Herpetology Workshop

An Introductory Course on Indigenous Reptiles & Amphibians

Objectives

- Familiarize attendees with basic herpetological concepts
- Familiarization with commonly encountered herps of NW Louisiana
- Identification of local venomous reptiles
- Introduction to conservation concerns
- Appreciation for these diverse and fascinating animals.

Conservation **begins with** ***Education*****.**
Attendees are commended for taking time out to learn more about our ecosystem!

Overview

The goal of this workshop is not just to *educate*, but hopefully to *fascinate*. An attempt has been made to balance important information with fun facts.

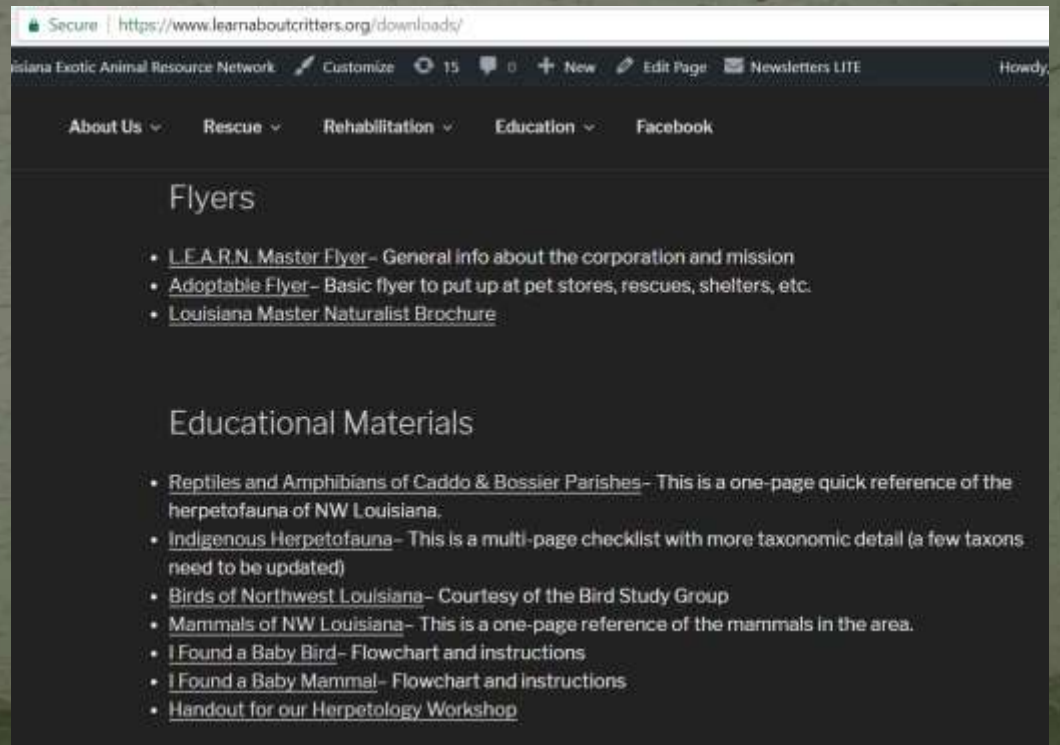
I. Diversity & Classification
II. Biology, Physiology & Reproduction
III. Natural History, Ecology & Distribution
IV. Conservation
V. Observation
VI. Local Species *(Learning Lunch)*
VII. Improving Identifications
VIII. Quiz

Discussion of taxonomy and academic minutia, while quite interesting to the author, will be kept to a minimum so you don't look like this.

Notes and Such…

- Naturalists must sign in
- Green presentation- PDF at learnaboutcritters.org/downloads
- Other handouts on page also
- Download Primer for more info (mailing list)
- L.E.A.R.N. on Facebook
- Field Herping tomorrow!
- Consider joining LMNA
- Join iNaturalist- Bioblitz
- Bathroom in main building
- Social next Thursday!
- Become a Friend of the Refuge

- Take a break if you need one
- "Learning breaks/lunch"
- Upbeat pace- questions okay
- Anonymous evaluations



Herpetology

Herpetology is the study of reptiles *(creeping)* and amphibians *(double life)*.

- Not closely related, beyond being tetrapods
- Often grouped and studied together
- Many physiological, behavioral and ecological similarities

May just be that the same types of people that enjoy studying amphibians also enjoy reptiles, and vice versa.

Part I: Diversity & Classification

Myth- Herps are Simple

- Herps inhabit every continent except Antarctica.
- They inhabit land and water, including the oceans.
- They live from mountaintops to down underground.
- They are diurnal, nocturnal, crepuscular, and seasonal.
- Many can go months, and some even years, without eating.
- They range from high visual acuity to blindness.
- Some actively forage, others are ambush predators.
- Reptiles are at the zenith of longevity in many areas.
- Some live in the hottest deserts, and others freeze solid in the winter.
- They hunt by constriction, venom, luring, tongue adaptations, and many other methods.
- Their diets range from prey as large as buffalo to as small as termite larvae.
- Some lay eggs, others give live birth.
- Many can give birth without mating.
- They exhibit almost every color imaginable, with many displaying dramatic and vivid color changes at will.
- Many species don't drink water, and some don't even breathe air.
- Amphibians are known for their metamorphoses, encompassing very different forms in one lifetime.
- Several species are known to be able to change their sex when needed.
- Some can change how the sex of their offspring is determined if their environment changes.
- They can be herbivorous, omnivorous, carnivorous, insectivorous, or many various specialties.
- They ambulate in numerous ways, such as walking, jumping, rolling, concertina, sand-swimming, and more.
- Some can run on water, and some are hydrophobic (unsinkable).

Some snakes and lizards even “fly!”

友情提示
Attention

尊贵的客人：
Dear guest：

为了您的安全,此阳台门已上锁,同时,在晚间请您及时关闭门、窗以防蚊虫进入,感谢您的支持与理解.

The door of the balcony has been locked to insure you safety. Please close the door and window at night to prevent flying reptiles.

Thank you for your cooperation and understanding.

Yours sincerely,
Housekeeping Dept.

华雅国际大酒店
VAYA INTERNATIONAL HOTEL
★ ★ ★ ★ ★

Chrysopelea paradisi

Kuhl’s Flying Gecko

Reptiles & Amphibians

Similarities

- Ectothermic
- Chordata
- Ecdysis
- Skin color alteration
- Visual Acuity
- Defensive traits
  - Camouflage
  - Biting
  - Inflating
  - Autotomy (salamanders/lizards)
  - Mimicry

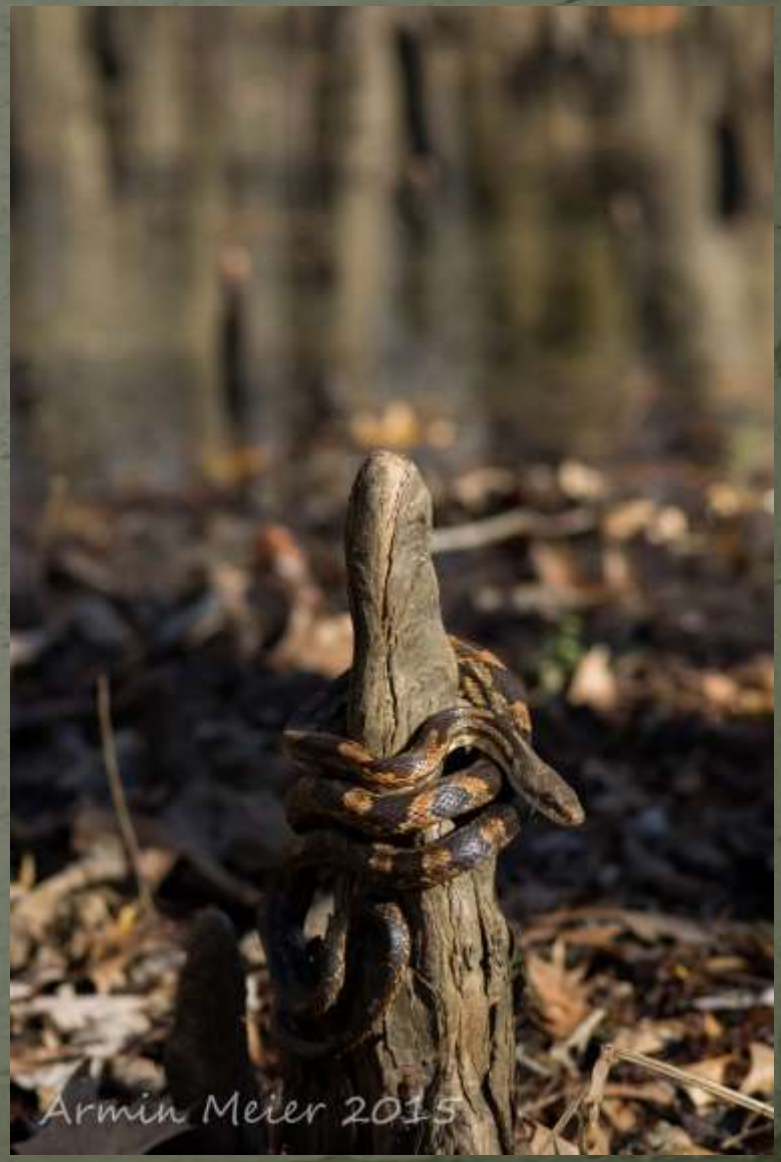
Reptiles & Amphibians

Differences

- Reptiles are amniotes, amphibians are anamniotes
- Reptiles do not undergo metamorphosis.
- Reptile breathing is via lungs, as opposed to cutaneous respiration in many amphibians.
- Reptiles can turn their heads
- Reptiles have scales/scutes; amphibians have permeable skin.
- Reptiles tend to exhibit greater longevity.
- Some reptiles possess loreal pits.
- Some amphibians use a lateral line, which may detect changes in water to identify prey.

Common Names

- Many, if not most, herps go by a variety of colloquial names (e.g., Water Moccasin, Spreading Adder, Chicken Snake).
- There is an “official” common name selected by SSAR- think of these as the “field guide names.”
- Any name in regular use is a common name, and valid for the purposes of communication.
- Highly recommended to familiarize yourself with scientific names.

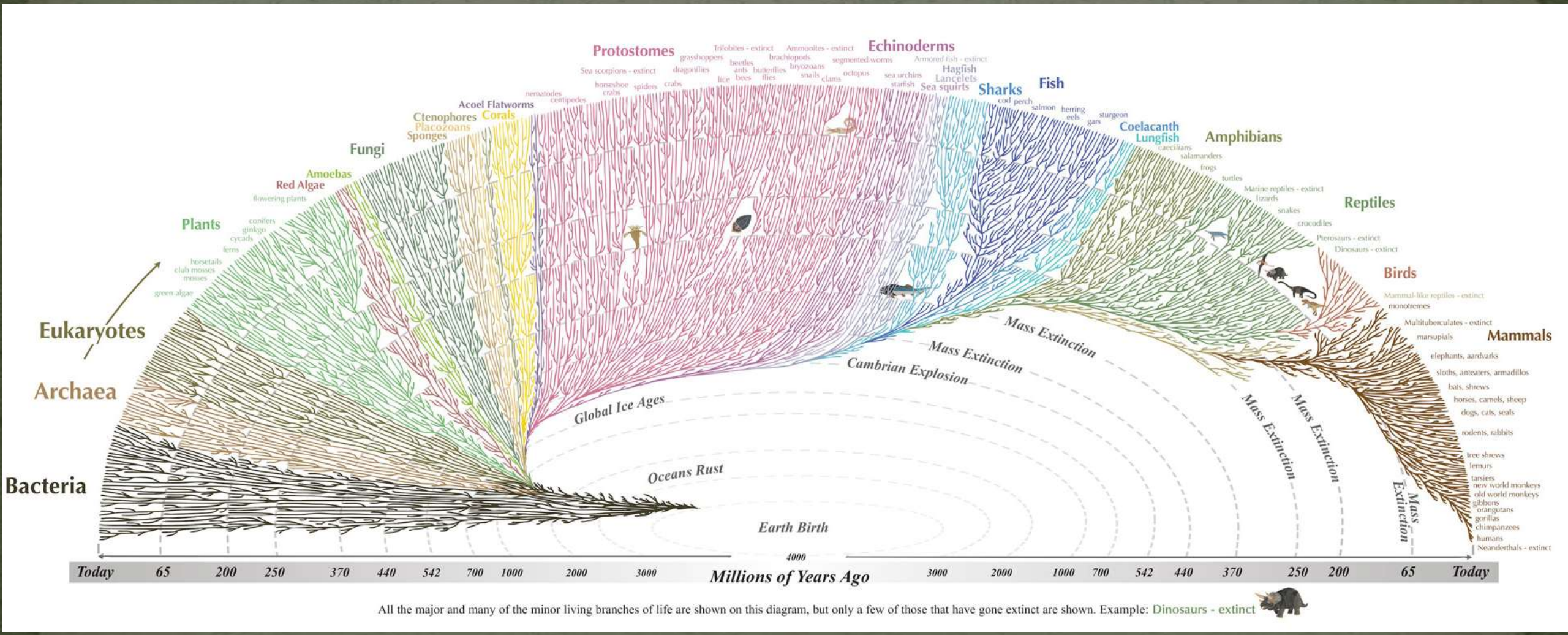


Scientific Names

Taxonomy is the ordering of organisms into groups that share similar characteristics

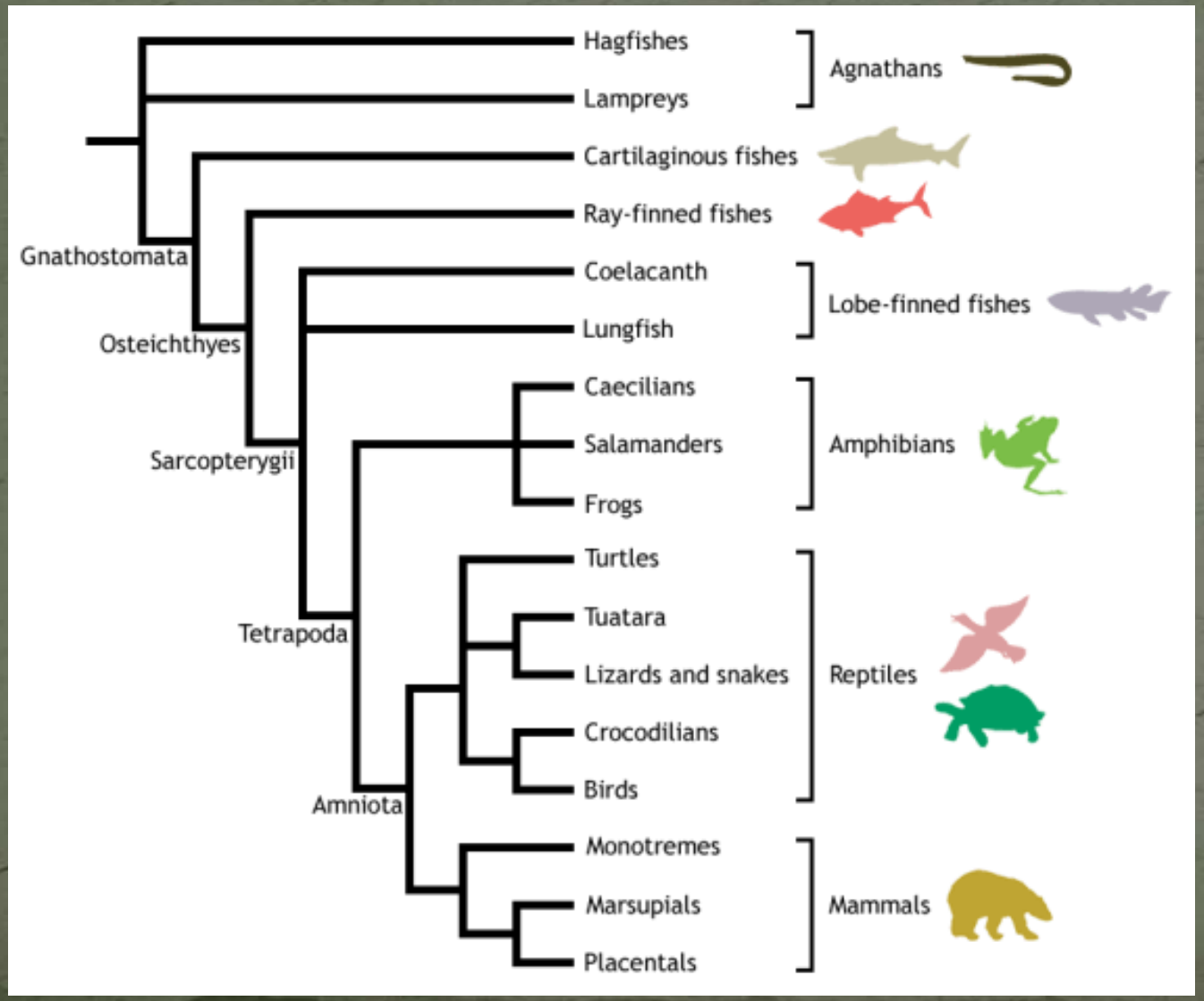
- Specific name for each unique entity (*taxon*, plural *taxa*).
- Taxonomy is dynamic
- Eliminates confusion associated with common names
- Binomial or trinomial

Classification



All the major and many of the minor living branches of life are shown on this diagram, but only a few of those that have gone extinct are shown. Example: Dinosaurs - extinct

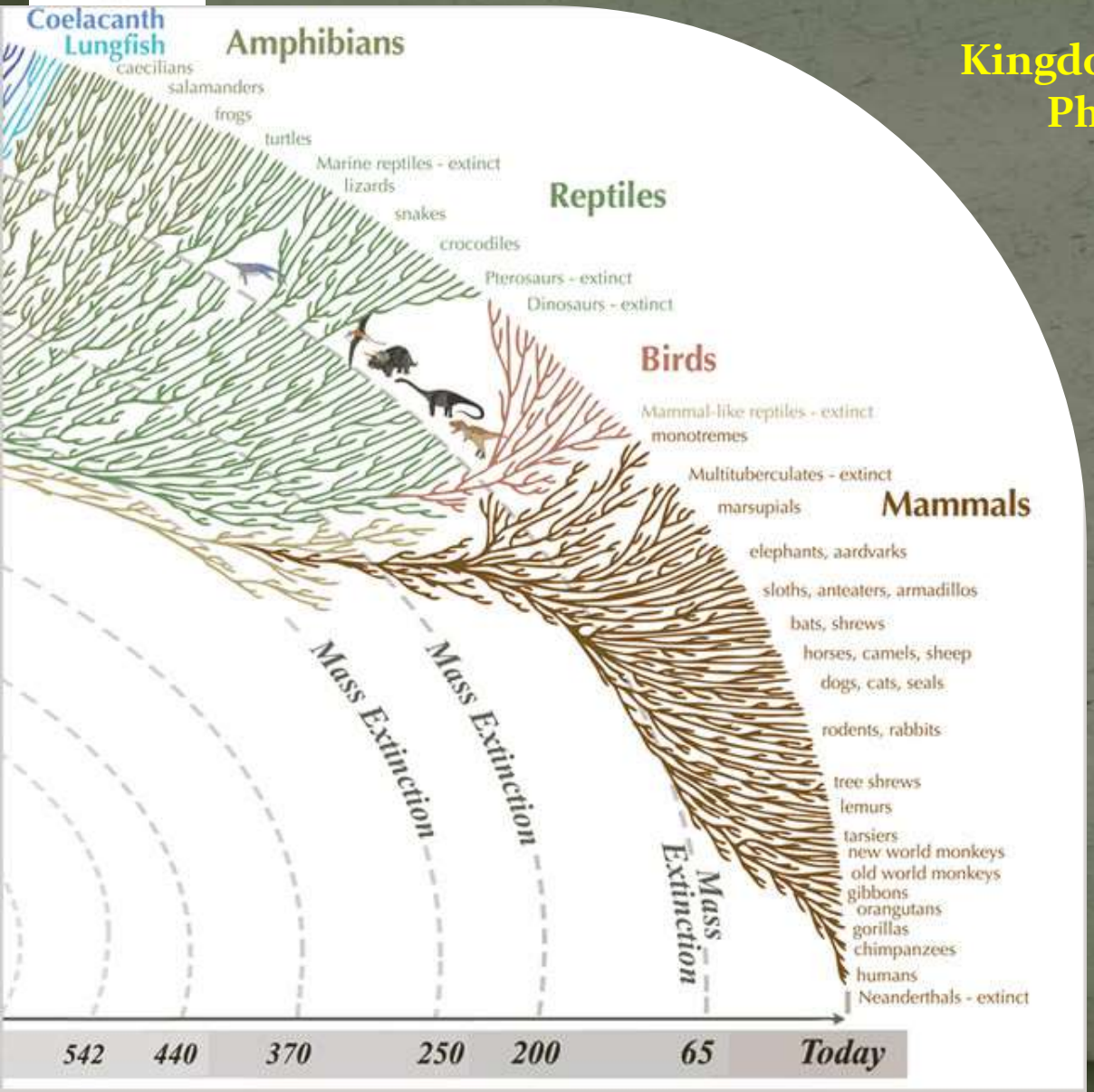
Classification



Orders of extant anamniotes & amniotes

Tuatara
only extant genre of its order

Local Orders



Kingdom: Animalia (Animal)
- **Phylum: Chordata** (Animals with spinal chords)
  - **Class: Amphibia** (Amphibians)
    - **Order: Caudata** (Salamanders)
      - **Suborder: Salamandroidea** (Salamanders- four legs and a tail)
      - **Suborder: Sirenoidea** (Sirens- two legs and a tail)
    - **Order: Anura** (Frogs)
      - **Suborder: Neobatrachia** ("New" frogs)
  - **Class: Reptilia** (Reptiles)
    - **Order: Crocodilia** (Crocodilians)
    - **Order: Testudines** (Turtles)
      - **Suborder: Cryptodira** (Hidden-necked)
    - **Order: Squamata** (Lizards and Snakes)
      - **Suborder: Iguania** (Iguanids)
      - **Suborder: Lacertilia** ("True" Lizards and Skinks)
      - **Suborder: Scleroglossa** (Hard-tongued* Lizards)
      - **Suborder: Serpentes** (Snakes)

Extant (living) Species

Extant Reptile Species– 10,711

(February 2018) Source:
reptile-database.org/db-info/SpeciesStat.html

Crocodylia (Crocodiles)
24 species (< 1%)

Rhynchocephalia (Tuataras)
1 species (< 1%)

Sauria (Lizards)
6,451 species *(60%)*

Serpentes (Snakes)
3,691 species *(34%)*

Testudines (Turtles)
350 species *(3%)*

Extant Amphibian Species – 7,838

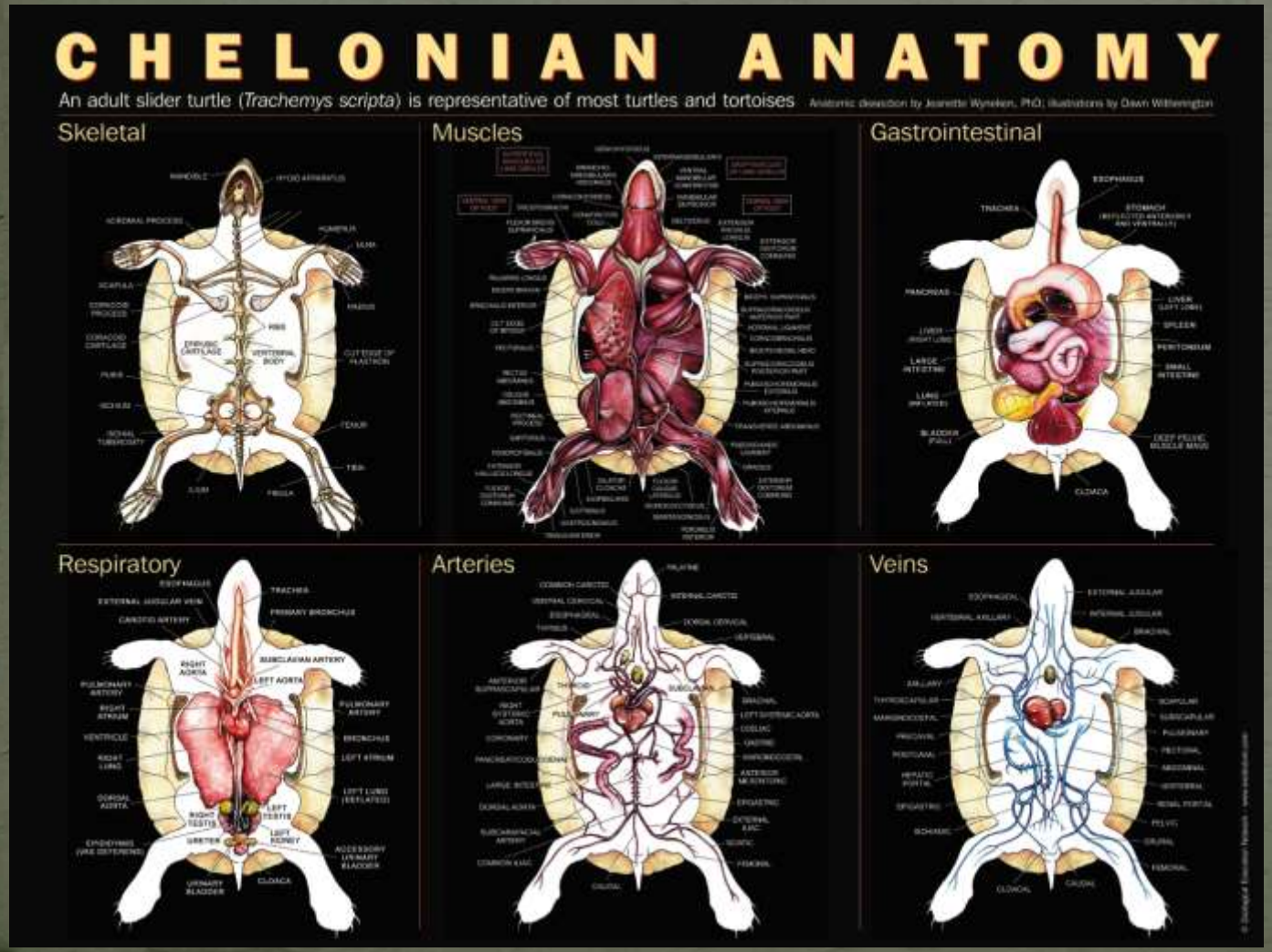
(March 30th 2018) Source:
amphibiaweb.org/amphibian/speciesnums.html

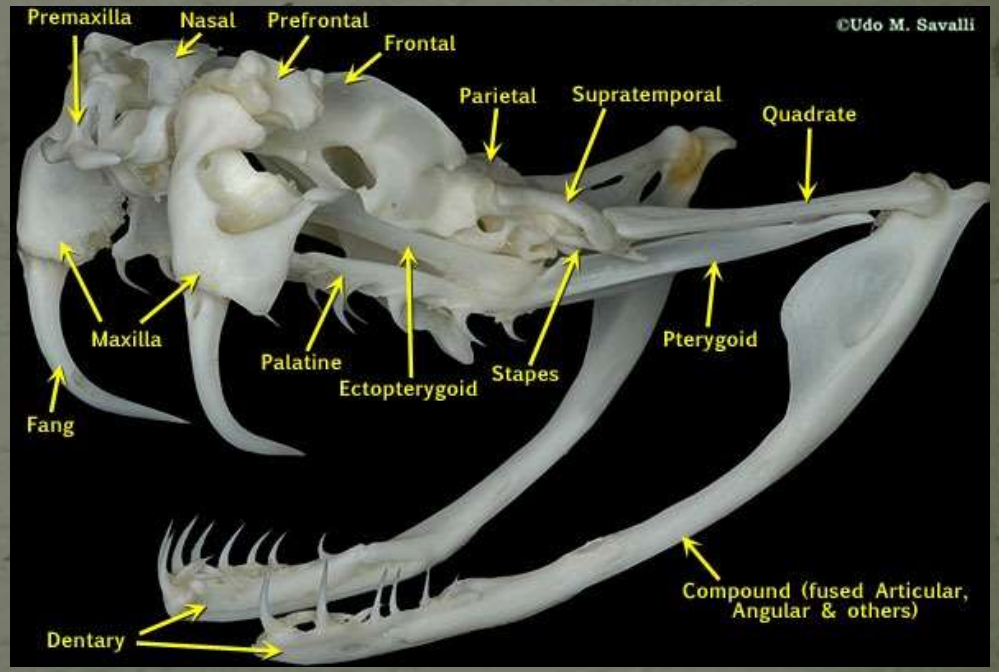
Anura (Frogs)
6,920 species *(88%)*

Caudata (Salamanders)
711 species *(9%)*

Apoda (Caecilians)
207 species *(3%)*

Part II: Biology, Physiology & Reproduction





Caudal Autotomy (Lizards' Tails)

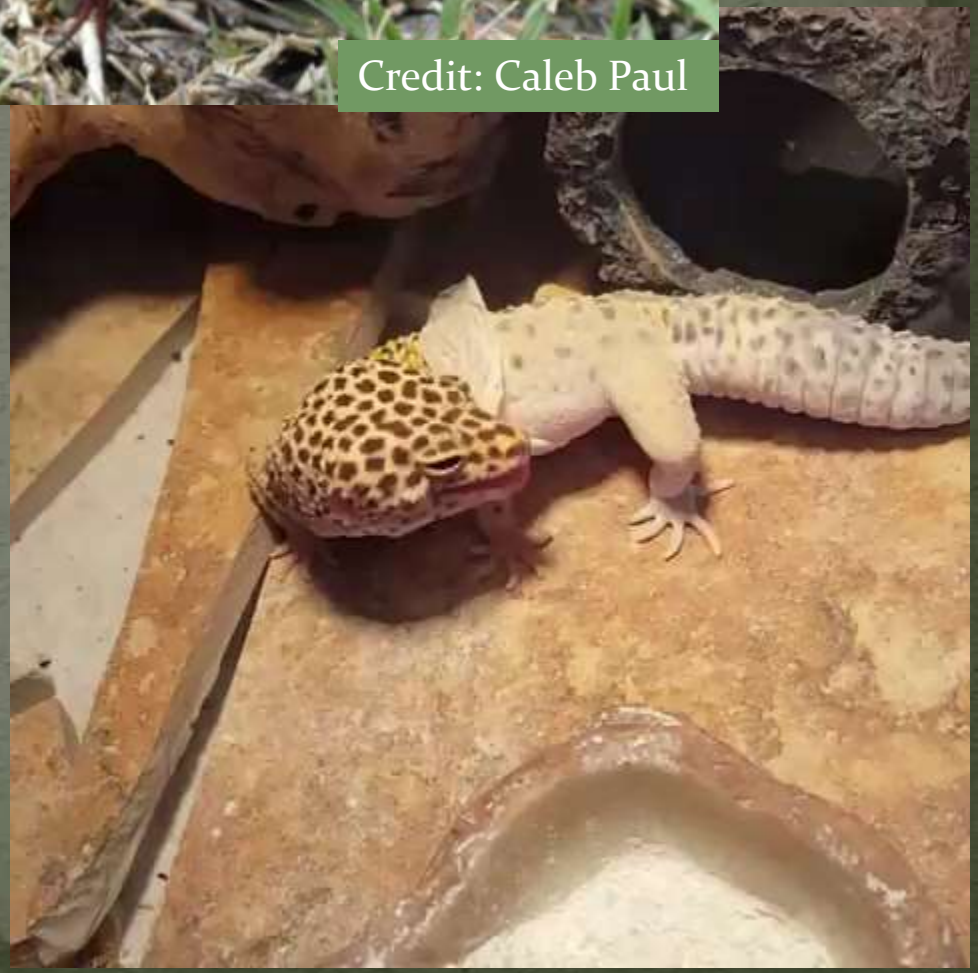
Some geckos, skinks, lizards, salamanders and tuatara that are captured by the tail will shed part of the tail

- Tail continues to wriggle, distracting predator
- Tail partially regenerates over a period of weeks
- New section contains cartilage rather than bone
- Skin typically differs in appearance
- Increased predation risk during regrowth
- Occurs in lizards along vertebral cleavage planes
- Caused by powerful muscle contractions
- Some snakes practice a pseudo-autotomy
- Take care to avoid causing this

Shedding (Ecdysis)

- Reptiles and amphibians shed their skin
- Usually a function of growth
- Can be a response to skin issues or parasites
- More often when young or active/feeding
- Many animals ingest skin to retain nutrients
- Cannot age a Rattlesnake or turtle by segments/rings.

Credit: Caleb Paul



In at least one caecilian species, the mother rapidly sheds her skin in order to feed her neonates!

Sexual Dimorphism

- External differences between sexes of the same species
- Common in nature, humans are sexually dimorphic, for example
- Not all herps are sexually dimorphic, some differences are subtle
- Can take many forms, such as overall size, head shape, tail length or shape, claw length, eye color, skin color (or portions of skin), etc.
- Impress your friends by being able to tell whether a herp is male or female just by looking!

Sexual Dimorphism


Western Pond Turtle (*Clemmys marmorata*)

Photo Credit: James Bettaso
U.S. Fish & Wildlife Service

Chelonian dimorphism:

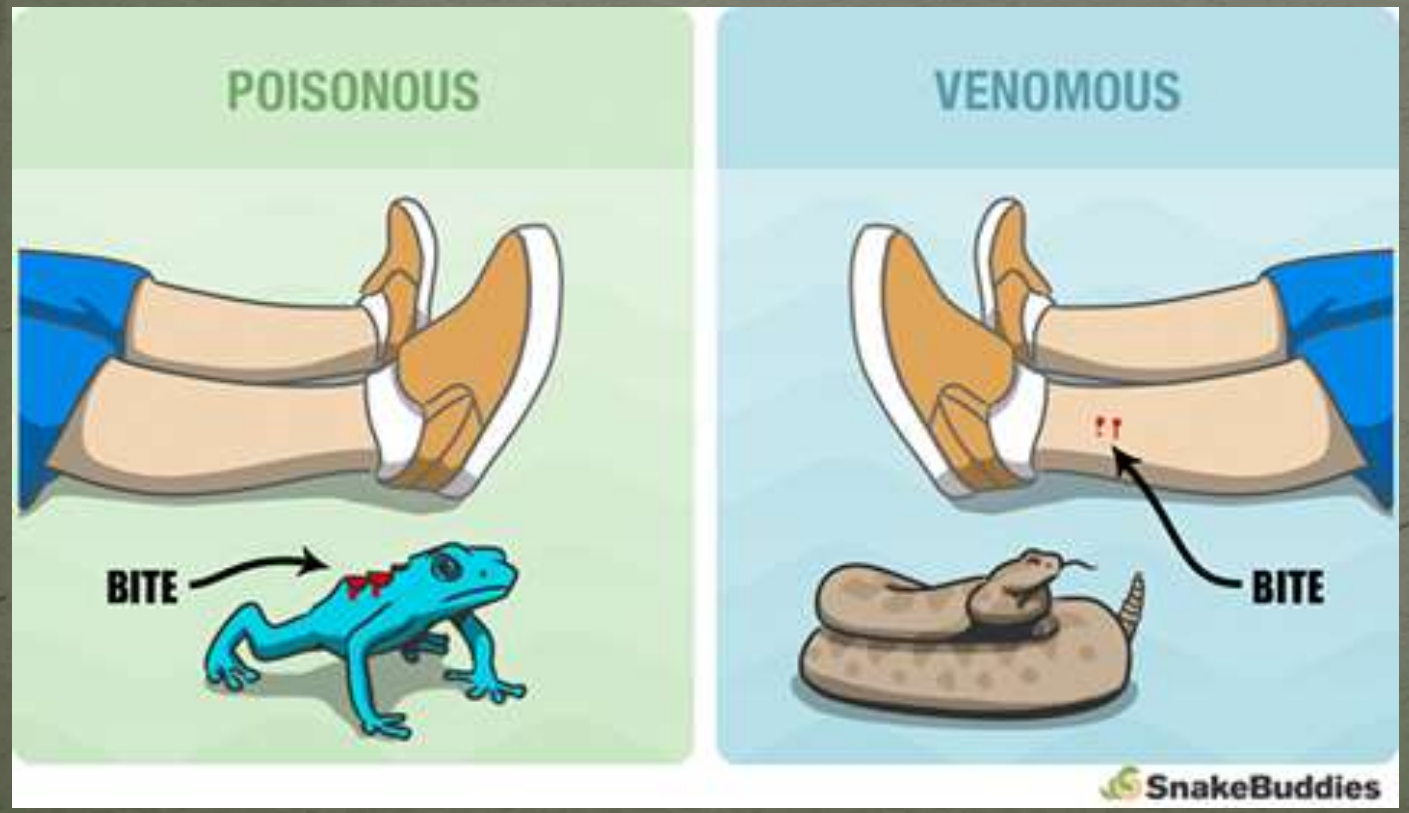
- Anal scutes typically have a deeper notch in females to facilitate egg laying.
- Males tend to have a concave plastron to facilitate breeding.
- Males tend to have thicker tails to accommodate their sex organ.
- Males' cloaca tends to be farther out to facilitate breeding.
- In many species, females tend to be larger.
- In sliders and some other species, males tend to have longer foreclaws, which they use in courtship displays and may facilitate breeding.

Hemipenes

- Bi-lobed sex organ in male snakes and lizards
- Not for urination, erectile with lymph fluid
- Fertilization can take place through either side
- Allows male to copulate from either side of female
- Bulges often visible
- Myriad of shapes
- Taxonomic importance

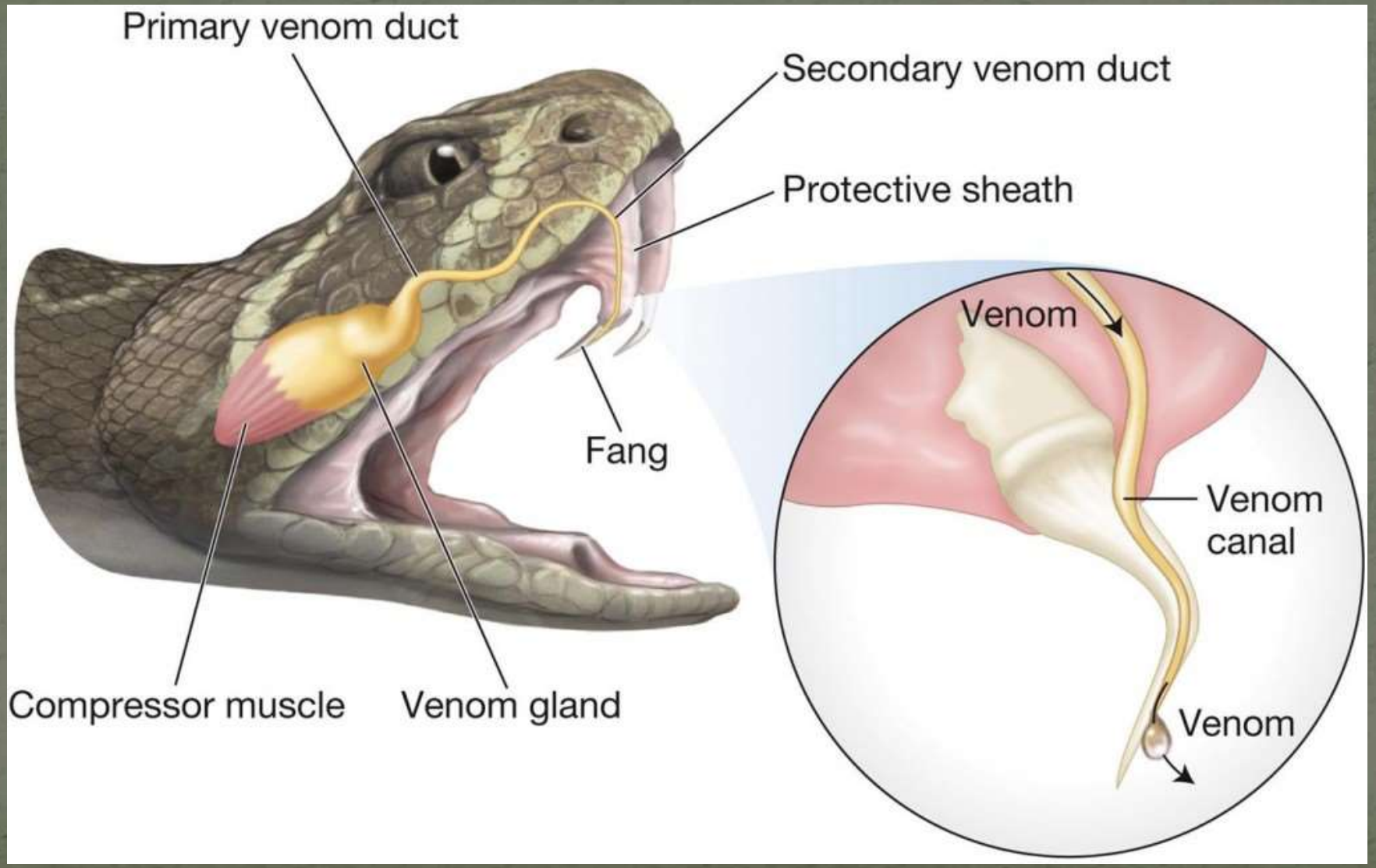
Venomous vs. Poisonous

- Poison – either ingested or absorbed through the skin
- Venom – injected via fangs, stingers, etc.



Some animals, such as the Japanese Grass Snake, are both.
It has venomous qualities in its saliva, and poisonous secretions from the nuchal glands on its neck.

Fangs


Primary venom duct
Secondary venom duct
Protective sheath
Fang
Compressor muscle
Venom gland
Venom
Venom canal
Venom

Rear-fanged Snakes

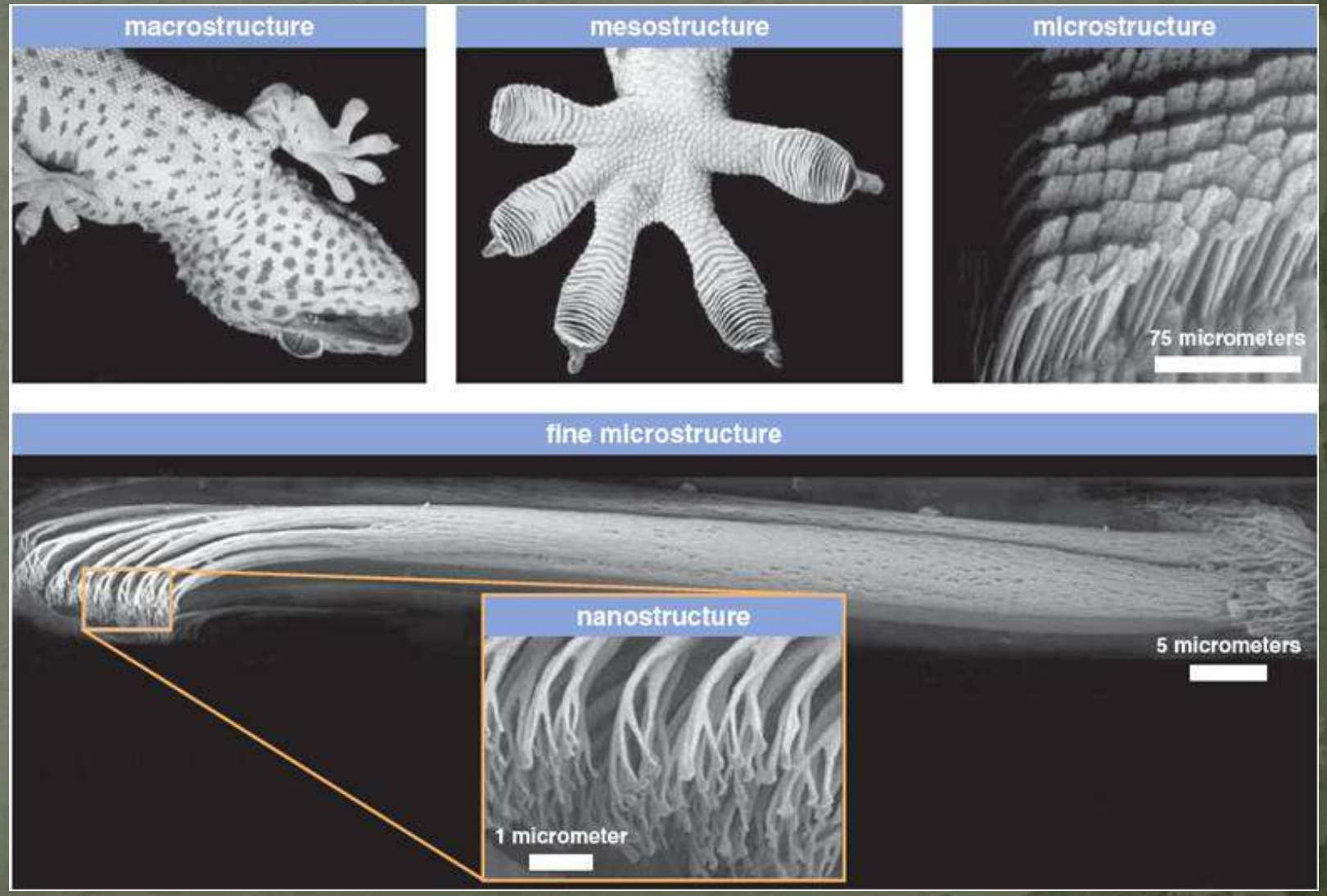
- Technically venomous
- Harmless* to humans
- Just a different saliva
- Some people allergic

“Sticky Feet”

Geckos:
Setae – Spatulae

“van der Waals forces”

A balance of mechanical and electromagnetic forces acting on the gecko and the angle of its toe hairs contribute to its sticking success.



Forked Tongues

- For smelling rather than tasting
- Tongue flicking samples the air
- Particles transferred to vomeronasal organ
- Jacobson's Organ transmits data to the brain
- Similar to our having ears on either side of our head

Scales

Whether a lizard or snake's scales are smooth or keeled is an important factor in identifying a species. Both have advantages, such as resisting external parasites or aiding with swimming.

Toxic Toads

Our local toads are technically poisonous, because they can excrete a toxin that deters predation. This comes from a paratoid gland behind their eyes, the shape of which is a key tool in species identification.

When is a Frog a Toad?

This is similar to asking when is a tree a shrub. Scientifically there isn't a delineating factor. Frogs and toads are all considered frogs. However, frogs tend to be called toads the more tubercles their skin contains and the drier their skin can get without ill effect.

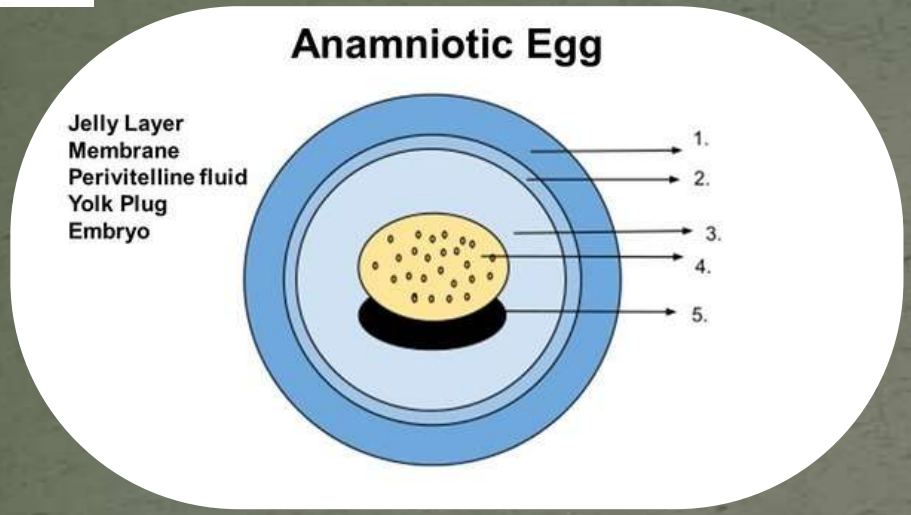
Pictured are Fowler's Toads in amplexus, a form of mating grasp exhibited by many anurans.

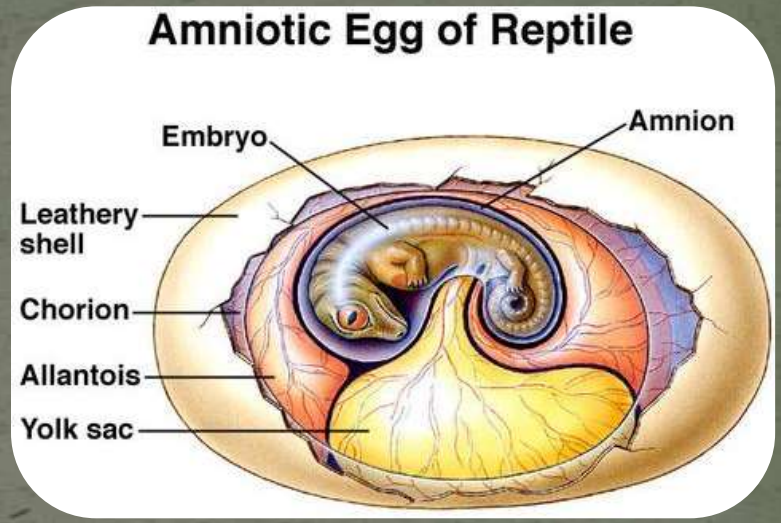
Overly exited male- toads have a "release" chirp

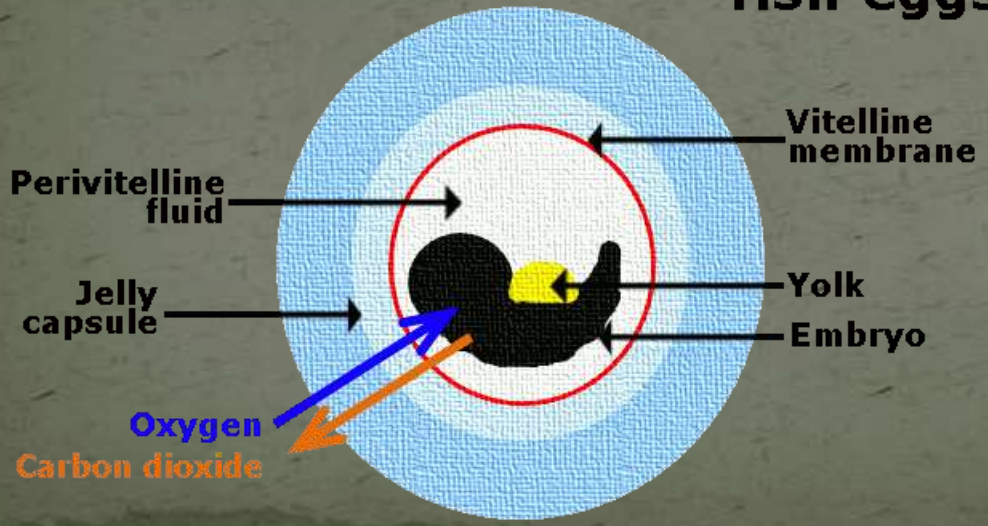
Toad Mating

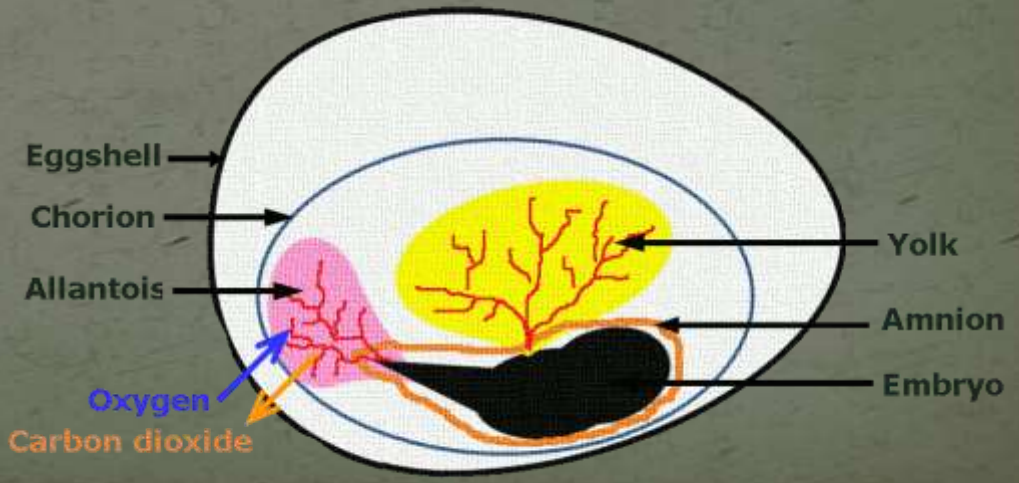
Their zeal is not always limited to females or even males of their own species!

Differences in Eggs









Amniotic Eggs

Reptile Reproduction

- Oviparous- egg laying
- Viviparous- live bearing
- Ovoviviparous (considered obsolete)
- Reptiles' ability to lay hard-shelled eggs has allowed them to colonize virtually every habitat on earth
- Not nearly as dependent on water as amphibians
- Very diverse methods, e.g., Green Anaconda birth in water; Pig-nosed Turtle eggs hatch once submerged.

Sex Determination

- Temperature-dependent Sex Determination (TSD)
  - E.g. High temps=males; low temps=females; median=mix
- Genotypic Sex Determination (GSD)
- Some exhibit a mixture of the two
- Some species can alter their means of determination in response to environmental factors

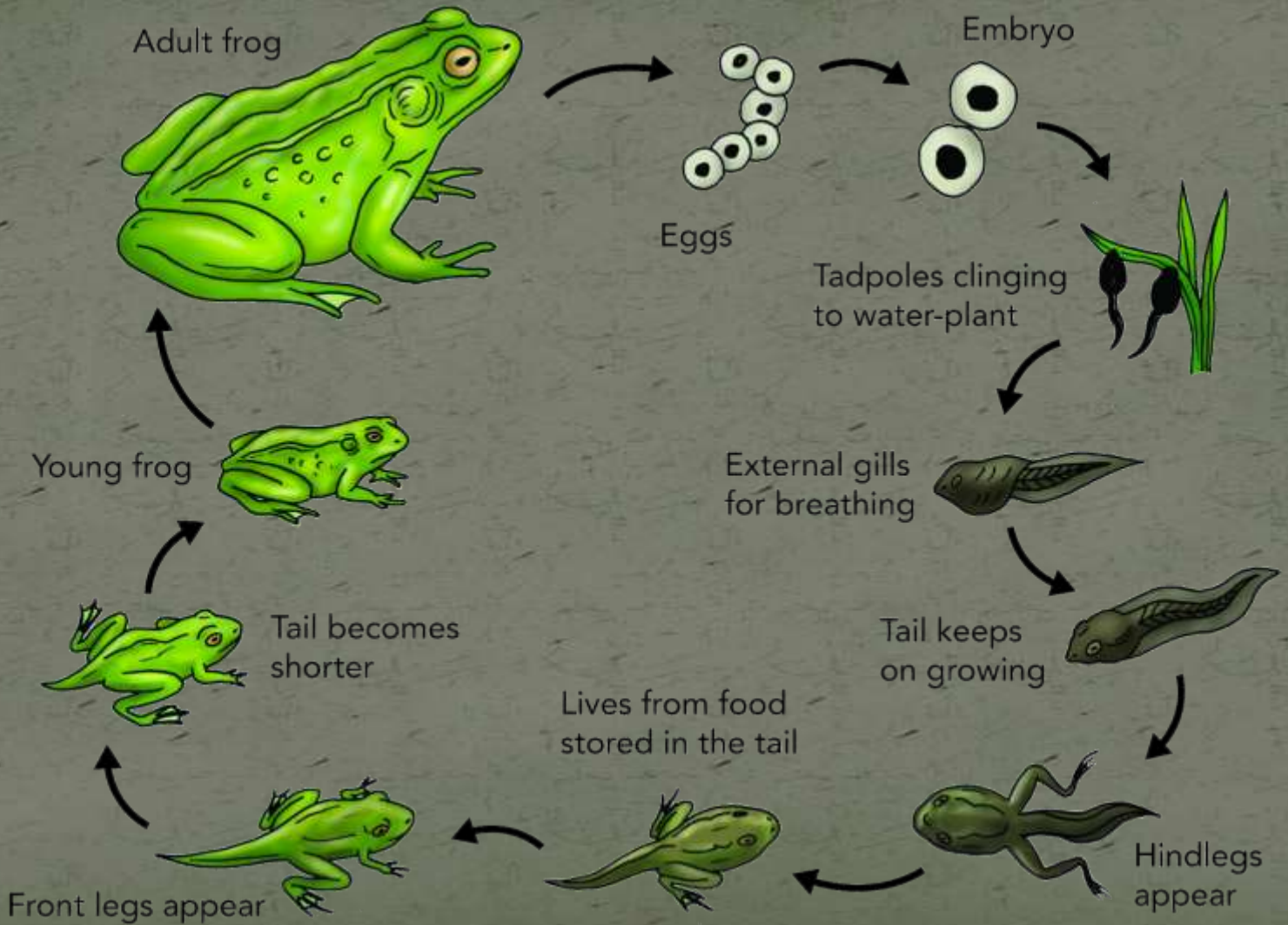
American Alligators are a local example of TSD, as are box turtles and many other Louisiana reptiles. Alligators builds large nests with grasses and vegetation, in which the eggs incubate by heat of decay.

Parthenogenesis

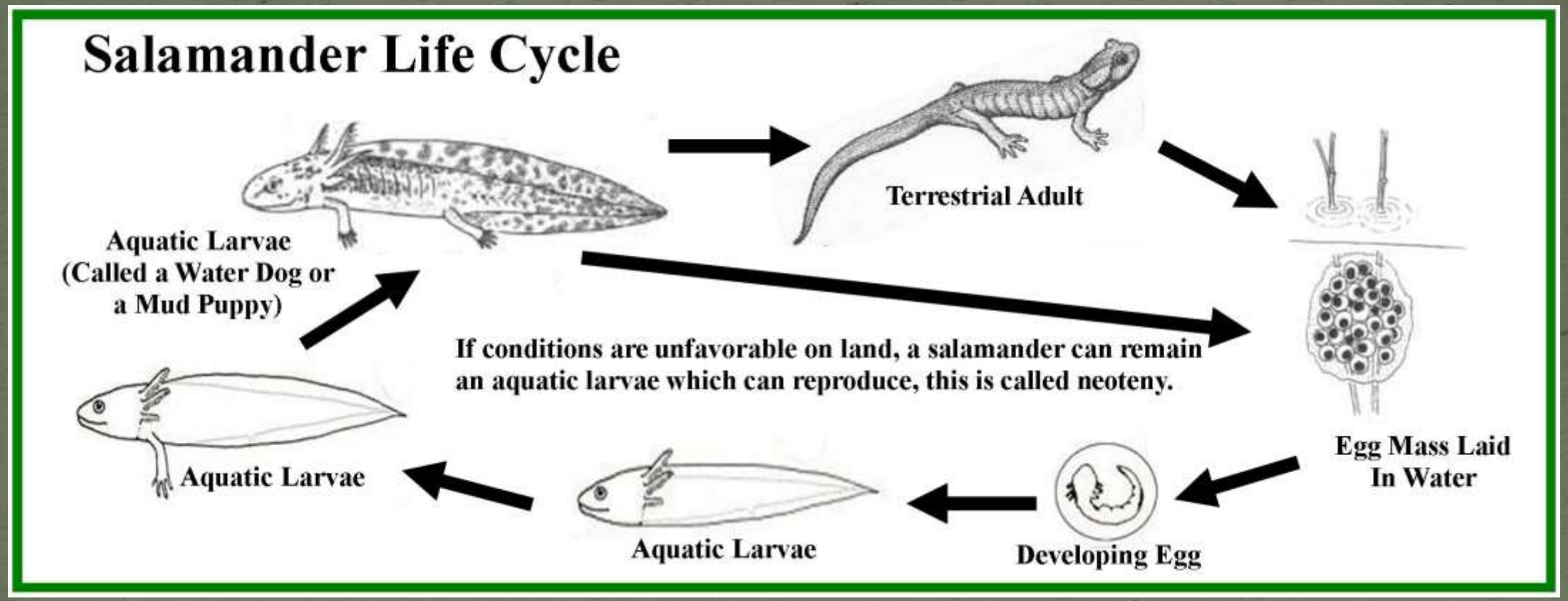
- Virgin birth
- Eight lizard families, one snake family
- Over fifty species in all known so far
- Individuals or populations in certain circumstances
  Ex. Komodo Dragon, Copperhead and Cottonmouth
- Well-known populations of Desert Grassland Whiptail lizard, which are closely related to our Six-lined Racerunners are all female
- May easily be more prevalent than we know, as it is often difficult to determine whether an individual in the wild has mated without sequencing DNA

Anamniotic Eggs

Frog Life Cycle

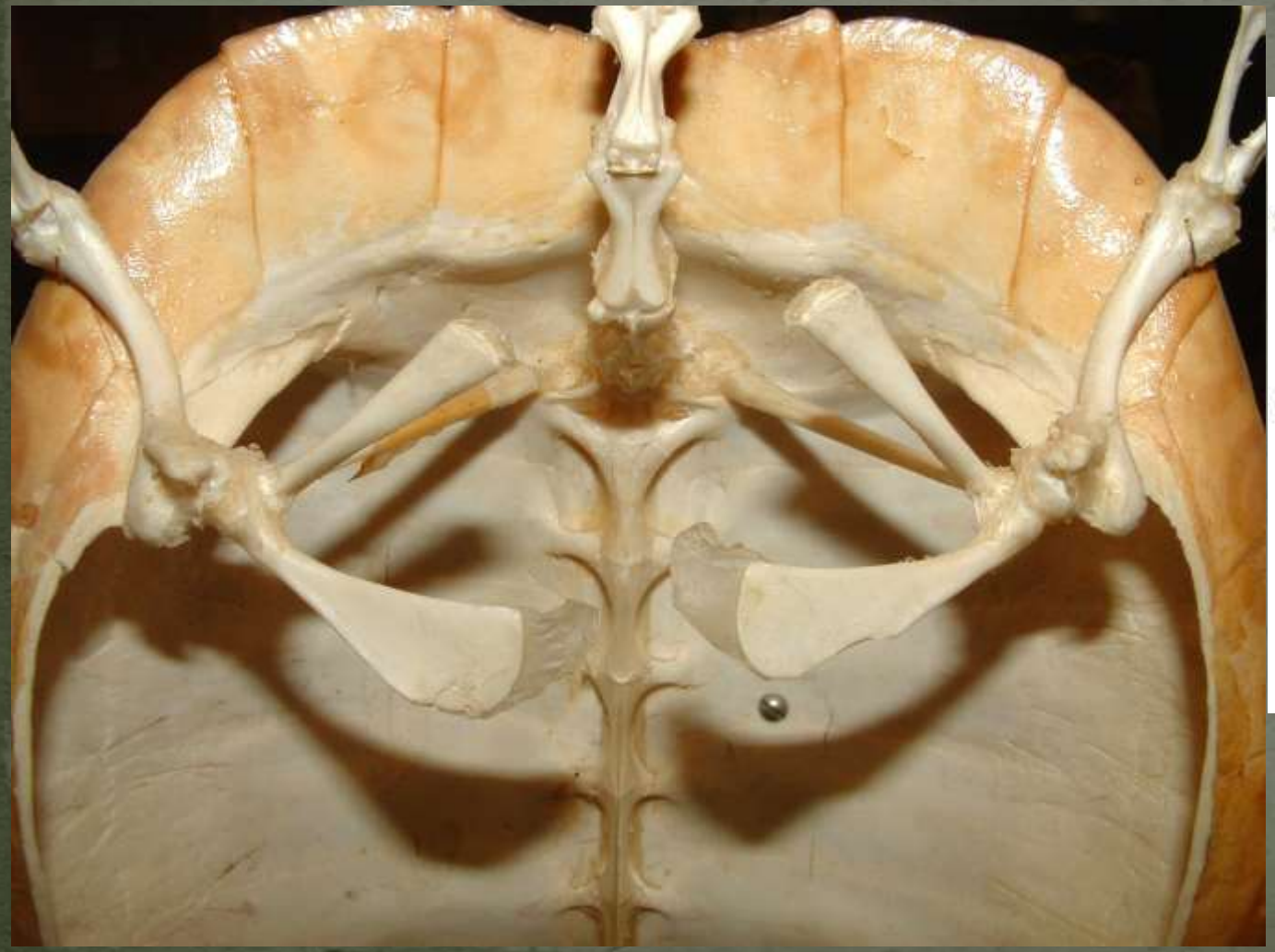


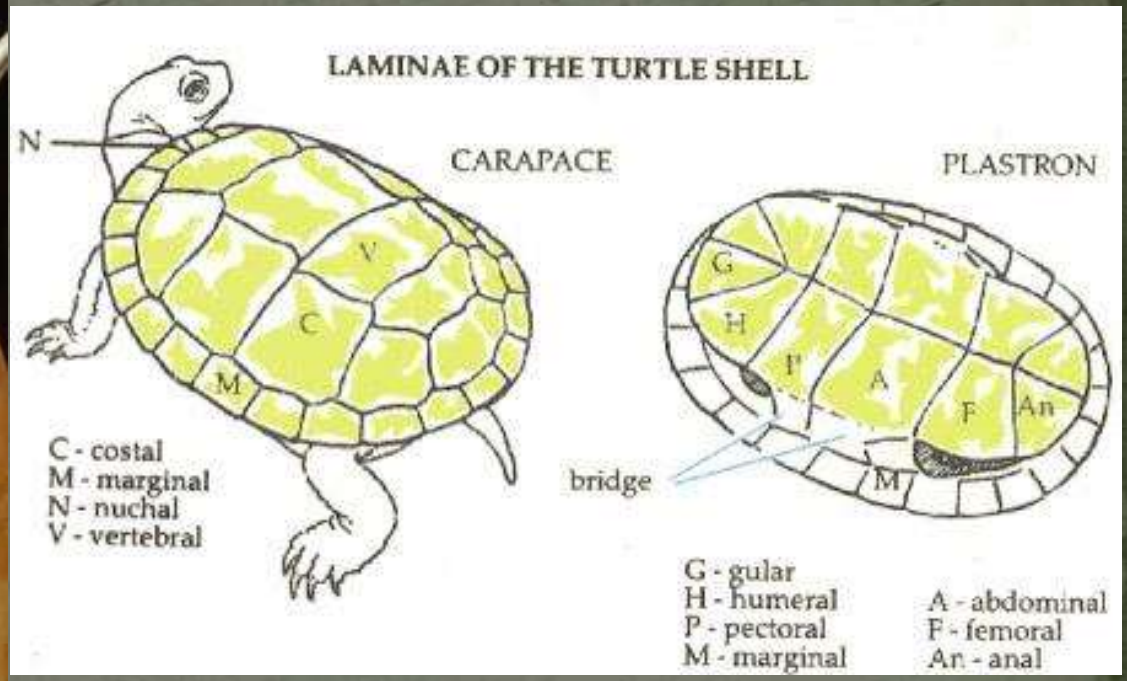
Salamander Life Cycle



Newts add a step to this cycle- they live on land once they change into their adult shape (called an eft during this stage), then move back to water once they reach sexual maturity. Internal fertilization- male deposits spermatophore, female takes it in through cloaca.

Turtle Shells





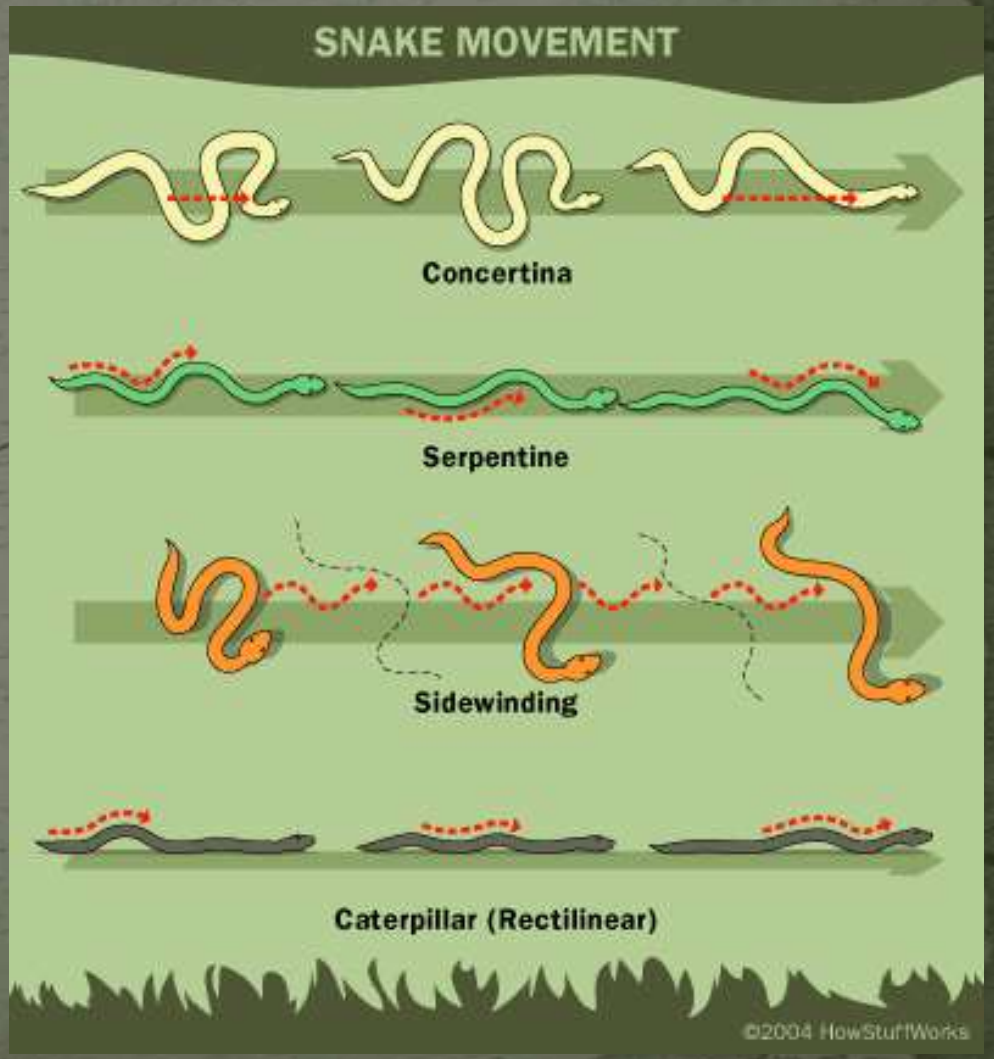
Snakes & Swallowing

- Jaws connected by ligaments (does not “dislocate”)
- Can swallow large prey, to a point
- Glottis for breathing

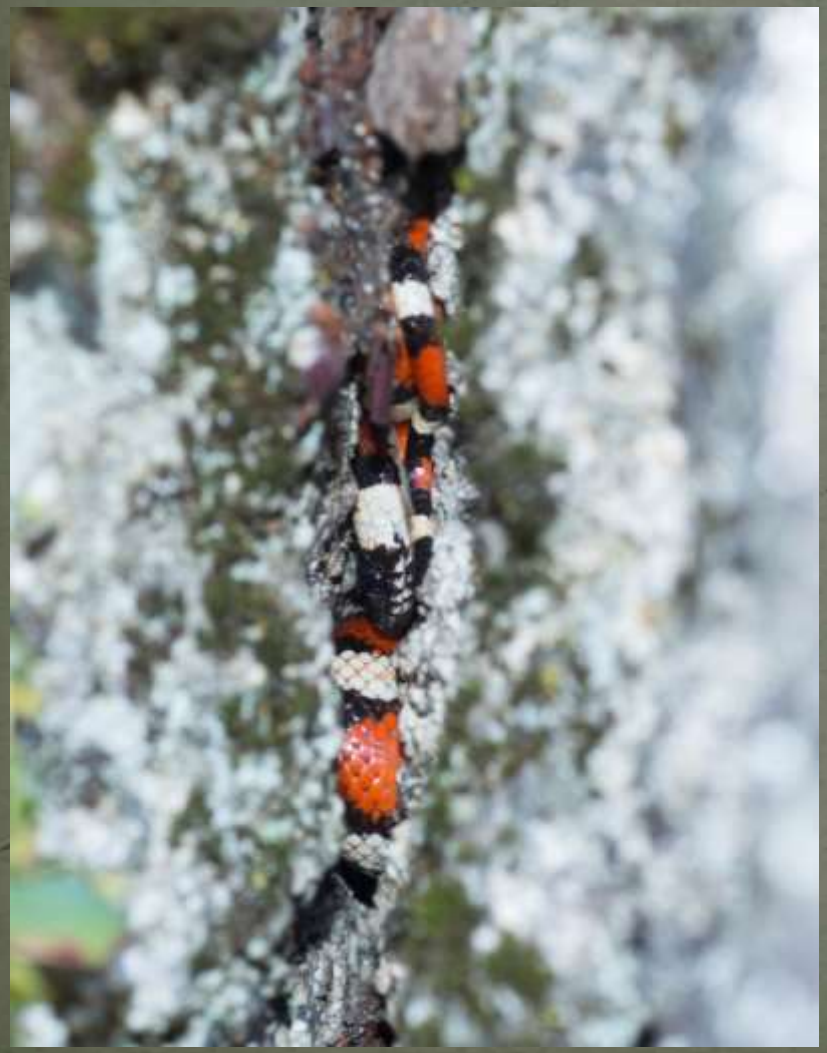
Snake Locomotion

Snakes can move in many different ways.

A lack of appendages turns out rarely to be a hindrance.



Hibernation (Brumation) & Aestivation



- A state of slowed metabolism, not an extended sleep
- Body burns fewer calories and uses less air
- Aquatic turtles are able to do this underwater (even under ice)
  - Absorb oxygen from the water via cloaca
- Hibernating herps may be periodically active and drink water when needed
- No food at this time, body is not warm enough for digestion

- In times of high temperatures, many species *aestivate*
- A state of reduced activity that helps prevent them from fatally overheating.

Part III: Natural History, Ecology & Distribution

How Big Do Herps Get?

Leatherback Seaturtle Dermochelys coriacea **6.6’ 2,000#**	**Komodo Dragon** *Varanus komodoensis* **8.5’ 200#**	**Green Anaconda** *Eunectes murinus* **17’ 215#**	**Saltwater Crocodile** *Crocodylus porosus* **17’ 2200#**
			

LA Life in Miniature

Usually, when someone sees a “baby” herp (especially snakes), it is an adult of a small species.

Eastern Musk Turtle *Sternotherus odoratus*	**Little Brown Skink** *Scincella lateralis*	**Texas Brownsnake** *Storeria dekayi*	**Fowler’s Toad** *Anaxyrus fowleri*
			

A Complex Web

Snakes and other reptiles and amphibians are integral parts of the food chain- both as predators and prey. This interconnected web is far too complex for us to ever comprehend its intricacies.

When asked why the Earth needs venomous snakes, one wise educator likened the answer to an airplane. "You may take a part from an airplane," he explained, "and yet it will still fly. You may take two or three or four without apparent ill effect. But sooner or later, you will have taken out too many parts and that plane will fall out of the sky."

And so it is with our ecosystem.

Camouflage

Herps are all around you every day.
While some may be out of sight, others are probably hiding in plain view!

Camouflage

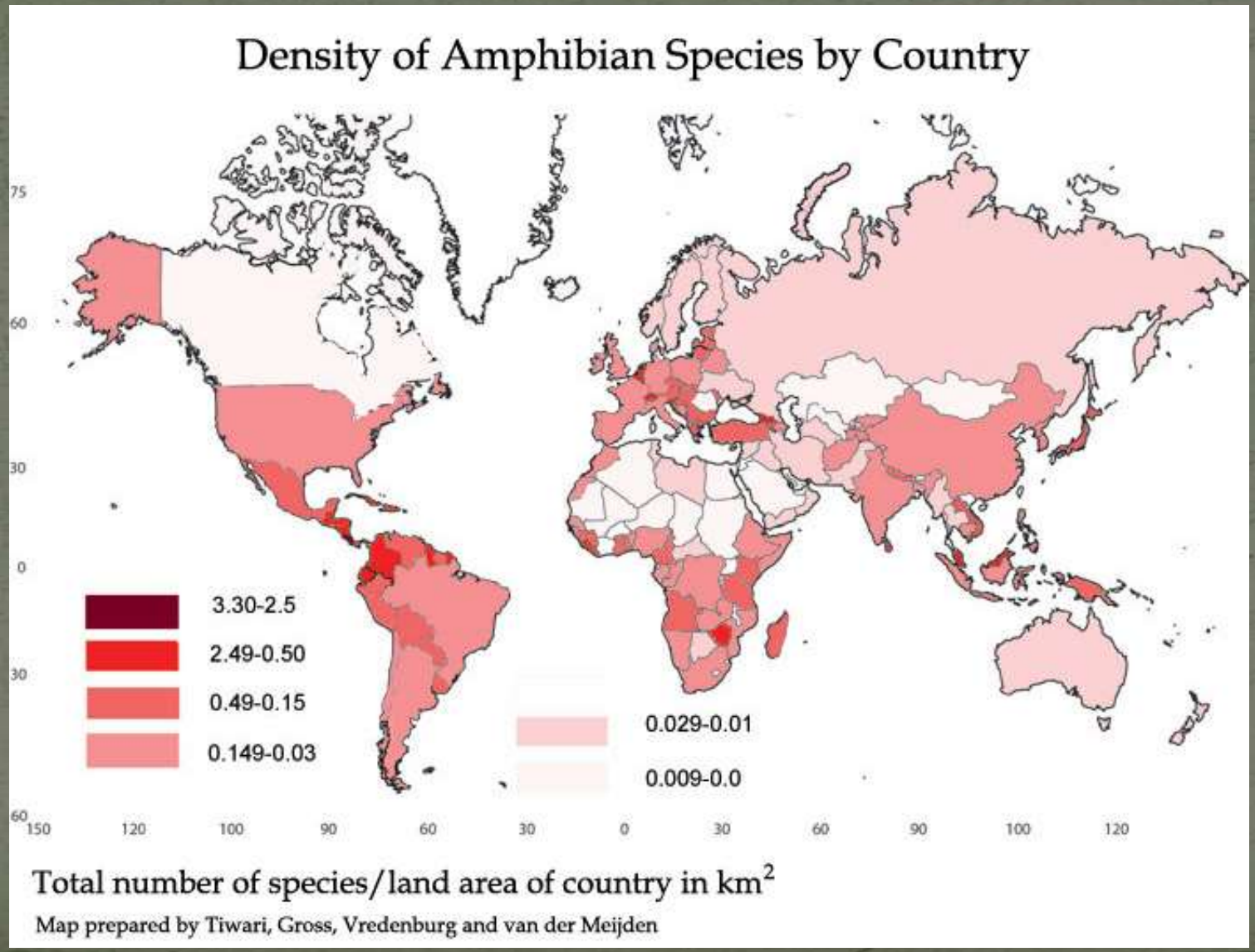
While many orders of the animal kingdom exhibit camouflage for defense or as an aid in hunting, reptiles and amphibians certainly have many striking examples. Can you spot the lizard in this picture?

Camouflage

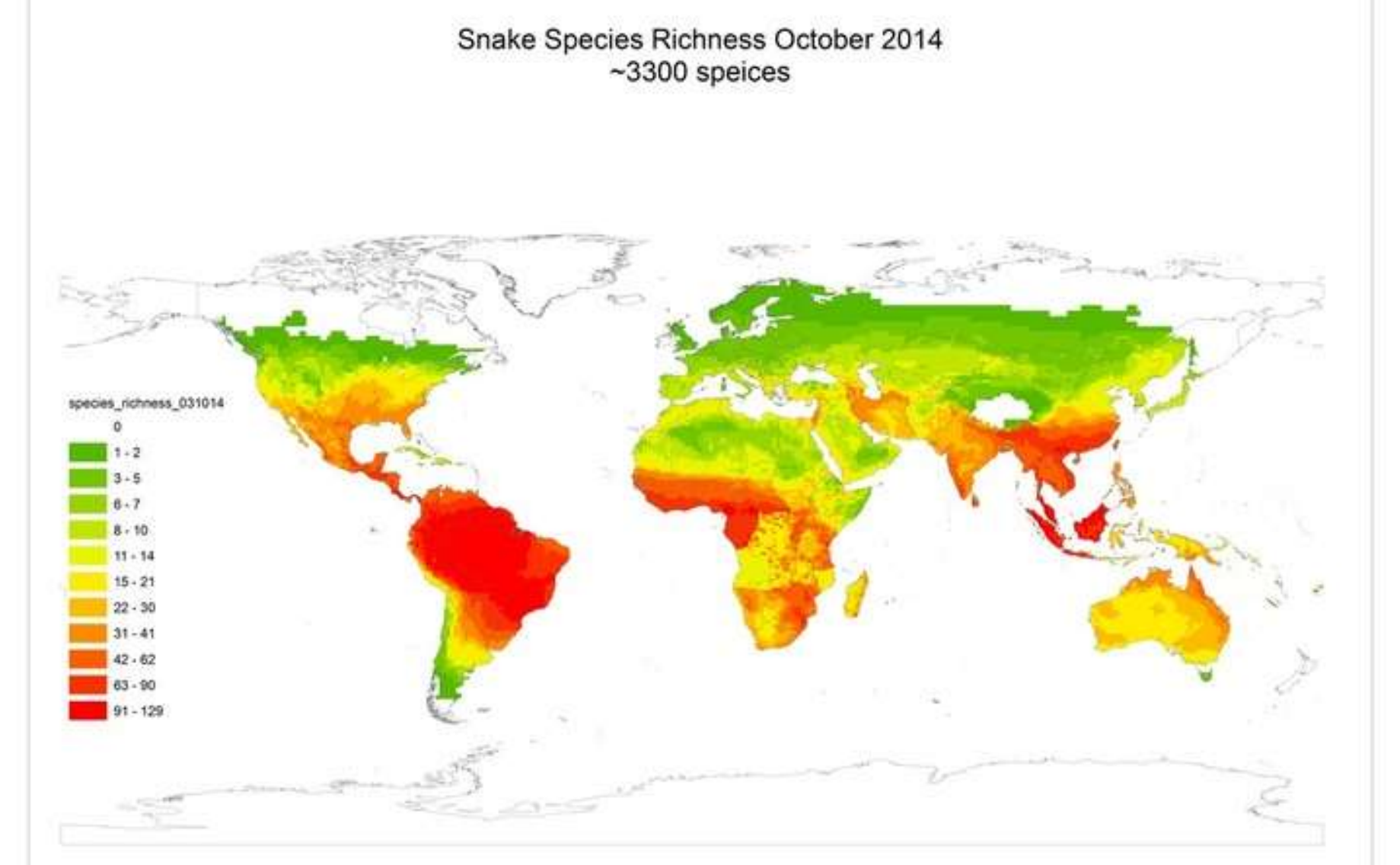
Naturalists should be constantly aware and on guard when hiking through snake country. Sometimes being able to discern a camouflaged animal can save you a LOT of grief!

Photo credit Jonathan Ashley

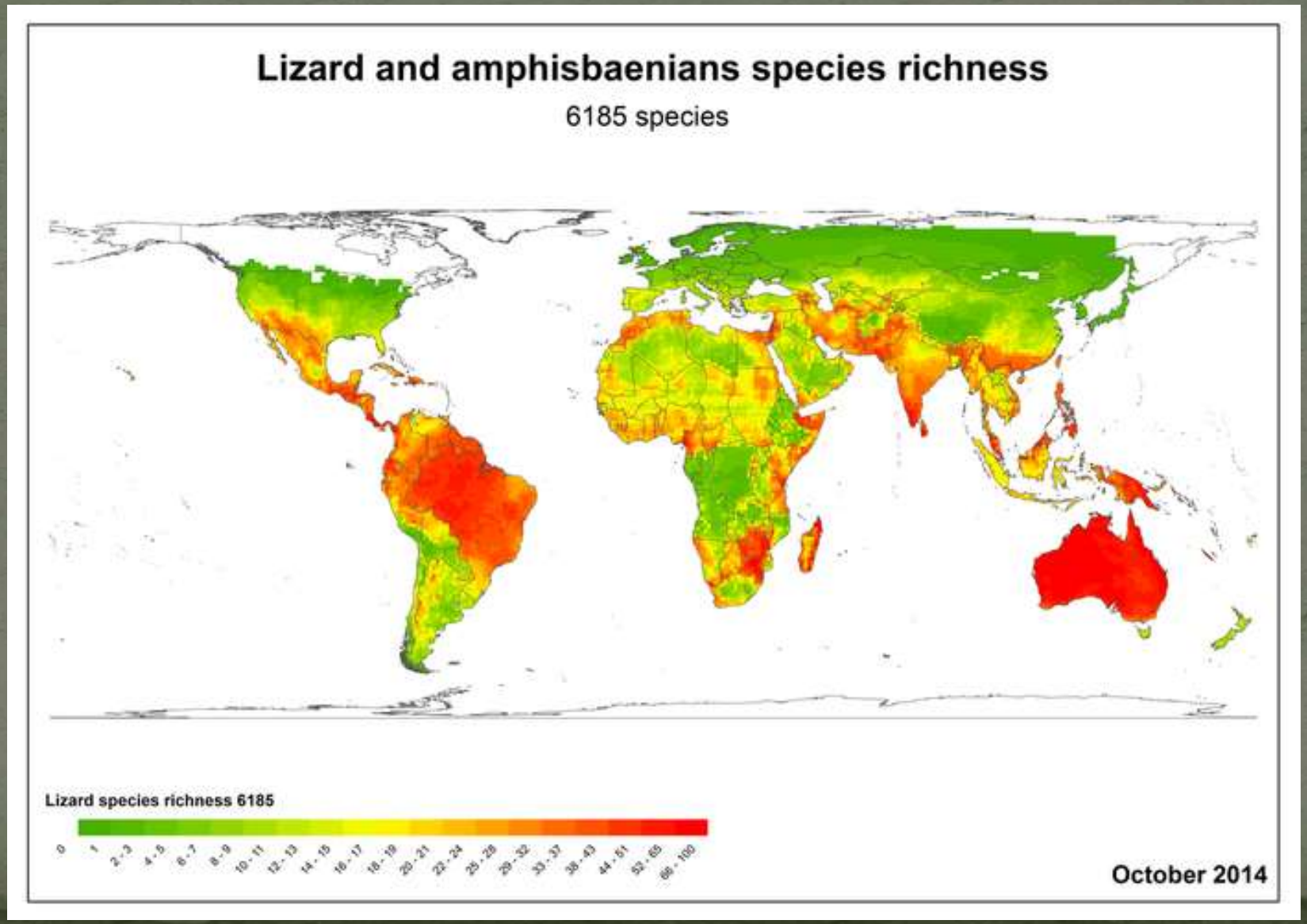
Distribution- Amphibians



Distribution- Snakes



Distribution- Lizards



Distribution

Herps tend to become larger the closer they are to the equator. Being ectotherms, this is largely because their metabolism is relative to temperature.

Teiids

Iguanids

Distributional Relationships

Herps tend to fall into “New World” and “Old World” categories. While there is some overlap and convergent evolution, the seasoned student can quite often tell which side of the world an animal is from based off its shape or other characteristics.

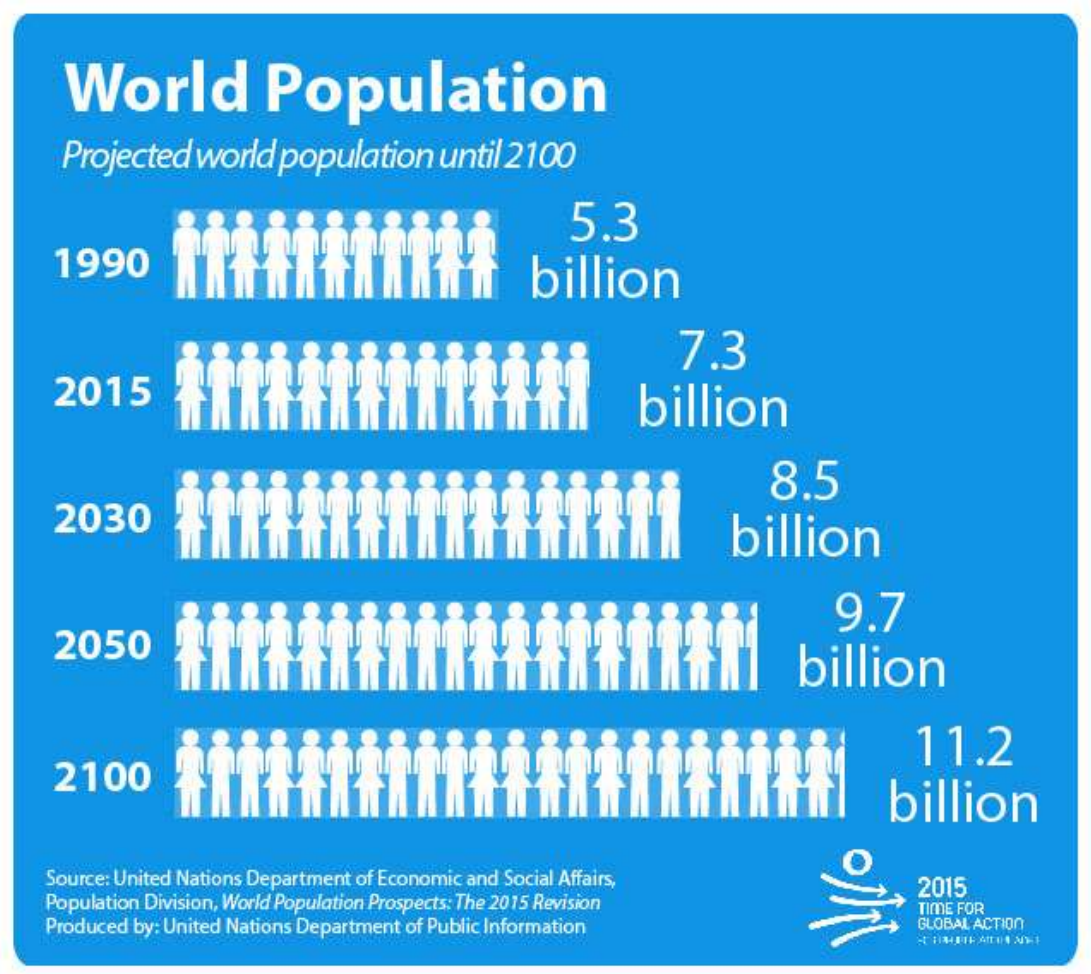
Agamids

Amphisbaenians & Caecilians

Amphisbaenians	Caecilians
Amphisbaenians (worm lizards), comprising over 190 extant species, are characterized by their long bodies, the reduction or loss of the limbs, and rudimentary eyes.	Caecilians (blind ones) are a group of over 200 species of limbless, serpentine amphibians. They mostly live hidden in the ground, making them the least familiar order of amphibians.

Part IV: Conservation

Global Conservation Concerns



Habitat destruction, degradation and fragmentation is the primary conservation concern for most species on earth, including reptiles and amphibians. While there is only so much that we as individuals can do to mitigate this issue, there are some local efforts that can be made, such as establishment of preserves, natural areas and habitat corridors.

Another option is to get involved with global organizations striving to maintain Earth's biodiversity. At our current rate of growth, we are projected to have roughly twice the population on Earth in forty years that we had twenty years ago.

The species lost during this expansion can never be recovered.

Conservation: Threats

1. Habitat destruction, degradation & fragmentation
2. Collection for food and pet trade
3. Climate change
4. Pollution including pesticides, hormones & altered Ph levels
5. Disease, e.g. Chytrid Fungi Bd & Bsal (Batrachochytrium dendrobatidis & Batrachochytrium salamandrivorans have caused more extinction events than any other infectious disease known to science) (Bsal gene recently identified); *Mycoplasma agassizii* in Gopher Tortoises, Snake Fungal Disease
6. Incidental mortality, such as sea turtles caught in commercial fishing activities
7. Direct human interference, e.g. killing snakes on sight
8. Introduced species, e.g. Cats, rats and goats

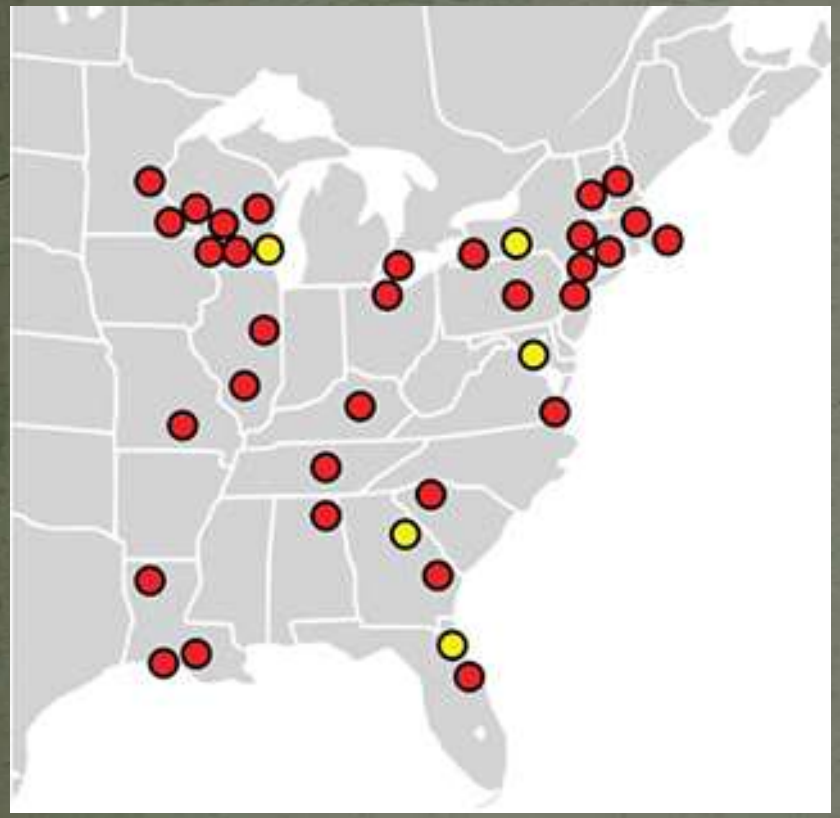
Conservation: Preservation & Management

1. Habitat reserves and corridors
2. CITES listings (Convention on International Trade in Endangered Species of Wild Fauna and Flora)
3. Scientific study, e.g. of climate, diseases, behavior, patterns
4. Captive (ex situ) management, translocation, repatriation
5. Connecting with public and policy-makers
6. Conservation begins with educational programs such as this
7. P.A.R.C. has set up a disease reporting task force.

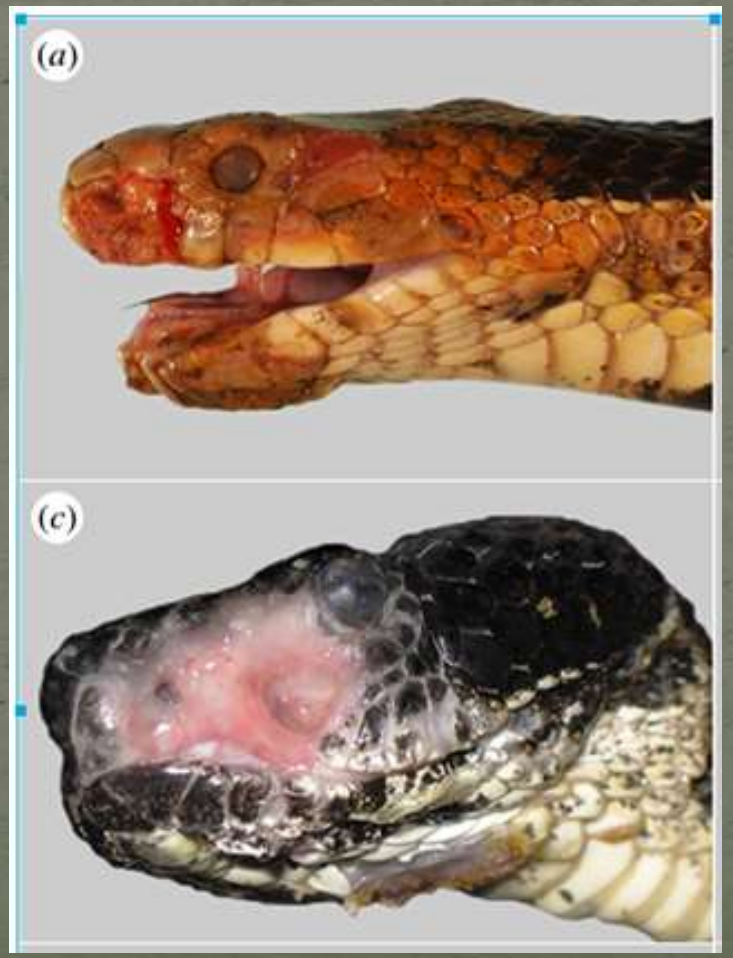
   http://parcplace.org/parcplace/resources/disease-task-team.html

Emerging Threats

Snake Fungal Disease, Chytrid Fungi



U.S. Geological Survey/National Wildlife Health Center
Red dots indicate wild snakes in which the disease was detected, yellow dots captive snakes. *INCOMPLETE



Snake Fungal Disease

Snake Fungal Disease (SFD), thought to be caused by the keratinophilic fungus *Ophidiomyces ophiodiicola* (OO)

- Mortality among affected animals vary, but can be very high
- Long term effects of pathogen in the environment unclear; concern of potential extinction events
- First described in NE US in 2006
- Appearance described in 20+ states as of 2016, stretching west of the Mississippi
- Challenging to detect true prevalence due to the secretive nature of snakes
- Cases have been detected in other countries (Canada, Germany, Australia, U.K.), but disease appears most prevalent in the US.
- Pathogen may have been in the environment for some time, possibly changing conditions (weather & temperature patterns) allowed for infections to become symptomatic
- Partners in Amphibian and Reptile Conservation (PARC) has a disease reporting task force
- Important to sterilize any tools used with wild herps to avoid potential cross-contamination of populations, animals may be carriers without being symptomatic

Chytrid Fungi Bd & Bsal

Frogs around the world are disappearing, largely due to a frightening disease outbreak caused by the spread of chytrid fungus.

Listen to Jonathan Kolby speak about this event & how his team is working to prevent extinction in Honduras.

Also hear an entreaty to take part in a citizen science project on iNaturalist.

More good info at amphibianark.org

amphibian ark
Keeping threatened amphibian species afloat

Chytrid Fungi Bd & Bsal

Chytrid Fungi Bd & Bsal

Louisiana Concerns

Species of Concern in Louisiana – State Rankings

- **S1** = critically imperiled in Louisiana because of extreme rarity (5 or fewer known extant populations) or because of some factor(s) making it especially vulnerable to extirpation
- **S2** = imperiled in Louisiana because of rarity (6 to 20 known extant populations) or because of some factor(s) making it very vulnerable to extirpation
- **S3** = rare and local throughout the state or found locally (even abundantly at some of its locations) in a restricted region of the state, or because of other factors making it vulnerable to extirpation (21 to 100 known extant populations)
- **S4** = apparently secure in Louisiana with many occurrences (100 to 1000 known extant populations)
- **S5** = demonstrably secure in Louisiana (1000+ known extant populations)
  (B or N may be used as qualifier of numeric ranks and indicating whether the occurrence is breeding or nonbreeding)
- **SA** = accidental in Louisiana, including species (usually birds or butterflies) recorded once or twice or only at great intervals hundreds or even thousands of miles outside their usual range
- **SH** = of historical occurrence in Louisiana, but no recent records verified within the last 20 years; formerly part of the established biota, possibly still persisting
- **SR** = reported from Louisiana, but without conclusive evidence to accept or reject the report
- **SU** = possibly in peril in Louisiana, but status uncertain; need more information
- **SX** = believed to be extirpated from Louisiana
- **SZ** = transient species in which no specific consistent area of occurrence is identifiable

Louisiana Concerns

Species of Concern in Louisiana – Amphibians

16 State-listed species, at least 3 occur or have occurred in NW LA in the past.

Common Name	State Rank	State Status
Eastern Tiger Salamander	S1	Prohibited
Four-toed Salamander	S1	
SOUTHERN RED-BACKED SALAMANDER	S1	Prohibited
Webster's Salamander	S1	Prohibited
Louisiana Slimy Salamander	S1	
Gulf Coast Mud Salamander	S1	Prohibited
Strecker's Chorus Frog	S1	
Southern Crawfish Frog	S1	
Southern Dusky Salamander	S1	
Southern Red Salamander	S2	Prohibited
Gulf Coast Waterdog	S3	
Red River Mudpuppy	S3	
Eastern Spadefoot	S3	
Crawfish Frog	S3?	
Ornate Chorus Frog	SH	
Dusky Gopher Frog	SH	

Louisiana Concerns

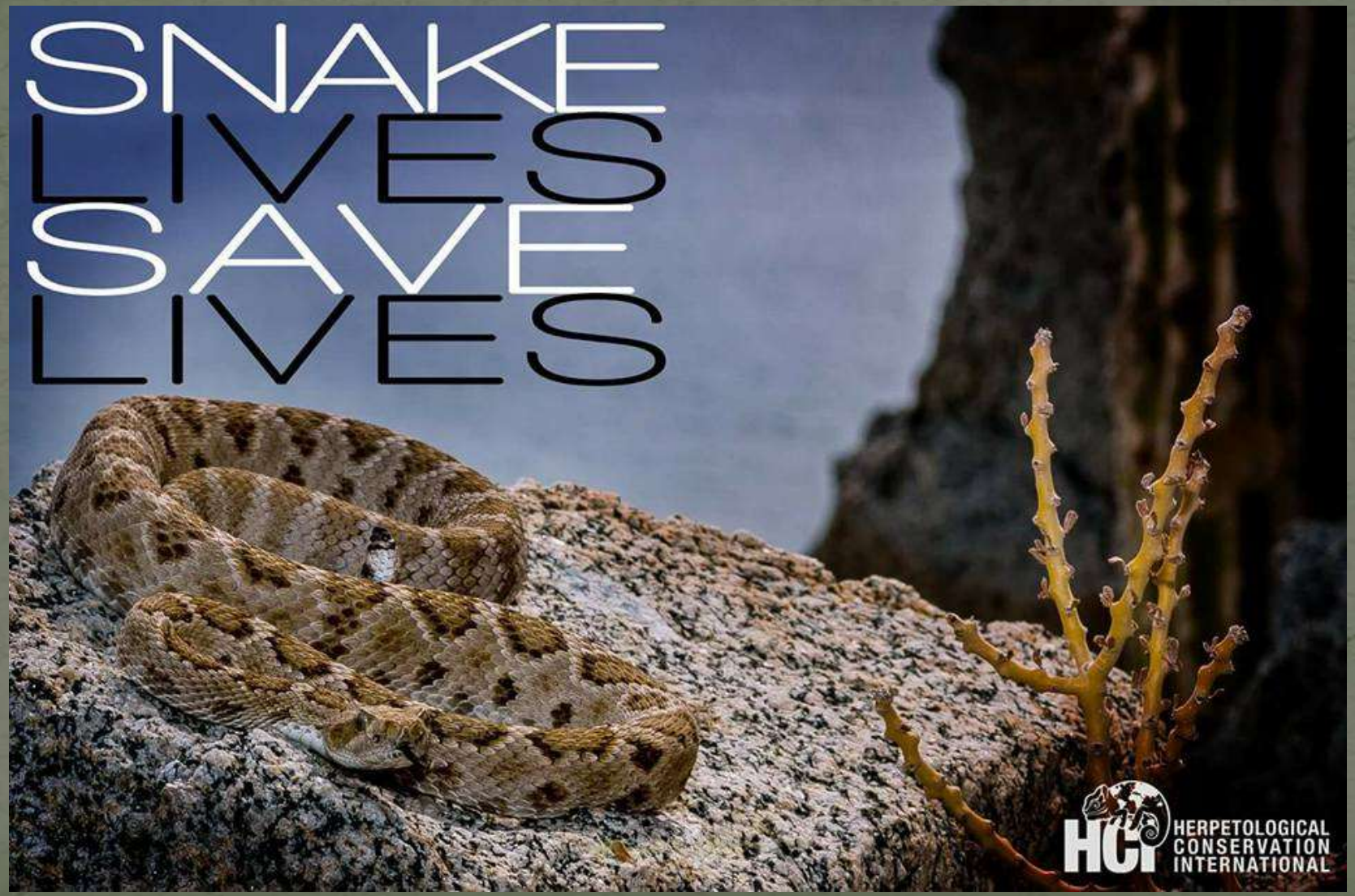
Species of Concern in Louisiana – Reptiles

32 State-listed species, at least 10 occur or have occurred in NW LA in the past.

Common Name	State Rank	State Status
Ornate Box Turtle	S1	Restricted Harvest
Stripeneck Musk Turtle	S1	
Gopher Tortoise	S1	T
Southern Prairie Skink	S1	
Western Worm Snake	S1	
Black Pine Snake	S1	
Pine Woods Snake	S1	
Eastern Diamondback Rattlesnake	S1	
Southeastern Crowned Snake	S1	
Kemp's Ridley Sea Turtle	S1B, S3N	E
Loggerhead Sea Turtle	S1B, S3N	T
Green Sea Turtle	S1N	T
Mole Kingsnake	S1S2	
Ringed Map Turtle	S2	T
Rainbow Snake	S2	
Louisiana Pine Snake	S2	

Common Name	State Rank	State Status
Harlequin Coral Snake	S2	
Western Chicken Turtle	S2	
Alligator Snapping Turtle	S3	Restricted Harvest
Pascagoula Map Turtle	S3	
Diamondback Terrapin	S3	Restricted Harvest
Eastern Glass Lizard	S3	
Smooth Softshell	S3	
Ouachita Map Turtle	S3	
Pearl Map Turtle	S3	
Western Slender Glass Lizard	S3	
Coal Skink	S3	
Eastern Hog-Nosed Snake	S3	
Timber Rattlesnake	S3S4	
Hawksbill Sea Turtle	SNA	E
Leatherback Sea Turtle	SNA	E
Texas Horned Lizard	SX	

Snakes Save Lives!



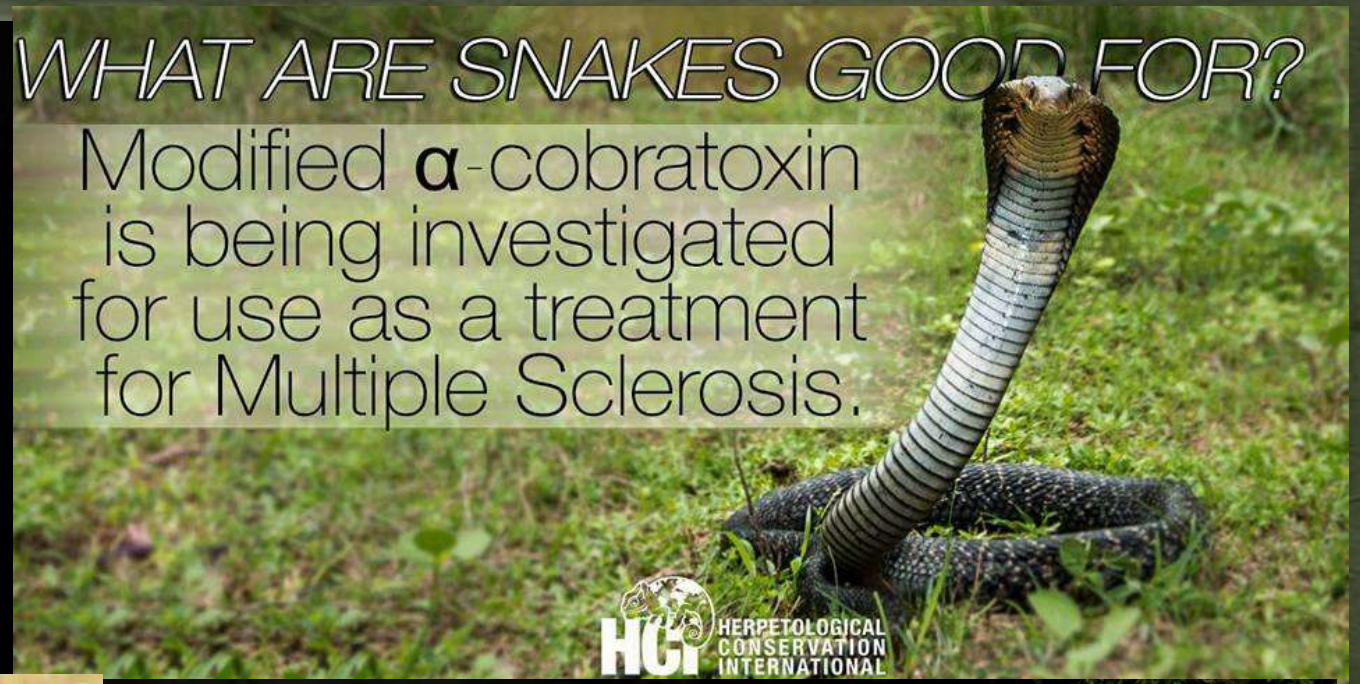
WHAT ARE SNAKES GOOD FOR?

Mambalgins are peptides isolated from black mamba venom that are being investigated for use as **painkillers**. When tested on mice, they were found to be as strong as morphine with fewer side effects.

HERPETOLOGICAL CONSERVATION INTERNATIONAL

WHAT ARE SNAKES GOOD FOR?

Modified α-cobratoxin is being investigated for use as a treatment for Multiple Sclerosis.



HERPETOLOGICAL CONSERVATION INTERNATIONAL

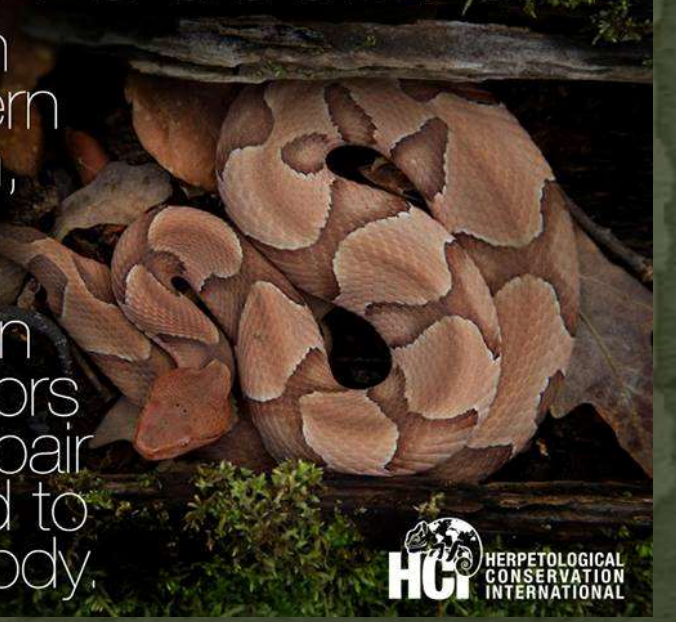
WHAT ARE SNAKES GOOD FOR?

Eptifibatide (Integrilin) prevents blood from clotting and is used by doctors to prevent **heart attacks**. It is derived from a protein found in pygmy rattlesnake venom.

HERPETOLOGICAL CONSERVATION INTERNATIONAL

WHAT ARE SNAKES GOOD FOR?

Vicrostatin, a protien derived from southern copperhead venom, has been shown to not only slow the growth of human **breast cancer** tumors in mice, but also impair their ability to spread to other parts of the body.



HERPETOLOGICAL CONSERVATION INTERNATIONAL

Part V: Observation

Field Guides

There are many great field guides available today, these are one of the best ways to quickly identify herps you encounter.

Snakes

(venomous & non-venomous)

Lizards

(incl. skinks & geckos)

Turtles

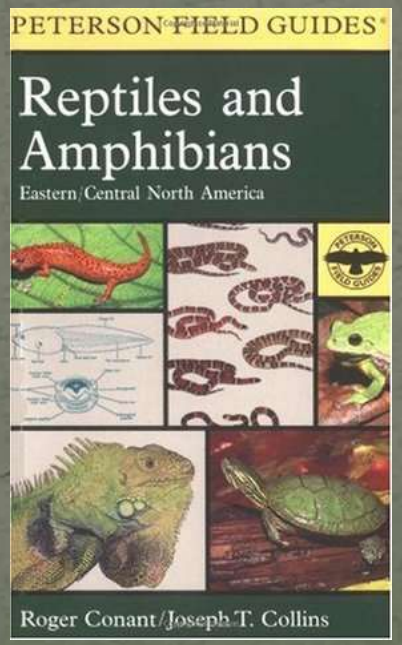
(aquatic & semi-aquatic)

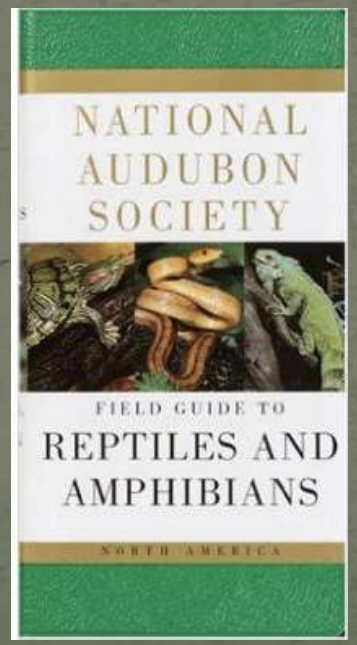
Newts & **Salamanders**

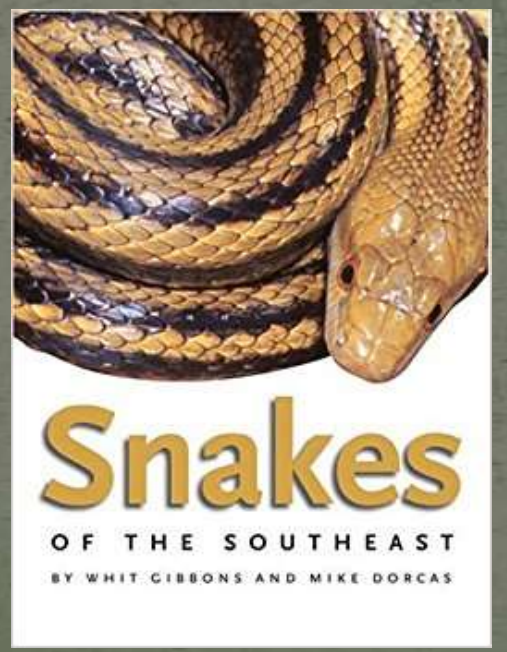
(aquatic & terrestrial)

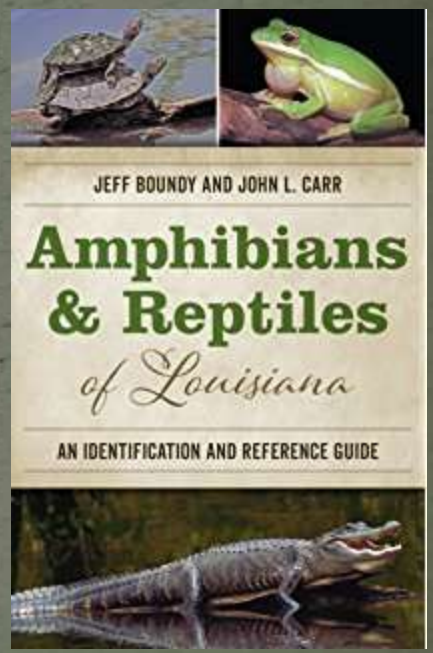
Frogs & **Toads**

Alligators









Field “herping”:

- Similar to other types of wildlife watching, such as birding
- Similar gear and methods apply, with some variations
- In LA, one may observe herps freely, need a fishing license to collect
- Some species are prohibited from collection or have restricted harvests
- The chances of spotting herps are generally increased when one considers that they are ectotherms.
- Basking in transition areas between sun and shade
- More likely to be in patches of sunlight in morning, or under cover that transfers radiant heat (e.g. corrugated tin scraps)
- More likely to be avoiding sun in heat of day
- Frogs can be spotted by following their calls or looking near waterways.

Observation

- Your hands are the best collection tools for most herps. A gentle slapping technique will suffice for lizards and other harmless herps. Care must be taken not to cause them to autotomize their tails.
- Researchers use other methods, such as drift fences, pitfalls, lizard nooses, turtle traps and the like to find herps efficiently.
- One can also set out cover-boards and flip them to find herps harboring underneath.
- Some people put pieces of PVC pipe containing some water on trees to attract treefrogs.
- Wading through shallow water at night is sure to produce many sightings.
- Looking under rocks, logs and debris is a common method of spotting herps.
- Garden ponds are a good way to attract frogs and hear their calls.
- Snakes can be carefully pinned with a hook or stick.
- Always remember to leave any snake alone unless you are sure it is harmless.

Handling

- Snapping turtles are best handled either by a rear leg (not tails) to avoid being bitten or scratched. Some people handle them by their carapace, being careful to wedge their head down.
- Soft-shelled turtles have an extremely long neck- it is very difficult to handle them without experience. They can reach very far back and bite.
- Other turtles can usually be handled with one hand above and below their shells.
- Lizards can usually be grasped gently around their bodies. Broad-headed skinks can bite fairly hard. Glass lizards flail and autotomize easily.
- Many slender snakes flail about, and most will poop on you.
- Toads will pee on you.
- Frogs should be held around their waist, keeping their legs straight. It is best to handle amphibians as little as possible. Oils and salts on our skin can be irritating to their skin, which absorbs things it contacts.
- Sturdy, thick, high-top shoes or boots are strongly recommended in snake country. Sporting goods stores also sell plastic shin guards to protect against snakebite.

Tools


Johnson
A Family Company
OFF!
DEEP WOODS
INSECT REPELLENT
LONG LASTING PROTECTION FROM
MOSQUITOES, TICKS,
BITING FLIES, GNATS
& CHIGGERS

CAUTION


Canon
EOS

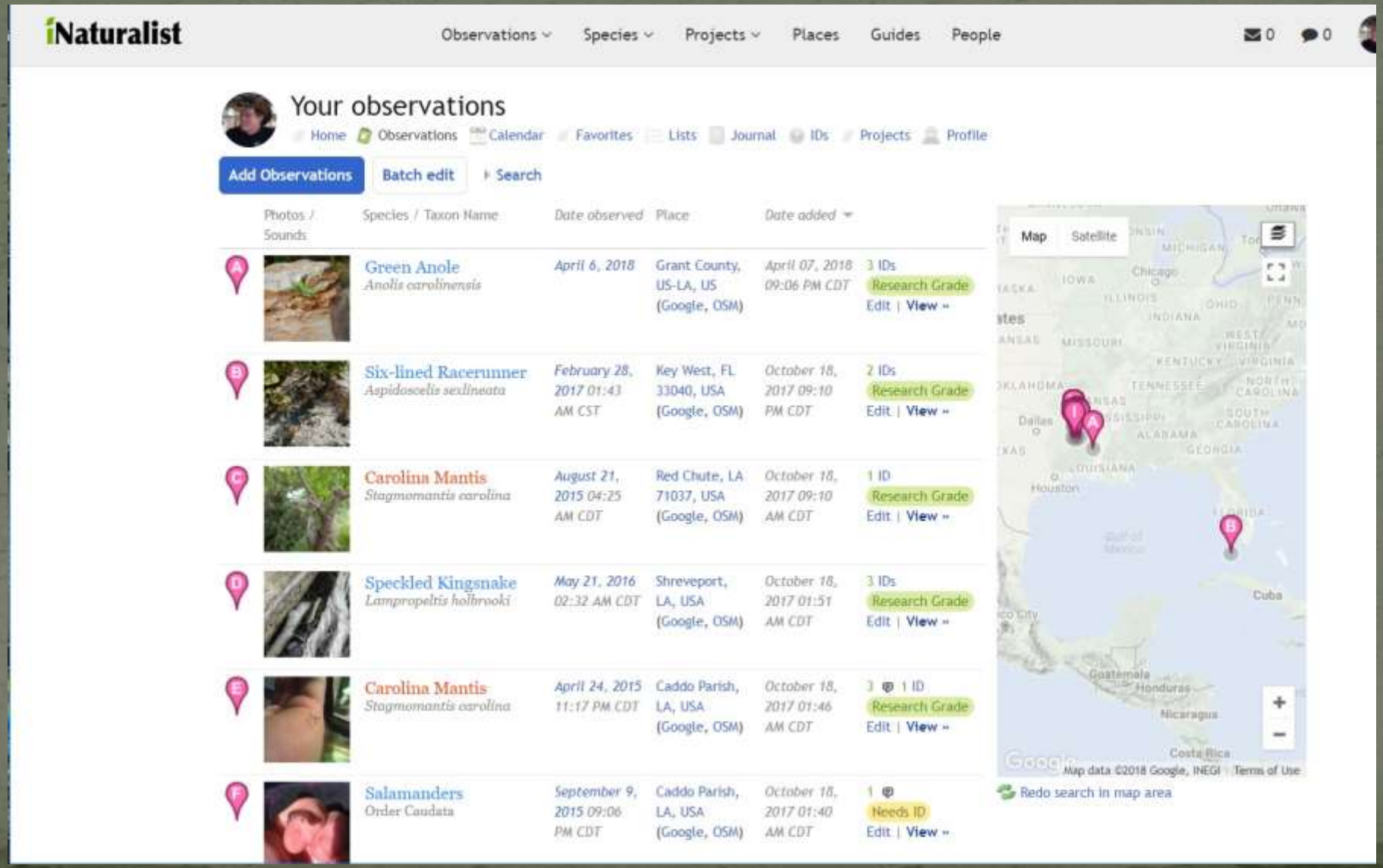
Citizen Science

iNaturalist- Citizen science platform for all organisms- you should have an account here. Also, LMNA NW has an ongoing Bioblitz here.

HerpMapper is a 501(c)(3) nonprofit organization designed to gather and share information about reptile and amphibian observations across the planet. Using HerpMapper, you can create records of your herp observations and keep them all in one place. In turn, your data is made available to HerpMapper Partners – groups who use your recorded observations for research, conservation, and preservation purposes. Your observations can make valuable contributions on the behalf of amphibians and reptiles.

FrogWatch USA is AZA's citizen science program and provides individuals, groups, and families opportunities to learn about wetlands in their communities by reporting on the calls of local frogs and toads.

Citizen Science



Snakebite Avoidance

Don't Handle Venomous Snakes!

ONLY THOSE WHO HAVE SPECIFIC REASONS, AND ARE WELL TRAINED, SHOULD CONSIDER TOUCHING THEM.

- Just as you should treat every gun as if it were loaded, treat every snake as if it were alive.
- Many people have been envenomated by handling "dead" snakes.
- Even the head of a snake that has been decapitated may be able to envenomate by reflex action!

Snakebite Avoidance

- Don't put your hands or feet in places you cannot see or have not examined.
- Don't turn rocks, logs, etc. with your hands. Don't be careless when moving boats left on shore.
- Don't crawl under fences, buildings, etc. without carefully looking under them.
- In the wild, don't sit, stand or walk without looking.
- Don't wear low-cut shoes or swim in areas known to be infested with venomous snakes.
- Don't gather firewood after dark or without looking carefully.
- Don't sleep on the ground near woodpiles, cave entrances, or swampy areas.
- Don't disturb snakes, or unnecessarily try to kill them.
- Don't handle "dead" snakes with your hands.
- Don't attempt to capture snakes unless you are skilled.
- Don't get within a snake's striking distance while trying to identify it.
- Don't travel alone in snake-infested areas.
- Don't stay near a snake if it bites you.
- Don't forget that venomous snakes can climb trees, can bite under water, do occur at high altitudes, and may enter saltwater.

Reducing Sightings

- Snakes are a part of the ecosystem we live in- just because you don't see them doesn't mean they are not there.
- Snakes are looking for the same things any other animal is- food, shelter, mate, protection from predators, etc.
- Repellants do not work and most are bad for the environment.
- Manicured yards with few hiding places (tall vegetation, boards, tin, woodpiles, etc.)
- Must preclude entry to homes- eliminate gaps and cracks around foundation, walls, plumbing and service entrances, etc.
- Don't offer food- if snakes smell rats, mice, squirrels, birds' nests, etc., they are likely to hand around and look for food

Snakebite

Snakes – Snakebite Treatment and Avoidance

Snakebite Treatment Kit

No Need For This!

Keys and a phone- Stay calm and drive to the hospital. Call ahead to let them know you're coming.

Snakebite Treatment

1. Calm and reassure victim, don't panic.
2. Remove all rings, bracelets, or other constricting items, abstain from food or drink, especially alcohol.
3. Take victim to medical facility as quickly as possible. Let them know you are on your way- they need to prepare for your arrival.
4. Bring positive identification of snake only if safely feasible. Envenomations are diagnosed clinically- you do not need to kill or capture the snake to bring it with you.
5. Do NOT cut flesh, apply heat or a tourniquet or any other outdated tricks. A short (>5 mins) application of an ice pack may be acceptable.
6. Position viperid bites at (Rattlesnake) or above (Agkistrodon) heart level (Corals below heart).
7. DO NOT apply a pressure (Ace type) bandage on a viperid bite, pressure immobilization is reasonable for elapid bites, but don't delay seeking treatment in order to apply self-treatments.
8. Not all hospitals are the same- if the doctor you see does not appear to know what he is doing, it is your right to be transferred to another hospital.

Field “herping” & IDs: More Info

HerpMa

Wild Snakes : Education & Discussion
36,266 Members

North American Field Herping Association
10,955 members

HerpMapper Community Group
1,711 member

Snake Identification
Public Group · 63,335 members

Wild Amphibians : Education & Discussion
Public Group · 2,673 members

Wild Lizards : Education & Discussion
Public Group · 1,923 members

Wild Crocodilians : Education & Discussion
Public Group · 598 members

Wild Turtles and Tortoises : Education &...
Public Group · 2,648 members

North American Native Reptile Keepers
Closed Group · 1,145 members

Part VI: Local Species

Lizards- 10 Species

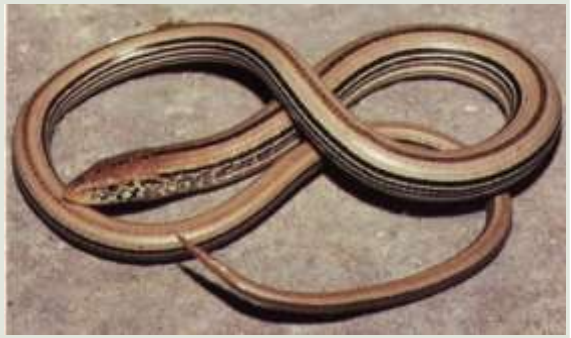
Genus	Species	Common Name	Notes
Kingdom: Animalia >> Phylum: Chordata >> Class: Reptilia >> Order: Squamata >> Suborder: Iguania			
Family: Dactyloidae			
Anolis - Anoles	*Anolis carolinensis*	Green Anole	
Kingdom: Animalia >> Phylum: Chordata >> Class: Reptilia >> Order: Squamata >> Suborder: Lacertilia			
Family: Phrynosomatidae			
Sceloporus - Spiny Lizards	*Sceloporus consobrinus*	Prairie Lizard	AKA Northern Fence Lizard
Family: Scincidae			
Plestiodon - Toothy Skinks	*Plestiodon anthracinus pluvialis*	Southern Coal Skink	Rarely seen- call if spotted
	Plestiodon fasciatus	Common Five-lined Skink	
	Plestiodon laticeps	Broad-headed Skink	
	Plestiodon septentrionalis obtusirostris	Southern Prairie Skink	Rarely seen- call if spotted
Scincella - Ground Skinks	*Scincella lateralis*	Little Brown Skink	AKA Ground Skink
Family: Teiidae			
Aspidoscelis - Whiptails	*Aspidoscelis sexlineata sexlineata*	Eastern Six-lined Racerunner	Intergrades with Prairie Racerunner A. s. viridis
Kingdom: Animalia >> Phylum: Chordata >> Class: Reptilia >> Order: Squamata >> Suborder: Scleroglossa			
Family: Anguidae Subfamily: Anguinae			
Ophisaurus - Glass Lizards	*Ophisaurus attenuatus attenuatus*	Western Slender Glass Lizard	AKA Legless Lizard
Family: Gekkonidae			
Hemidactylus - House Geckos	*Hemidactylus turcicus*	Mediterranean Gecko	Alien Species

Lizards- Highlights

Little Brown Skink
Scincella lateralis
5”
Diet: tiny invertebrates
Found: everywhere
Thought to be largest biomass in some areas

Northern Green Anole
Anolis carolinensis
7”
Diet: invertebrates
Found: above ground on plants, walls, fences, houses, etc.
Humorously territorial

Western Slender Glass Lizard
Ophisaurus attenuatus attenuatus
42”
Diet: invertebrates
Found: rarely. Dry, upland areas, vacant lots, grasslands
Tail breaks off easily,
Lateral fold



Mediterranean Gecko*
Hemidactylus turcicus
5”
Diet: nocturnal insects
Found on buildings after dusk near lights
Introduced species

Anoles- Huge Egos

Turtles- 14 Species

Genus	Species	Common Name	Notes
Kingdom: Animalia >> Phylum: Chordata >> Class: Reptilia >> Order: Testudines >> Suborder: Cryptodira			
Family: Chelydridae			
Chelydra - Snapping Turtles	Chelydra serpentina	Snapping Turtle	
Macrochelys - Alligator Snapping Turtles	Macrochelys temminckii	Alligator Snapping Turtle	Restricted Harvest; IUCN Red Listed as Vulnerable
Family: Emydidae			
Chrysemys - Painted Turtles	Chrysemys dorsalis	Southern Painted Turtle	
Deirochelys - Chicken Turtles	Deirochelys reticularia miaria	Western Chicken Turtle	Rarely seen- call if spotted
Graptemys - Map Turtles	Graptemys ouachitensis	Ouachita Map Turtle	
	Graptemys pseudogeographica kohnii	Mississippi Map Turtle	
Pseudemys - Cooters	Pseudemys concinna concinna	Eastern River Cooter	
Terrapene - American Box Turtles	Terrapene carolina triunguis	Three-toed Box Turtle	Restricted Harvest & Possession
Trachemys - Sliders	Trachemys scripta elegans	Red-eared Slider	
Family: Kinosternidae			
Kinosternon - American Mud Turtles	Kinosternon subrubrum hippocrepis	Mississippi Mud Turtle	
Sternotherus - Musk Turtles	Sternotherus odoratus	Eastern Musk Turtle	AKA Stinkpot
	Sternotherus carinatus	Razor-backed Musk Turtle	
Family: Trionychidae			
Apalone - North American Softshells	Apalone mutica mutica	Midland Smooth Softshell	
	Apalone spinifera pallida	Pallid Spiny Softshell	

Turtles- Highlights

Red-eared Slider
Trachemys scripta elegans
10”
Diet: carnivorous when young, becoming herbivorous
Found in almost any permanent water body

Eastern Musk Turtle
Sternotherus odoratus
4.5”
Diet: most anything, living or dead
Found in permanent wetland & bayous
“Stinkpot”

Three-toed Box Turtle
Terrapene carolina triunguis
6”
Diet: anything they can reach
Found in mesic hardwood forests and fields
Lives up to 100 years; High site fidelity; low replacement

Alligator Snapping Turtle
Macrochelys temminckii
26”, up to 275#
Diet: omnivore, nuts, grasses, vertebrates
Found: on trotlines, extremely aquatic
Tongue “lure”

Salamanders- 8 Species

Genus	Species	Common Name	Notes
Kingdom: Animalia >> Phylum: Chordata >> Class: Amphibia >> Order: Caudata >> Suborder: Salamandroidea			
Family: Ambystomatidae			
Ambystoma - Mole Salamanders	*Ambystoma maculatum*	Spotted Salamander	
	Ambystoma opacum	Marbled Salamander	
	Ambystoma talpoideum	Mole Salamander	
	Ambystoma texanum	Small-mouthed Salamander	
Family: Amphiumidae			
Amphiuma - Amphiumas	*Amphiuma tridactylum*	Three-toed Amphiuma	
Family: Plethodontidae			
Eurycea - Brook Salamanders	*Eurycea paludicola*	Western Dwarf Salamander	
Family: Salamandridae			
Notophthalmus - Eastern Newts	*Notophthalmus viridescens louisianensis*	Central Newt	
Kingdom: Animalia >> Phylum: Chordata >> Class: Amphibia >> Order: Caudata >> Suborder: Sirenoidea			
Family: Sirenidae			
Siren - Sirens	*Siren intermedia nettingi*	Western Lesser Siren	

Salamanders- Highlights

Marbled Salamander
Ambystoma opacum
To 4.5”
Diet: invertebrates
Found- in moist areas, burrows, debris

Western Dwarf Salamande
Eurycea paludicola
3.5”
Diet: tiny invertebrates
Found- moist areas underneath debris
Lungless

Three-toed Amphiuma
Amphiuma tridactylum
41”
Diet: crustaceans, fish, amphibians, insects
Found in shallow waters and creeks
Painful bite

Western Lesser Siren
Siren intermedia nettingi
27”
Diet: crustaceans, fish, amphibians, insects
Found in permanent water bodies
Two legs, gills, neoteny

Frogs- 17 Species

Genus	Species	Common Name	Notes
Kingdom: Animalia >> Phylum: Chordata >> Class: Amphibia >> Order: Anura >> Suborder: Neobatrachia			
Family: Bufonidae			
Anaxyrus - North American Toads	*Anaxyrus fowleri*	Fowler's Toad	
Family: Eleutherodactylidae Subfamily: Eleutherodactylinae			
Eleutherodactylus - Rain Frogs	*Eleutherodactylus cystignathoides campi*	Rio Grande Chirping Frog	Alien species / Isolated record- call if spotted
	Eleutherodactylus planirostris	Greenhouse Frog*	Alien species / Isolated record- call if spotted
Family: Hylidae			
Acris - Cricket Frogs	*Acris blanchardi*	Blanchard's Cricket Frog	Formerly considered A. crepitans crepitans, Northern Cricket Frog
Hyla - Holarctic Treefrogs	*Hyla avivoca*	Bird-voiced Treefrog	
	Hyla cinerea	Green Treefrog	
	Hyla chrysoscelis	Cope's Gray Treefrog	Complex includes Gray Treefrog H. versicolor
Pseudacris - Chorus Frogs	*Pseudacris crucifer*	Spring Peeper	
	Pseudacris fouquettei	Cajun Chorus Frog	Formerly considered P. feriarum, Upland Chorus Frog
	Pseudacris streckeri	Strecker's Chorus Frog	Rarely seen- call if spotted
Family: Microhylidae Subfamily: Microhylinae			
Gastrophryne - North American Narrow-mouthed Toads	*Gastrophryne carolinensis*	Eastern Narrow-mouthed Toad	
Family: Ranidae			
Lithobates - American Water Frogs	*Lithobates areolatus areolatus*	Southern Crawfish Frog	Rarely seen- call if spotted
	Lithobates catesbeianus	American Bullfrog	
	Lithobates clamitans	Green Frog	AKA Bronze Frog
	Lithobates palustris	Pickerel Frog	
	Lithobates sphenocephalus utricularius	Coastal Plains Leopard Frog	Formerly considered Southern Leopard Frog
Kingdom: Animalia >> Phylum: Chordata >> Class: Amphibia >> Order: Anura >> Suborder: Mesobatrachia			
Family: Scaphiopodidae			
Scaphiopus - North American Spadefoots	*Scaphiopus hurterii*	Hurter's Spadefoot	

Frogs- Highlights

Fowler's Toad
Anaxyrus fowleri
2.5"
Diet: LOTS of invertebrates
Found everywhere, especially seen near lights after dark
Males have black throat

Cope's Gray Treefrog
Hyla chrysoscelis
1.75"
Diet: insects
Found on trees, shrubs & buildings
chrysoscelis-versicolor complex

American Bullfrog
Lithobates catesbeianus
8.25"
Eats: anything it can catch
Found in and near water
Largest American frog
Lateral fold around tympanum

Blanchard's Cricket Frog
Acris blanchardi
1"
Diet: tiny invertebrates
Found along water bodies
Tremendous leaper for size

Frog Calls

American Bullfrog

Frog Calls

Cajun Chorus Frog

Photo credit: Brad “Bones” Glorioso

Frog Calls

Cope's Gray Treefrog

Frog Calls

Eastern Narrow-mouthed Toad

Frog Calls

Fowler's Toad

Frog Calls

Green Frog (AKA Bronze Frog)

Frog Calls

Green Treefrog

Frog Calls

Hurter's Spadefoot

Frog Calls

Pickerel Frog

Frog Calls

Spring Peeper

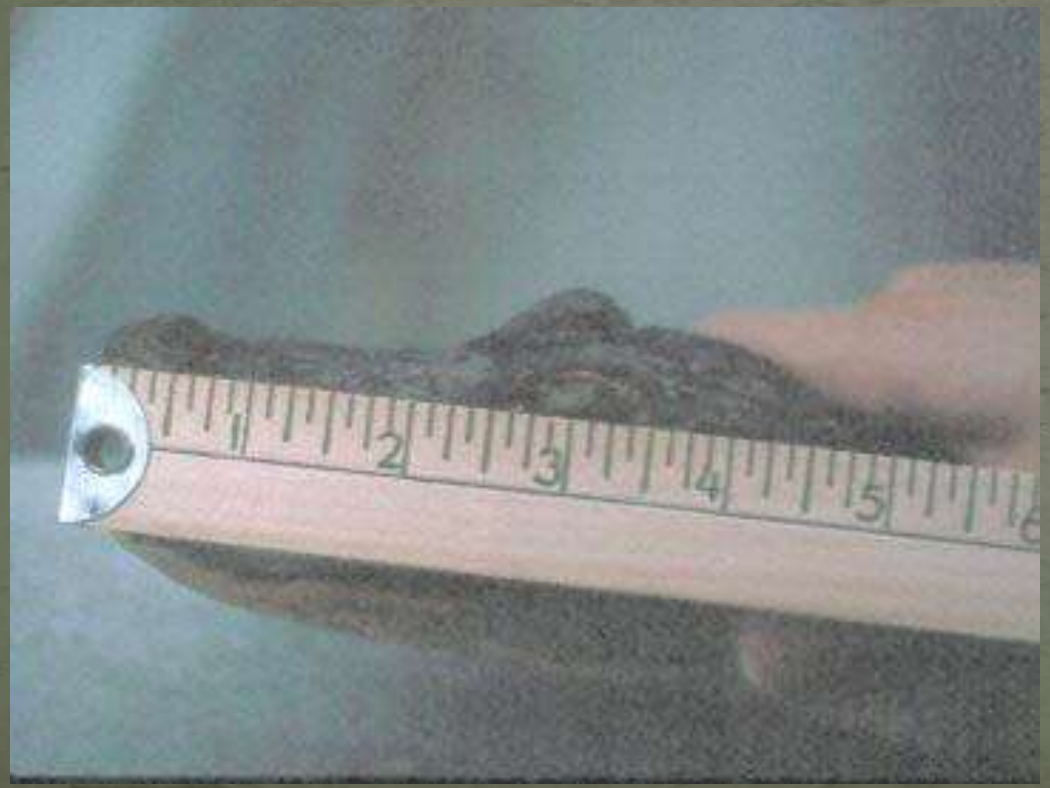
American Alligator

American Alligator
Alligator mississippiensis

Populations in peril in 60s & 70s, brought back by hunting and farming. Louisiana's successful program is now being attempted in other areas. Eggs are harvested, raised on farms, 14% are returned to nature (approximate survival rate in wild). Legal hunting provides funds to combat poaching. Alligators are strictly regulated (no rehab, nuisance licensees).

American Alligator

Estimating the size of an alligator:
The distance from the nose to the eye in inches transfers to feet in total length.



American Alligator

Alligators use a variety of methods for communicating with one another: posture in the water, head/tail up, sounds, and infrasound (vibrating the lateral muscles and producing a sound that is inaudible to humans – but visible by bubbles dancing around the sounds and backs).

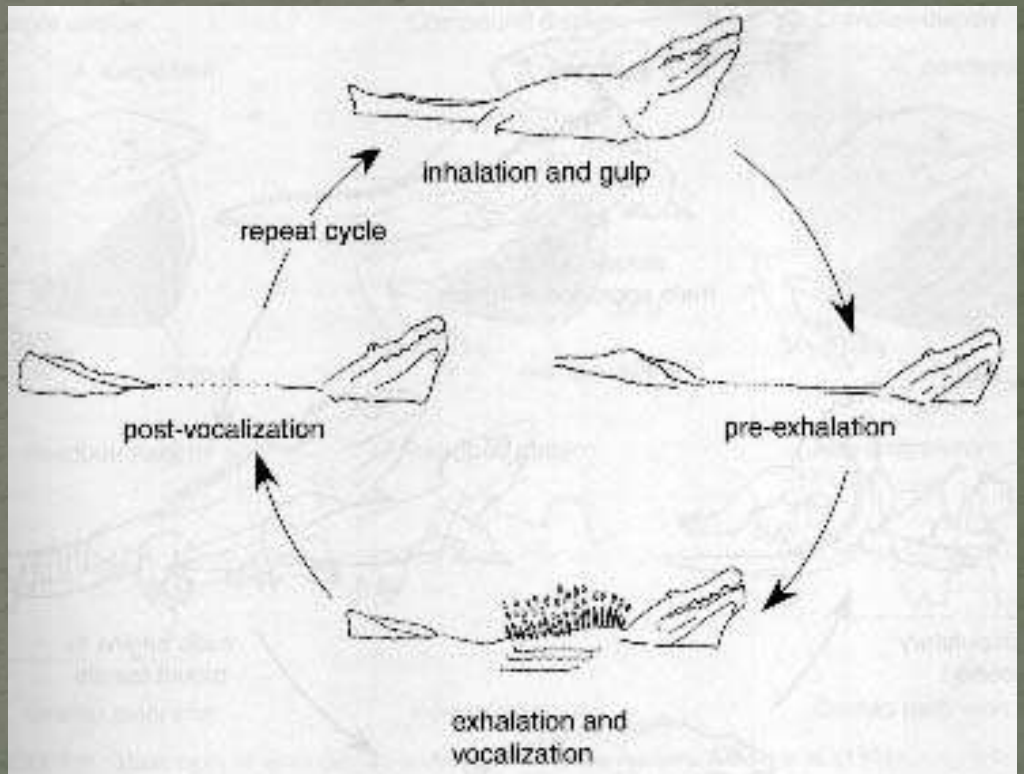


FIGURE 9.7 Sequence of events involved in the production of the bellow of an alligator, *Alligator mississippiensis*. Exhalation causes a fountain of water along the alligator's trunk and also produces a radiating series of ripples at the water surface. Adapted from Garrick and Lang (1977).

American Alligator

Snakes!

- Snakes are beneficial for many reasons.
- Rodents (introduced) are destructive.
- Native animals like snakes and other herps are a part of the ecosystem and, as such, have inherent value as part of the natural balance.
- Killing a snake is pointless, as another will simply fill that gap and they are around us daily.
- Snakes are not out to get people.

Changing Perceptions

Snakes are partly to thank that you don't see this!

Snakes (non-venomous) – 25 Species

Genus	Species	Common Name	Notes
Kingdom: Animalia >> Phylum: Chordata >> Class: Reptilia >> Order: Squamata >> Suborder: Serpentes			
Family: Colubridae Subfamily: Colubrinae			
Cemophora - Scarletsnakes	*Cemophora coccinea copei*	Northern Scarletsnake	Known from Bossier Parish
Coluber - North American Racers, Coachwhips and Whipsnakes	*Coluber constrictor anthicus*	Buttermilk Racer	Intergrades w/ C. c. priapus
	Coluber flagellum flagellum	Eastern Coachwhip	
Lampropeltis - Kingsnakes	*Lampropeltis calligaster*	Prairie Kingsnake	
	Lampropeltis holbrooki	Speckled Kingsnake	
	Lampropeltis gentilis	Western Milksnake	Formerly Louisiana Milksnake
Opheodrys - Green Snakes	*Opheodrys aestivus aestivus*	Northern Rough Greensnake	
Pantherophis - North American Ratsnakes	*Pantherophis obsoletus*	Western Ratsnake	AKA Texas (Black) Ratsnake, Chicken Snake
	Pantherophis slowinskii	Slowinski's Cornsnake	Rarely seen, call if spotted
Tantilla - Black-headed, Crowned, and Flat-headed Snakes	*Tantilla gracilis*	Flat-headed Snake	Rarely seen, call if spotted
Family: Colubridae Subfamily: Gentilis			
Carphophis - North American Wormsnakes	*Carphophis vermis*	Western Wormsnake	Rarely seen- call if spotted
Diadophis - Ring-necked Snakes	*Diadophis punctatus stictogenys*	Mississippi Ring-necked Snake	
Farancia - Mudsnakes and Rainbowsnakes	*Farancia abacura reinwardtii*	Western Mudsnake	
Heterodon - North American Hog-nosed Snakes	*Heterodon platirhinos*	Eastern Hog-nosed Snake	
Family: Colubridae Subfamily: Natricinae			
Nerodia - North American Watersnakes	*Nerodia cyclopion*	Mississippi Green Watersnake	
	Nerodia erythrogaster	Plain-bellied Watersnake	AKA Yellow-bellied Watersnake
	Nerodia fasciata confluens	Broad-banded Watersnake	
	Nerodia rhombifer rhombifer	Northern Diamond-backed Watersnake	
Regina - Crayfish Snakes	*Regina grahamii*	Graham's Crayfish Snake	
Liodytes - Swampsnakes	*Liodytes rigida sinicola*	Gulf Swampsnake	AKA Gulf Crayfish Snake
Storeria - North American Groundsnakes	*Storeria dekayi*	Dekay's Brownsnake	
	Storeria occipitomaculata	Red-bellied Snake	
Thamnophis - North American Gartersnakes	*Thamnophis proximus proximus*	Orange-striped Ribbonsnake	Stripes actually often bluish or greenish
Haldea- Rough Earthsnakes	*Haldea striatula*	Rough Earthsnake	
Virginia - Smooth Earthsnakes	*Virginia valeriae elegans*	Western Smooth Earthsnake	

Snakes (non-venomous)– Highlights

Western Ratsnake
Pantherophis obsoletus
Up to 7'
Diet- small mammals, birds, lizards, amphibians
Found in trees and sheds most commonly

Dekay's Brownsnake
Storeria dekayi
12"-18"
Diet- worms & small invertebrates
Found in leaf litter
Live-bearing

Prairie Kingsnake
Lampropeltis calligaster
Up to 4'
Diet- mammals and reptiles, including venomous reptiles
Found in burrows and under debris

Eastern Hog-nosed Snake
Heterodon platirhinos
Up to 4'
Diet- toads & mammals
Found in woodlands
Death feigning behavior
Spreads neck to look venomous

Watersnakes- Non-Venomous

We have more Nerodia and other natricine snakes that live near water than we have venomous snakes. Some of these will even “flare” their heads out to convince you that they are dangerous. While it is best to leave any snake alone that you cannot positively identify, it is also good to be aware that not every watersnake is dangerous.

Hognose Feigning Death

Snakes (venomous)

5 Species (4 pit vipers, 1 elapid)

Genus	Species	Common Name	Notes
Kingdom: Animalia >> Phylum: Chordata >> Class: Reptilia >> Order: Squamata >> Suborder: Serpentes			
Family: Elapidae			
Micrurus - American Coralsnakes	*Micrurus tener tener*	Texas Gulf-Coast Coralsnake	VENOMOUS
Family: Viperidae Subfamily: Crotalinae			
Agkistrodon - American Moccasins	*Agkistrodon contortrix*	Eastern Copperhead	VENOMOUS
	Agkistrodon piscivorus	Northern Cottonmouth	VENOMOUS AKA Water Moccasin
Sistrurus - Massasauga and Pygmy Rattlesnakes	*Sistrurus miliarius streckeri*	Western Pygmy Rattlesnake	VENOMOUS
Crotalus - Rattlesnakes	*Crotalus horridus*	Timber Rattlesnake	VENOMOUS AKA Canebrake Rattlesnake

Snakes (venomous)

- *Viperids*, aka Pit vipers, have primarily hemotoxic (vascular) and cytotoxic (cellular) venom. In Louisiana, this family is represented by Cottonmouths, Copperheads and Rattlesnakes.

- Coralsnakes are not pit vipers but are *Elapids* (like cobras and mambas). This family has a primarily neurotoxic venom, which affects the central nervous system and essentially shuts down the respiratory system.

Changing Perceptions

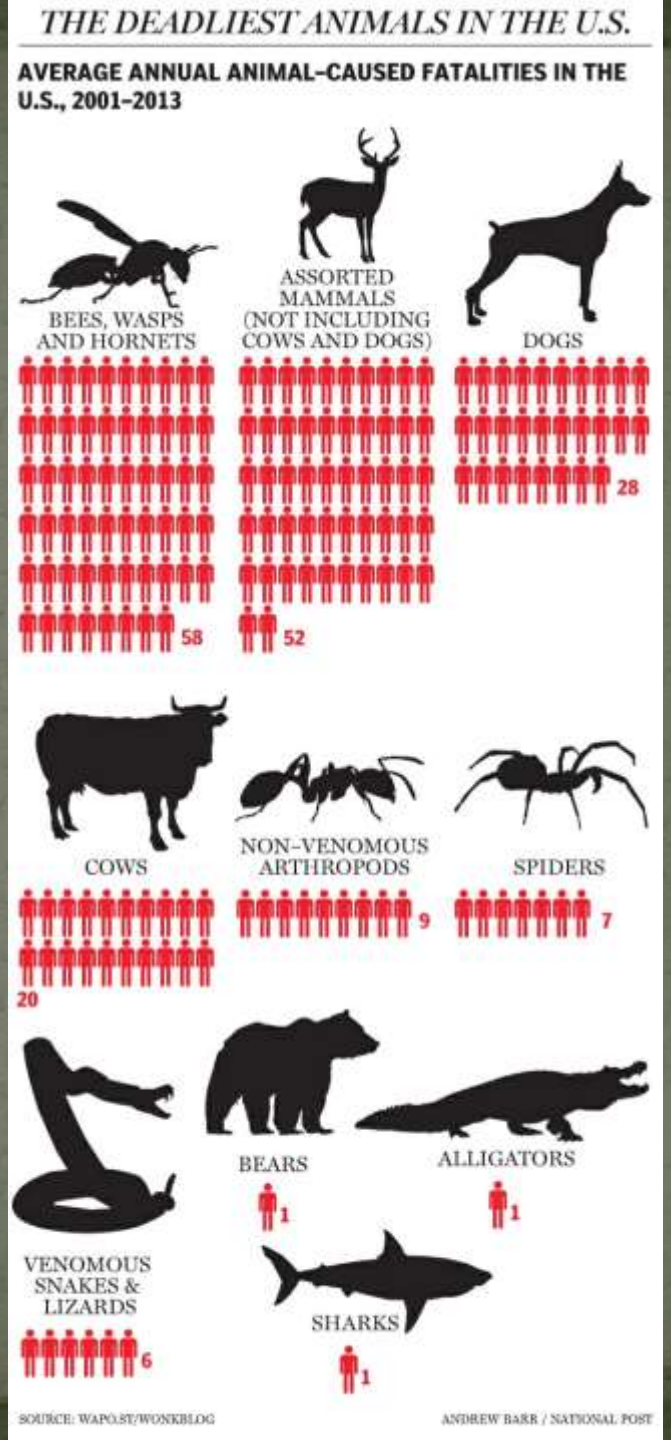
Snakes (venomous)

With medical care your chance of dying from snakebite is 0.0007%, without medical care this goes up to 0.03%.

Statistically, in the US, a person is 12.5% more likely to die from a bee sting (100/year) than snakebite (<8/year). [Sources vary somewhat]

You are more likely to die in an automobile accident *this week* than you are to die from snakebite in your lifetime.

People who are very young or old or have compromised immune systems or are allergic to these organic compounds are at an increased risk over a typical adult.



Changing Perceptions

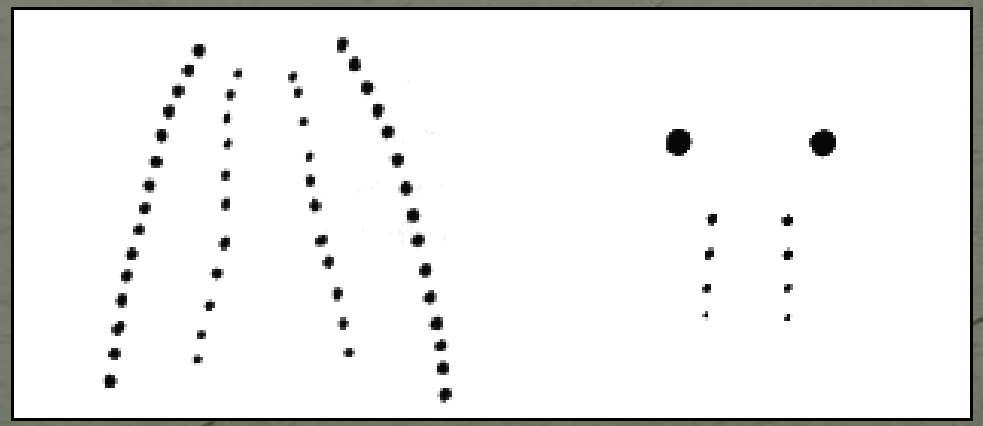
That is not to say that you should volunteer to get bitten by a venomous snake.

Besides the venom hurting *and* the antivenom hurting, pictured is an example of a bill for these services.

This bill is even a little on the low side compared to some others, especially those needing an airlift.

Snakebite

- Most snakes (venomous or not) are loathe to bite people.
- They are not stupid and know you are not prey.
- They generally bite for the same reasons other animals bite- in defense or because they are startled.
- Bites are frequently the result of someone interfering with the snake- if you leave the animal alone, it is likely to leave you alone.



In practice, marks may not be this "neat." It is possible for a bite to be a single puncture or even a scratch.

Louisiana Venomous Species

Snakes (venomous) – 5 Species (4 pit vipers, 1 elapid) (EDB historical)


Northern Copperhead


Western Pygmy Rattlesnake


Timber Rattlesnake


Western Cottonmouth


Texas Gulf-Coast Coralsnake

Louisiana Venomous Species

Snakes (pit vipers) – Timber Rattlesnakes - 25”-70”

Photo credit: Justin Sokol

Louisiana Venomous Species

Snakes (pit vipers) – Western Pygmy Rattlesnakes – 10”-20”

Photo credit Beau Gregory LDWF

Louisiana Venomous Species

Snakes (pit vipers) Western Cottonmouth 15”-55”

The Maligned Cottonmouth

- Possibly THE most misidentified animal in the U.S.
- Possibly the most unjustly feared animal in the U.S. (maybe tied with Brown Recluse).
- People regularly claim to see them outside their range.
- They are said to chase people, lay in wait to drop in boats, collect in "nests," and many other myths.
- Mysteriously, no such reports of this behavior from biologists/enthusiasts.
- Gaping and rattling are polite warnings, not aggression.
- Snakes will escape if they can.

- Gibbons/Dorcas Study:
  - Designed test equipment: dummy hand, snake boots
  - Recorded 83 interactions with Cottonmouths in the wild
  - Approached them, stood by them, stepped on them, picked them up (I'd have bitten them, too!)
  - Snakes that bit when stood next to- 0%
  - Snakes that bit when stepped on- <5%
  - Even when picked up only ~1/3rd (36%) bit the artificial hand

Gibbons, J. W., & Dorcas, M. E. (2002). Defensive behavior of cottonmouths (*Agkistrodon piscivorus*) toward humans. *Copeia*, 2002(1), 195-198

Improving Identification

Snakes (pit vipers) Northern Copperhead 14”-45”

Photo credit: Justin Sokol

Louisiana Venomous Species

Snakes (elapids) – 1 Species

Texas Gulf-Coast Coralsnake, ***Micrurus tener tener – 15” – 36”***

Note the fixed fangs.

Appearance is quite dissimilar to anything except its mimics.
Secretive and fossorial, not commonly encountered.

Part VII: Improving Identification

Improving Identification

All snakes killed are killed needlessly.

Naturalists should be available and equipped to ID harmless species quickly and correctly.

FORGET THE RULES!!!

Reptile (especially snake) identification MUST be done holistically.

"Rules" (triangle head, cat eyes, subcaudal scales, loreal pits, protruding brow, tail rattling, the "rhyme," swimming behavior) are misleading and result in harmless species being killed constantly.

Improving Identification

HOW CAN ONE TELL A CORAL SNAKE FROM ITS "MIMICS"?

In our area (usually): *Red and yellow kill a fellow, red and black friend of Jack.*

This does not apply everywhere, and it does not take aberrant coloration or pattern into account!

Western Milksnake
Lampropeltis gentilis

Northern Scarletsnake
Cemophora coccinea copei

Scarlet Kingsnake
Lampropeltis elapsoides

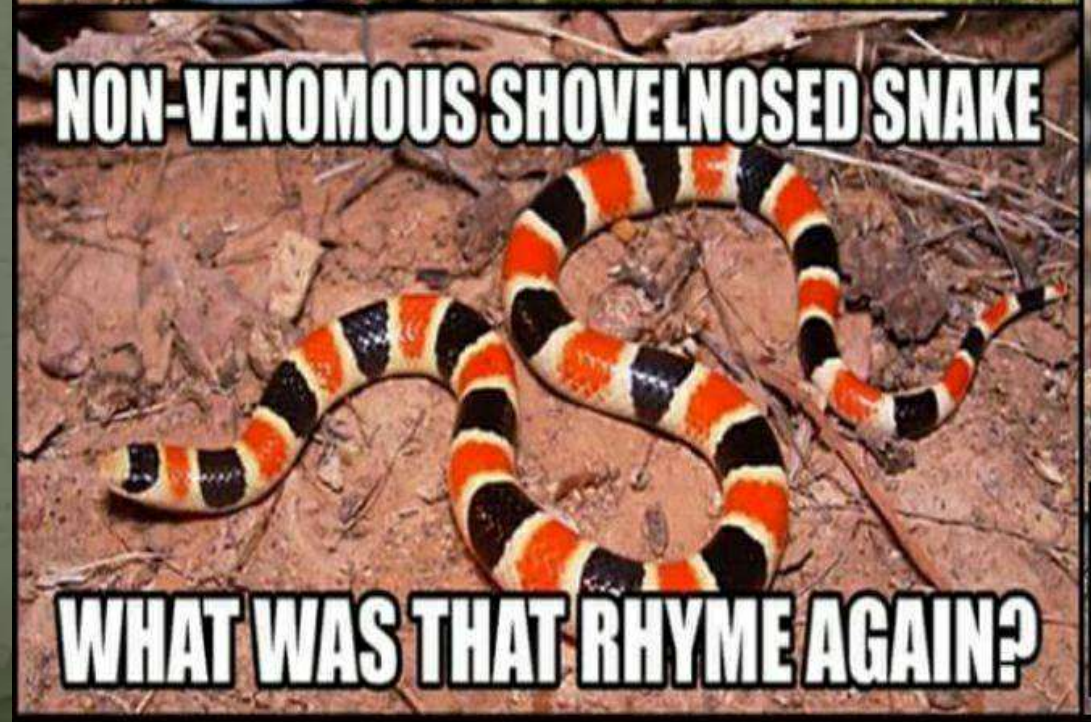
"Tri-colored" Snakes of the Southeastern U.S.

* Never rely on a rhyme to identify snakes
* Focus on pattern shapes, head, and over all body shape
* Never pick up a snake you cannot identify

1. Harlequin Coralsnake (Micrurus fulvius)
2. Scarlet Kingsnake (Lampropeltis elapsoides)
3. Scarletsnake (Cemophora coccinea)

facebook.com/groups/snakeED


VENOMOUS CORAL SNAKE


NON-VENOMOUS SHOVELNOSED SNAKE
WHAT WAS THAT RHYME AGAIN?


SladenPhotos
Micrurus tener melanistic phase


© Chris Harrison
Micrurus tener albino phase

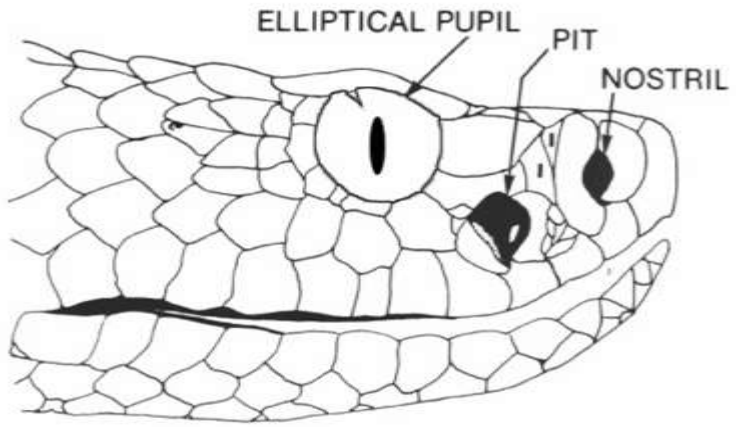
Aberrant Morphology

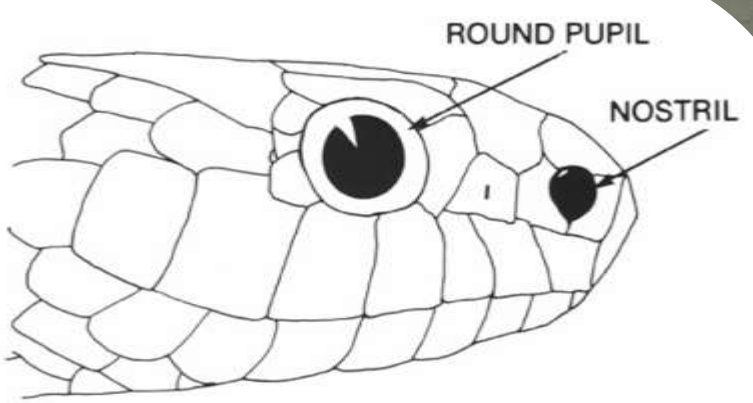
Unusual appearances, both color and pattern, do occur in the wild. These are both Copperheads observed in the wild in Louisiana.

Photo credit: Kim Bell Mross

Photo credit: Kim Bell Mross

Loreal Pits





Pit vipers (not Coralsnakes) have elliptical pupils and loreal pits between their eyes and nose. Both of these features may be hard to make out at a distance- do not get down close to make these forms out!

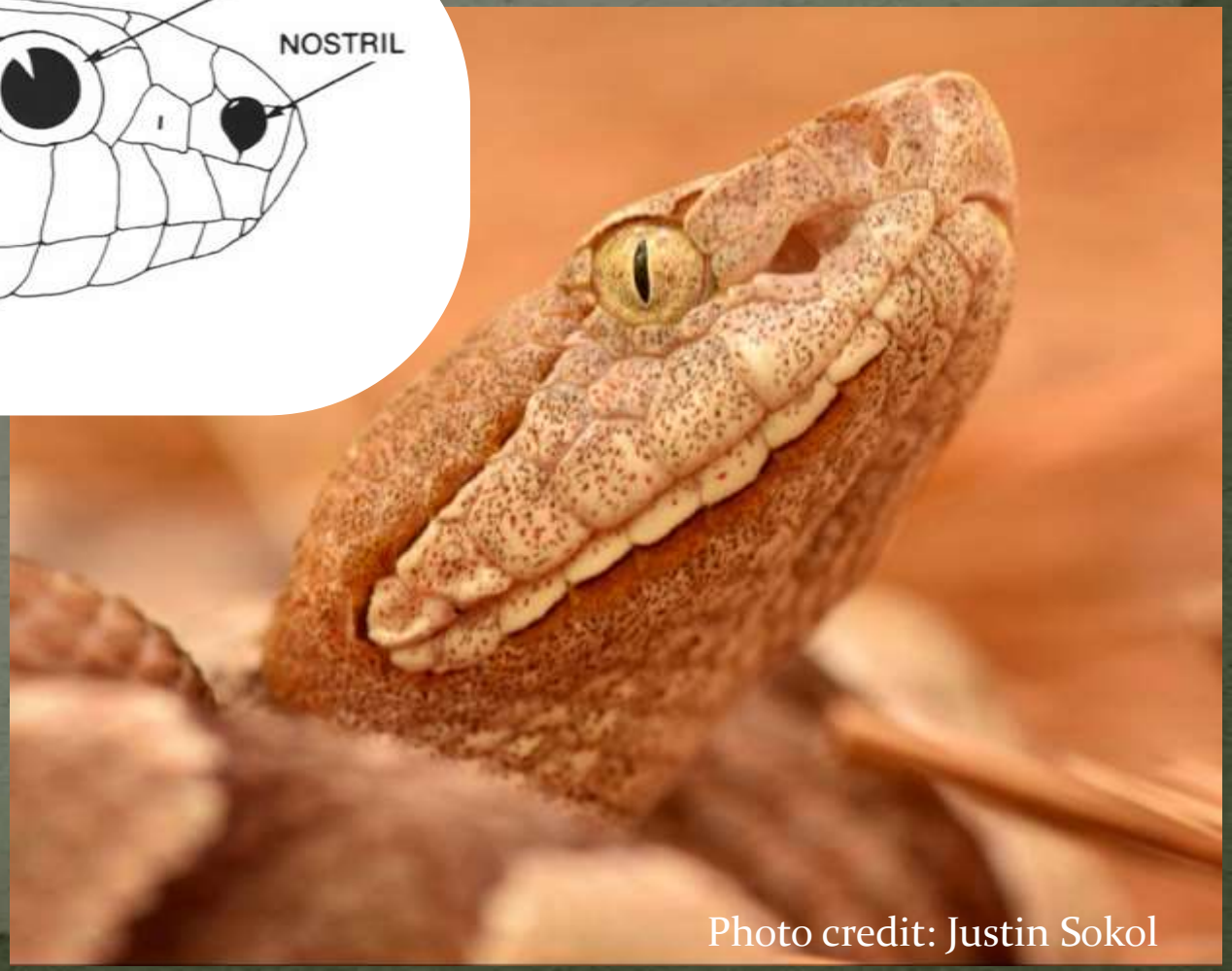


Photo credit: Justin Sokol

Elliptical Pupils

Elliptical pupils, like other pupils, expand in the darkness to allow more light in, so may appear rounded in low light.

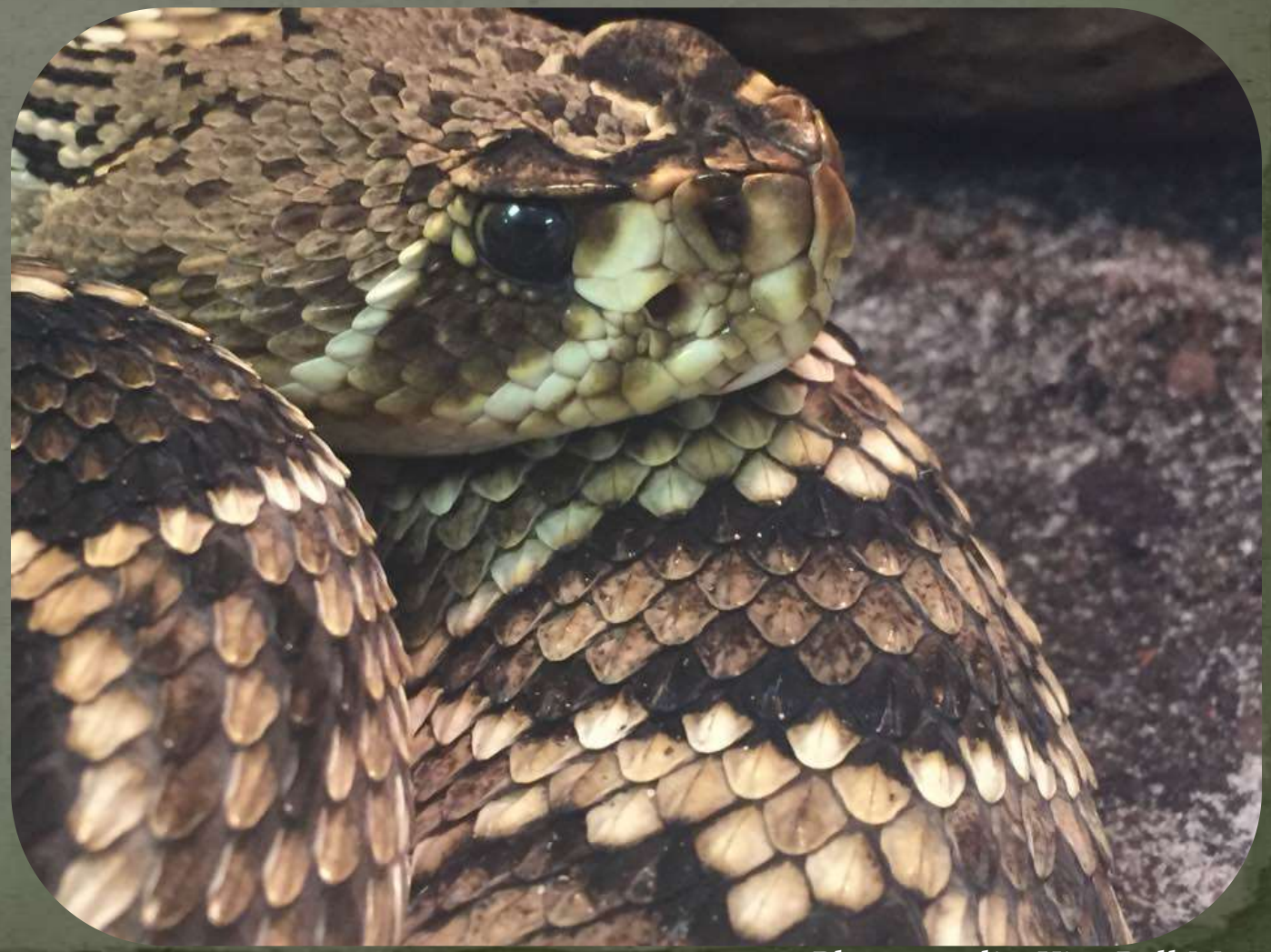


Photo credit: Kim Bell Mross

Swimming Posture

- Venomous Copperheads and Cottonmouths typically swim with their body on top of the water and head raised above the water.
- Harmless watersnakes typically swim with their body below the water and head at surface of the water.
- Note that individuals may not adhere to these traits at all times.

Head Shape

Many species of snakes will try to convince you that they are venomous. If you don't know for sure- don't touch it. However, once you know what they are, you can smirk at their ruse.

Once you learn what your local venomous species look like, the venom glands become easy to identify.

Eye Visibility

North American pit vipers have a flattened top to their head, making them look like they have pronounced brows.

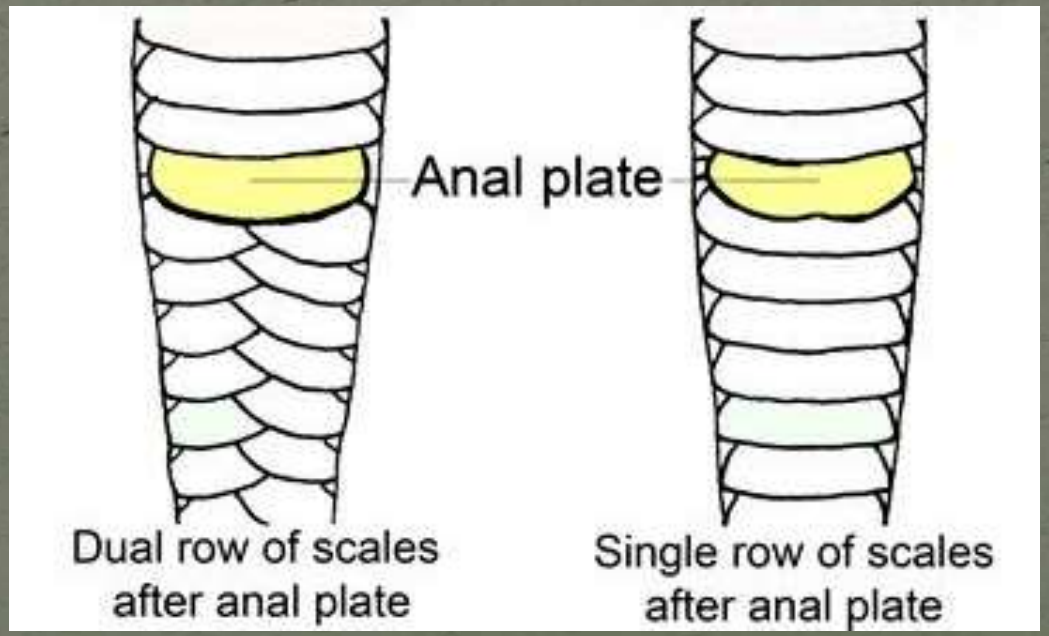
This has a tendency to make them look “meaner” than other snakes.

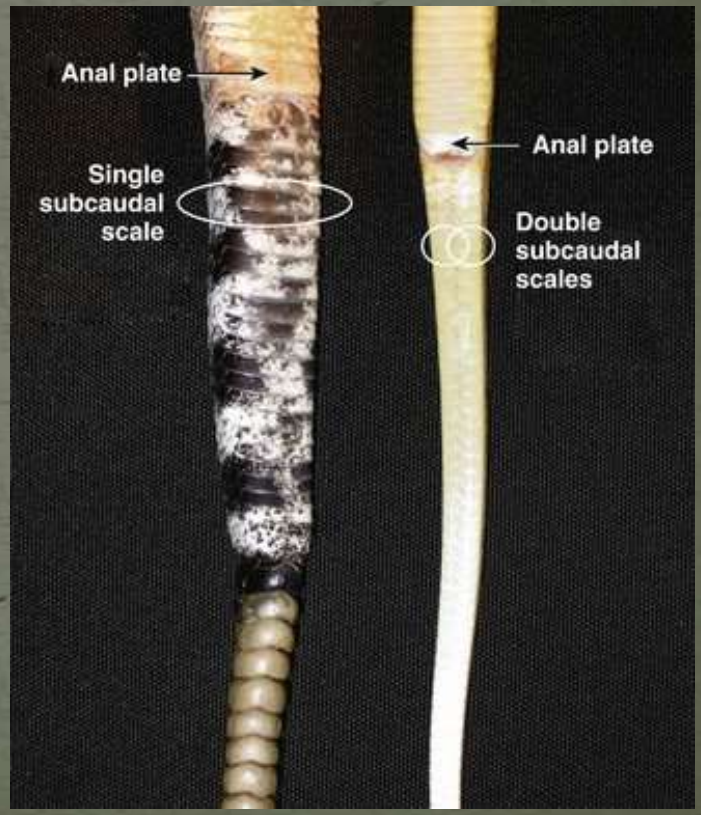
It also means that their eyes are scarcely visible from above. Harmless snakes (and elapids) have eyes that are visible from above.

Subcaudals

Louisiana pitvipers have a row of single subcaudals, while non-venomous snakes (and elapids) have paired subcaudals. Do not pick one up to be sure- but this may be useful in identifying a shed skin.

Also notable is that rattles are added when rattlesnakes shed, and may also be lost. A rattlesnake may not have a rattle, and many harmless snakes rattle convincingly by vibrating their tails amongst leaf litter.



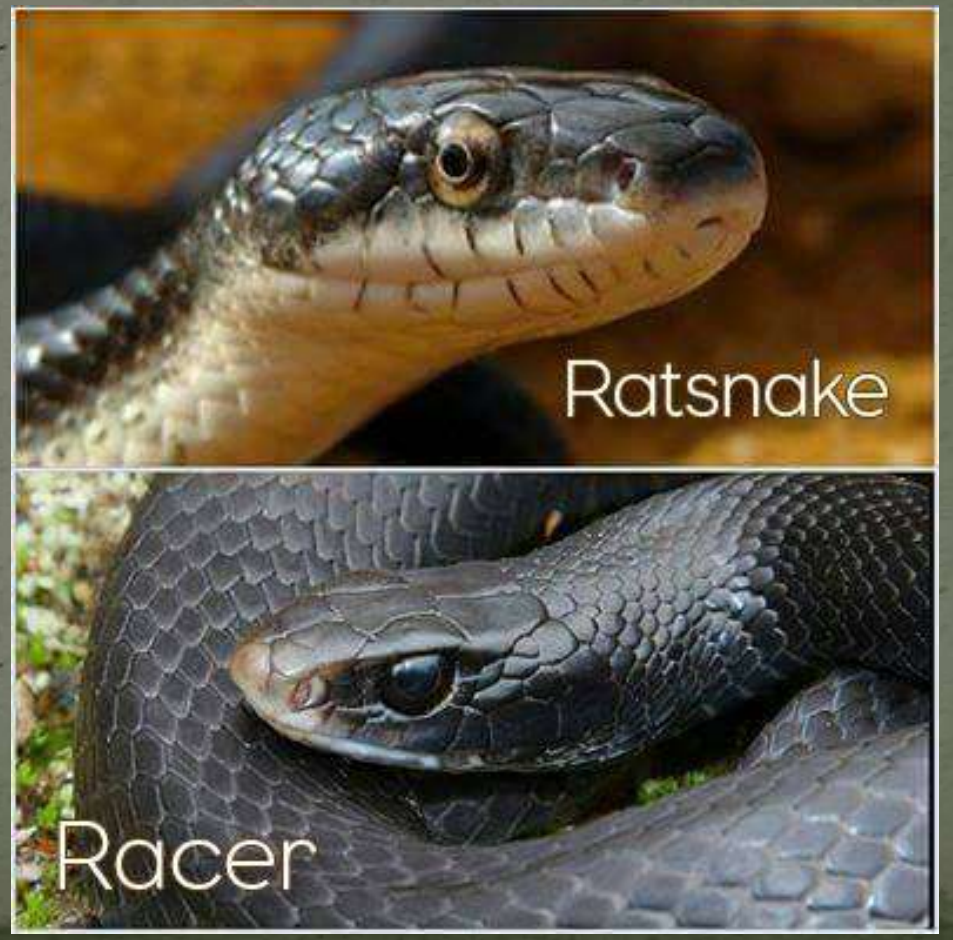


Agkistrodon Juveniles

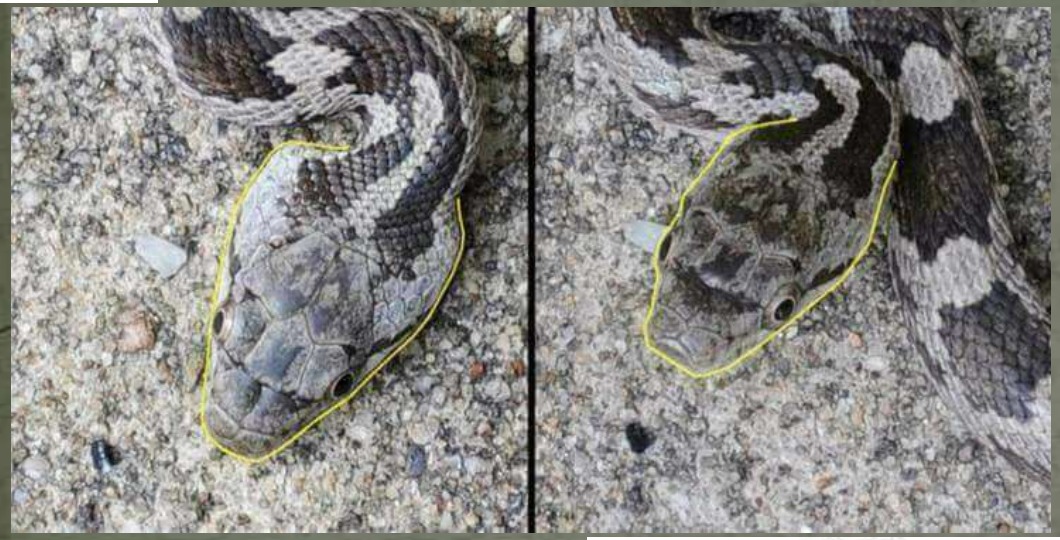
While we are on the subject of viper tails, a dead giveaway when looking at a juvenile *Cottonmouth or Copperhead* is the bright green tail, which they use as a lure when hunting.

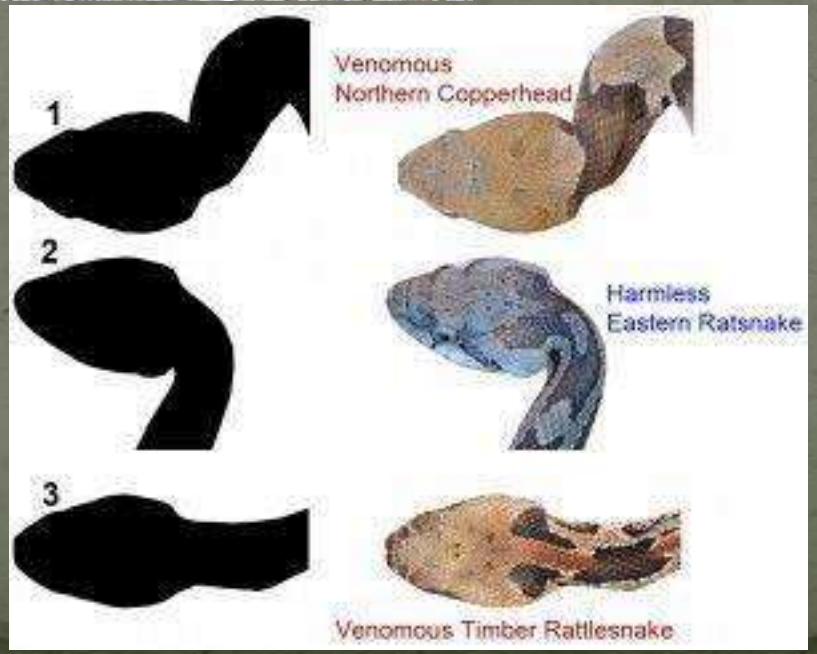
ID Memes

A closer look at some commonly misidentified animals and diagnostic characteristics.

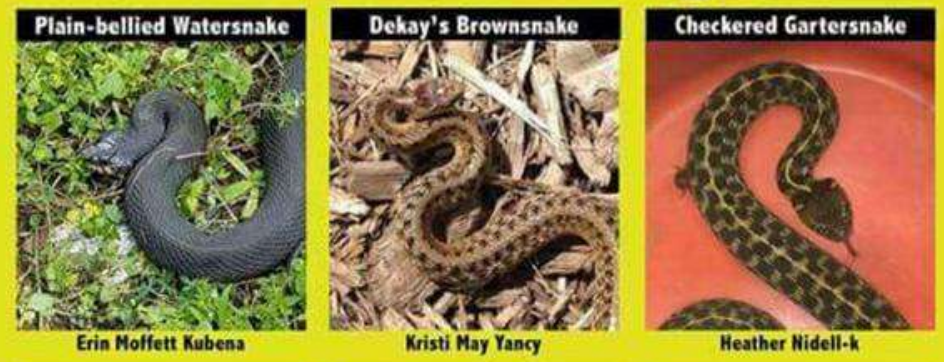


Head Shape



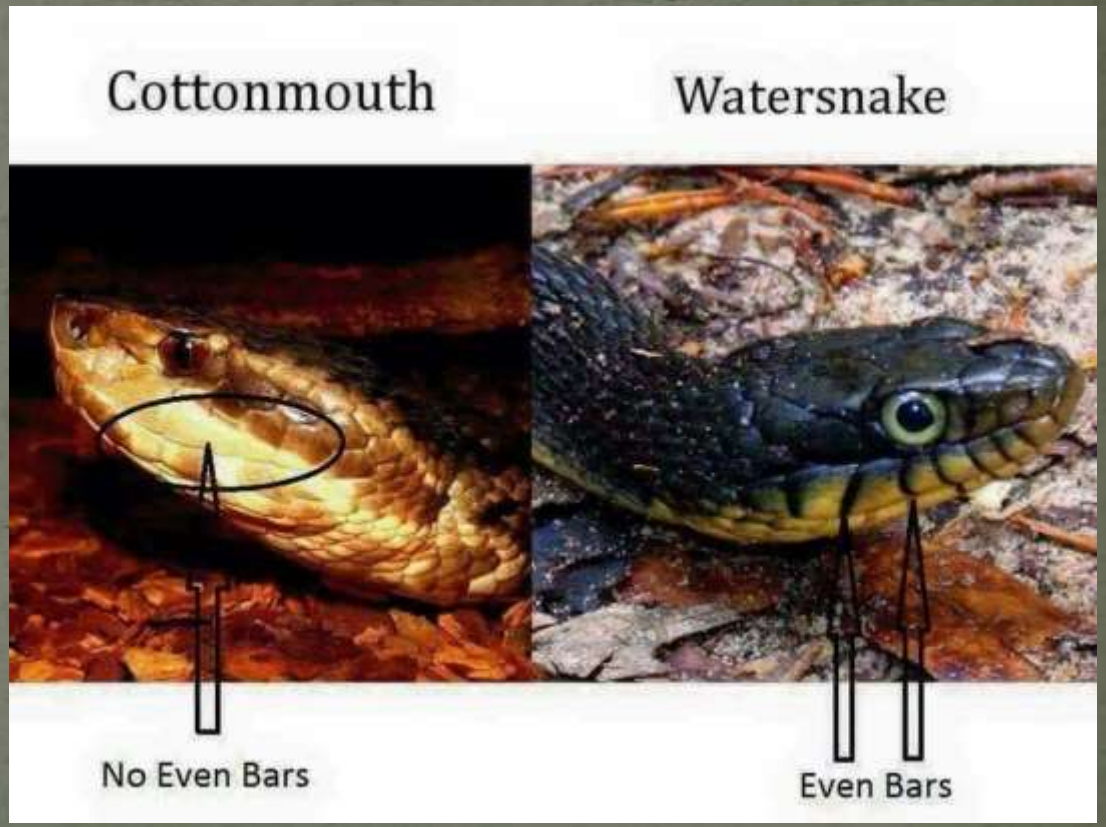


Triangular head means venomous... right?



FALSE!

Labial Markings



FLORIDA WILDLIFE SERIES

Nerodia fasciata

THE BANDED WATERSNAKE

Reptilia: Squamata: Serpentes: Colubridae: Natricinae

The **Banded watersnake** is a live-bearing, non-venomous, and semi-aquatic species ranging throughout much of the American southeast. Adults typically average between 22-42 inches in length and are highly variable in coloration and pattern. Many individuals tend to darken substantially with age, though vertical lip bands often remain evident. Pupils are round. Many adults have a banded pattern running from behind the eye to the corner of the jaw. Preferring calm, freshwater habitats such as ponds, lakes, marshes, and streams, Banded watersnakes feed primarily on fish and frogs. When basking, they are somewhat casual in preference, sometimes basking on shore and other times basking in tree limbs hanging over water. Dorsal scales are keeled. This species is often confused with the venomous cottonmouth, *Agkistrodon piscivorus*.

Taxonomy & Species Status: There are currently two subspecies listed in Florida: *N. f. pictiventris*, the Florida watersnake (ranging throughout the Floridian peninsula) and *N. f. fasciata*, the Banded watersnake (ranging in the Florida panhandle). Along coastal areas of central and southern Florida, this species may hybridize with the Salt marsh snake group, *N. clarkii*.

Updated 24 March 2017

All images by Janson Jones

COPPERHEADS

VENOMOUS

Eastern, formerly called Southern, has a pattern that can generally resemble Hershey's kisses.

Photo by Boyd Everitt

Broadband has wide, uneven markings, or bands.

Photo by Phil Plank

Colors range from tan to copper to bronze and even shades of gray!

Photo by Mark Pyle

Some may have a green or yellowish tail. Venom of youngsters is NOT more potent than adults.

Photo by Boyd Everitt

Poster by Elizabeth Evans.

More Information

Online Groups For More Information:

Wild Snakes : Education & Discussion
40,266 Members

North American Field Herping Association
10,955 members

HerpMapper Community Group
1,711 member

Snake Identification
Public Group · 63,335 members

Wild Amphibians : Education & Discussion
Public Group · 2,673 members

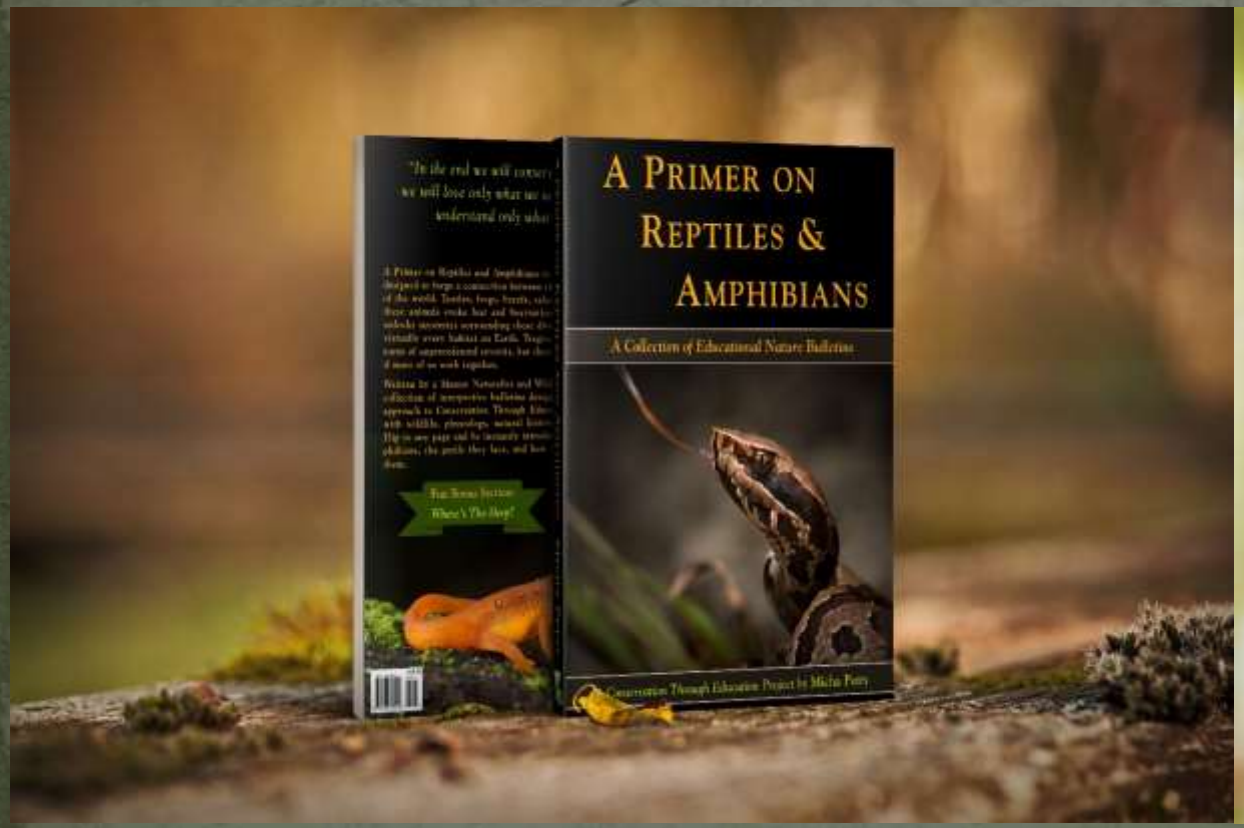
Wild Lizards : Education & Discussion
Public Group · 1,923 members

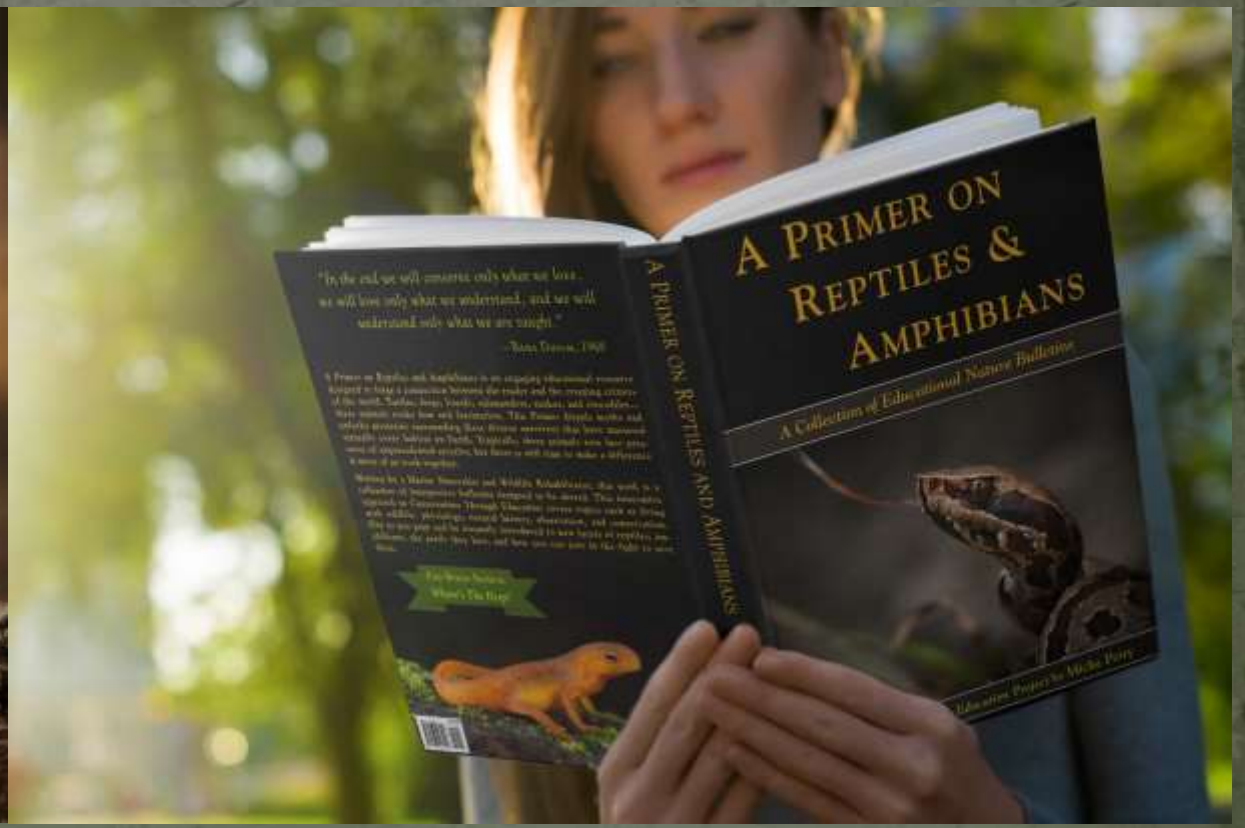
Wild Crocodilians : Education & Discussion
Public Group · 598 members

Wild Turtles and Tortoises : Education &...
Public Group · 2,648 members

North American Native Reptile Keepers
Closed Group · 1,145 members

A Primer on Reptiles and Amphibians





THE ONLY *GOOD* HUMAN IS AN *EDUCATED* HUMAN

Southern Copperhead photo by Justin Sokol

LearnAboutCritters.org

Quiz Time!

In the following slides,
see if you can identify which snakes are

venomous

and which are

Colubrids...

Is it one, some or none?

Photo credit Scott Edward

Photo credit Justin Sokol

Photo credit Laura Sullivan

Photo credit Beau Gregory

Photo credit Justin Sokol

Photo credit Justin Sokol

Photo credit Justin Sokol

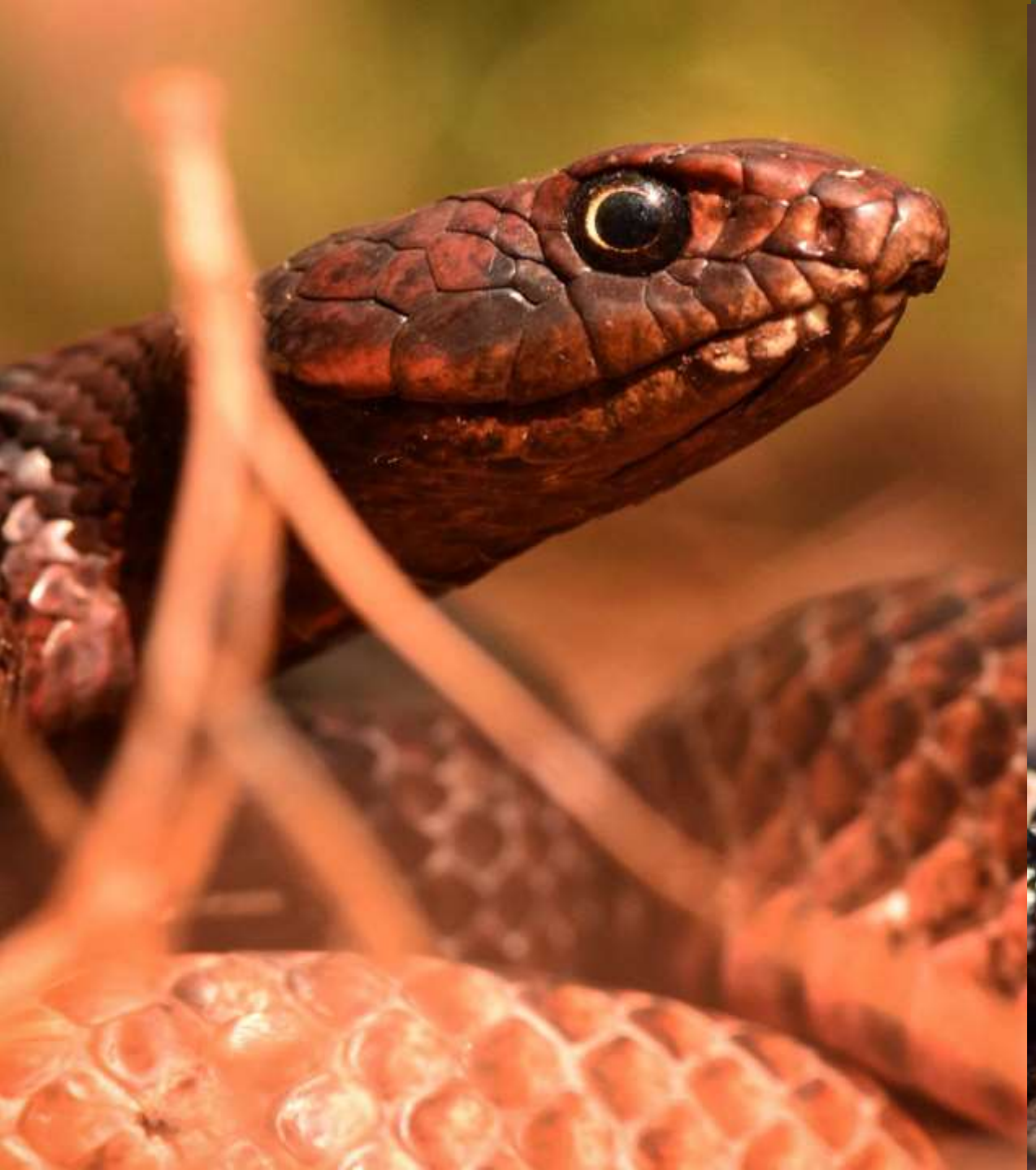



Photo credit Luke Smith

Find The Herp!

In the following slides, see if you can spot the reptile or amphibian.

In nature, we often walk by them without noticing....


Armin Meier 2014


Ashley Tubbs


Every animal has a purpose in the world...
even if you don't know what that purpose is.
LEARN TO VALUE LIFE'S DIVERSITY.
LEARN
Louisiana Exotic Animal Resource Network
Western Pygmy Rattlesnake photo by Armin Meier
LearnAboutCritters.org

Thanks for attending

Louisiana Master Naturalist Association Herpetology Workshop

Visit **NWLANaturalists.org** or **LearnAboutCritters.org** for more resources and links to learn more.

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Our group- **@HerpIntro** Twitter- **@intHERPretation**

Download the Primer- **learnaboutcritters.org/primer**