, P.O. Box 8630, Woodland, CA 95776, 866-897-7625, redrockbiologics.com