

AMPHIBIAN & REPTILE

NATURAL HISTORY



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San Diego Natural History Museum

AMPHIBIANS

DIVERSITY



Reptiles



Amphibians

<http://web.me.com/chuckwalla1/NaturalHistory/>

AMPHIBIANS

DIVERSITY



Reptiles

Turtles, Lizards & Snakes



Amphibians

<http://web.me.com/chuckwalla1/NaturalHistory/>

AMPHIBIANS

DIVERSITY



Reptiles

Turtles, Lizards & Snakes



Amphibians

Frogs & Salamanders

<http://web.me.com/chuckwalla1/NaturalHistory/>

SAN DIEGO NATURAL HISTORY MUSEUM



Founded in 1874
Newly Expanded Facilities

SAN DIEGO NATURAL HISTORY MUSEUM

DEPARTMENT OF HERPETOLOGY



2003



2008

Amphibian and Reptile Collections

SAN DIEGO NATURAL HISTORY MUSEUM

DEPARTMENT OF HERPETOLOGY

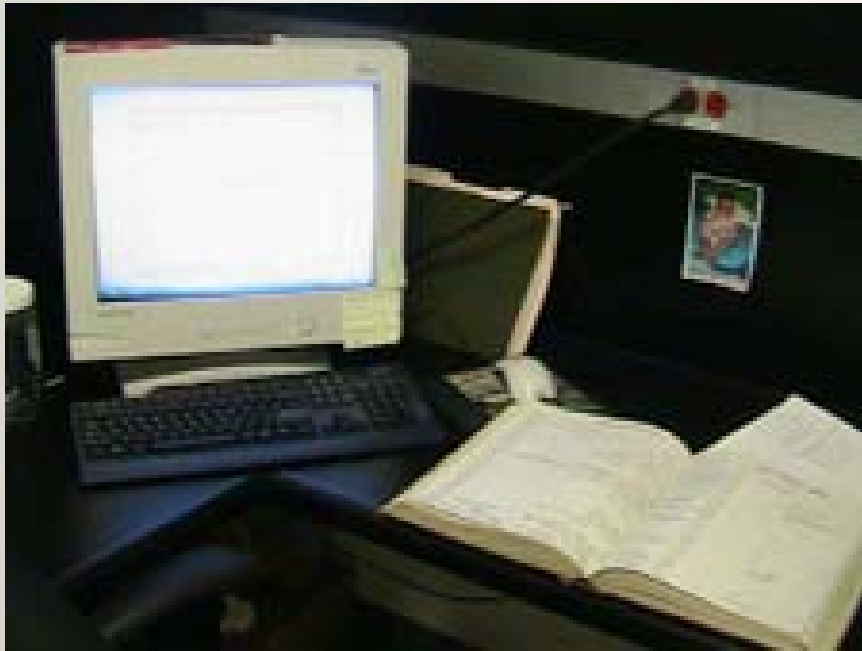


Over 73,500 Specimens

Amphibian and Reptile Collections

SAN DIEGO NATURAL HISTORY MUSEUM

DEPARTMENT OF HERPETOLOGY



Information Systems

Amphibian and Reptile Collections

SAN DIEGO NATURAL HISTORY MUSEUM

DEPARTMENT OF HERPETOLOGY

Biodiversity

Distribution

Habitat
Preference

Diet

Reproduction

Morphology

Parasites



Natural History Specimen

Amphibian and Reptile Collections

SAN DIEGO NATURAL HISTORY MUSEUM

DEPARTMENT OF HERPETOLOGY

Biodiversity

Distribution

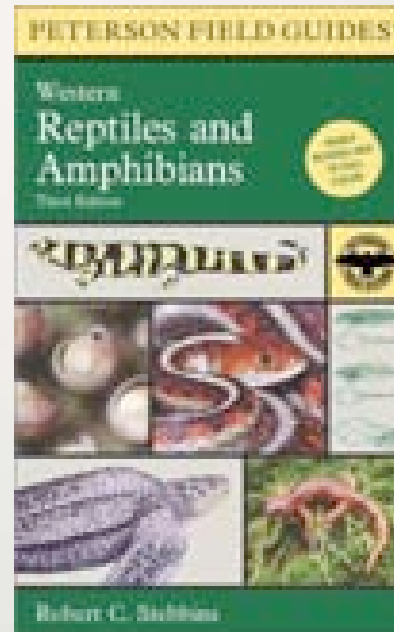
Habitat
Preference

Diet

Reproduction

Morphology

Parasites



Field Guides

Author: Robert C. Stebbins

Amphibian and Reptile Collections

AMPHIBIANS

BIODIVERSITY CONSERVATION



AMPHIBIANS

BIODIVERSITY CONSERVATION

Indicator Species

FROGS

BIODIVERSITY CONSERVATION

Western Toad

Arroyo Toad

Red-spotted Toad

California Treefrog

Pacific Treefrog

Western Spadefoot

Red-legged Frog

Mountain Yellow-legged Frog

FROGS

BIODIVERSITY CONSERVATION

Western Toad

Arroyo Toad

Red-spotted Toad

California Treefrog

Pacific Treefrog

Western Spadefoot

Red-legged Frog

Mountain Yellow-legged Frog

FROGS

BIODIVERSITY CONSERVATION

Western Toad	
Arroyo Toad	Endangered
Red-spotted Toad	
California Treefrog	
Pacific Treefrog	
Western Spadefoot	Problematic
Red-legged Frog	Locally Extinct
Mountain Yellow-legged Frog	Locally Extinct

AMPHIBIANS

DIVERSITY



Caudata

5 Native Species



Anura

8 Native Species

AMPHIBIANS

DIVERSITY



Caudata

Salamanders

5 Native Species



Anura

8 Native Species

AMPHIBIANS

DIVERSITY



Caudata

Salamanders

5 Native Species



Anura

Frogs

8 Native Species

SALAMANDERS

LIFE CYCLE

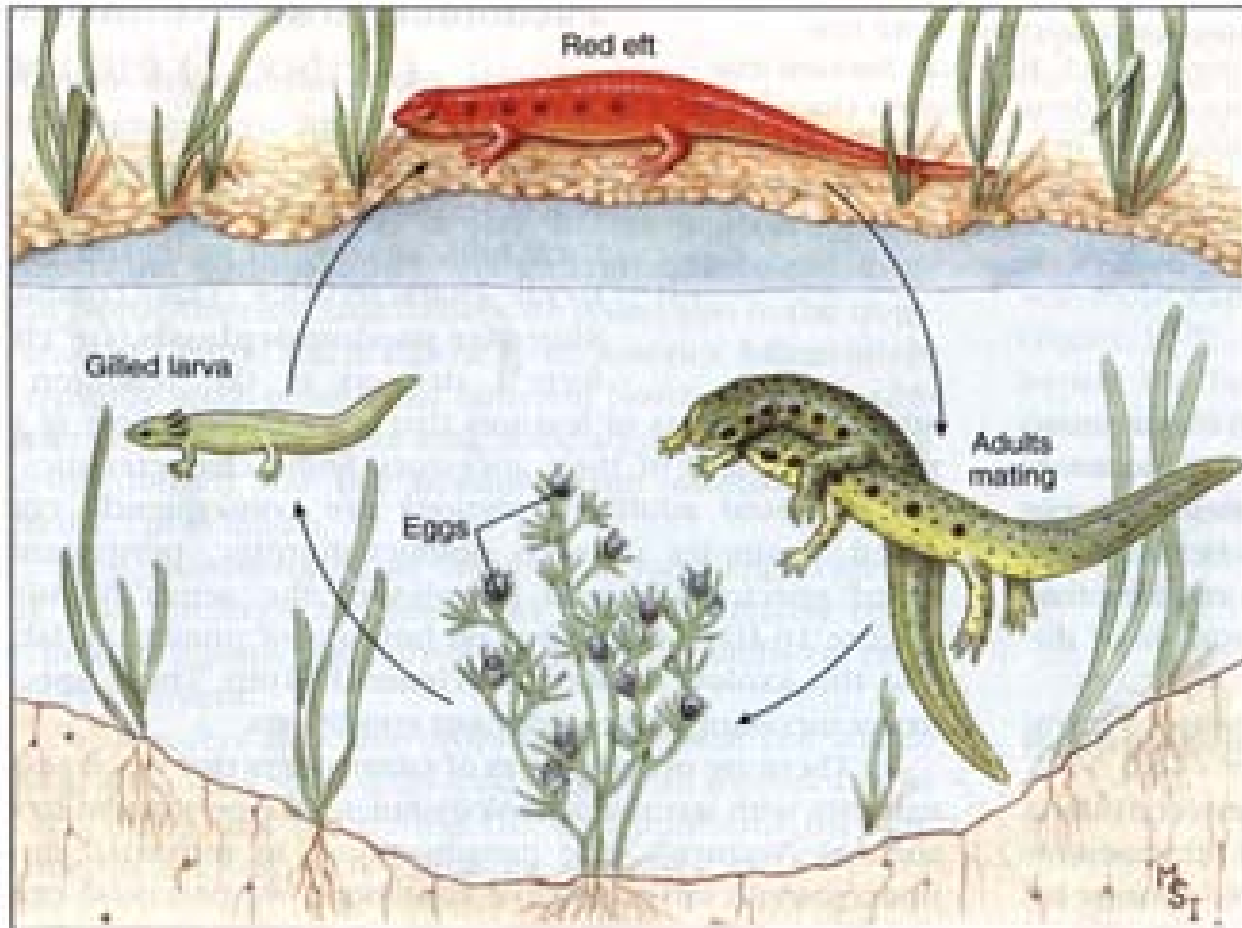


FIGURE 16-8

SALAMANDRIDAE

BIOLOGY

- Generalized reproductive pattern
 - Aquatic eggs and larvae



California Newt
(*Taricha torosa*)



SALAMANDRIDAE

BIOLOGY



PLETHODONTIDAE

LUNGLESS SALAMANDERS

- Terrestrial reproductive pattern
 - Terrestrial eggs laid in moist microhabitat



Garden Slender Salamander
(*Batrachoseps major*)



Arboreal Salamander
(*Aneides lugubris*)

PLETHODONTIDAE

LUNGLESS SALAMANDERS

- Terrestrial reproductive pattern
 - Terrestrial eggs laid in moist microhabitat



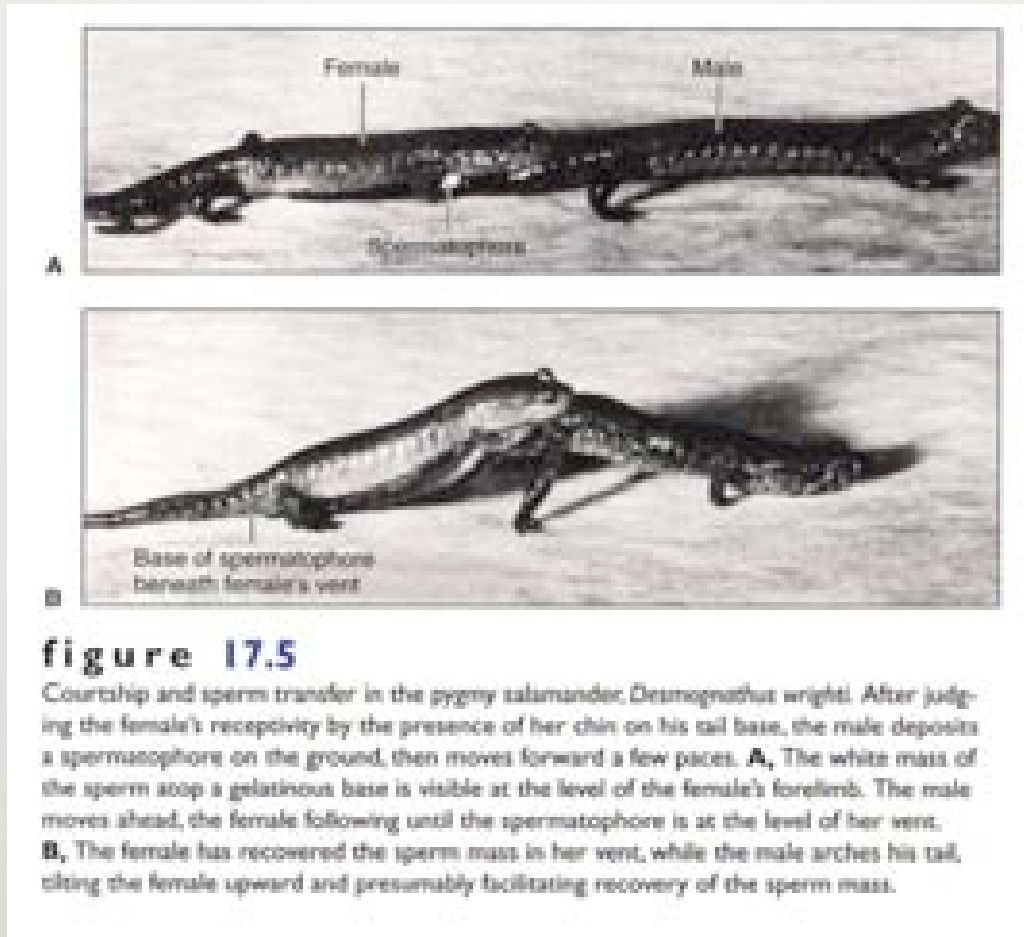
Monterey Ensatina
(*Ensatina eschscholtzii*)



Large-blotched
Ensatina (*Ensatina
klauberi*)

NATURE NEWS

BREAKING RESEARCH



Spermatophores



First Video Footage

FROGS

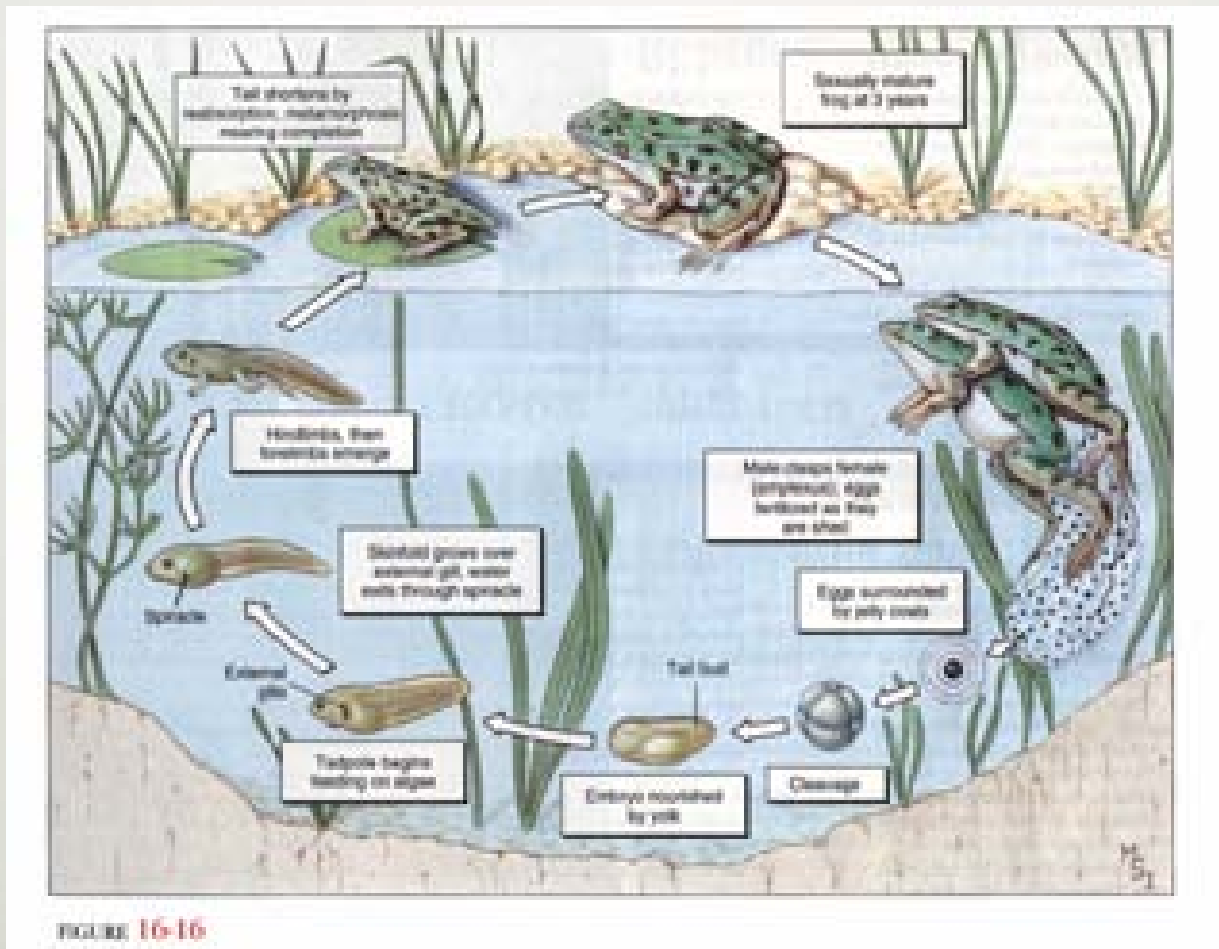
CALLING AMPHIBIANS



Important for Survival

FROGS

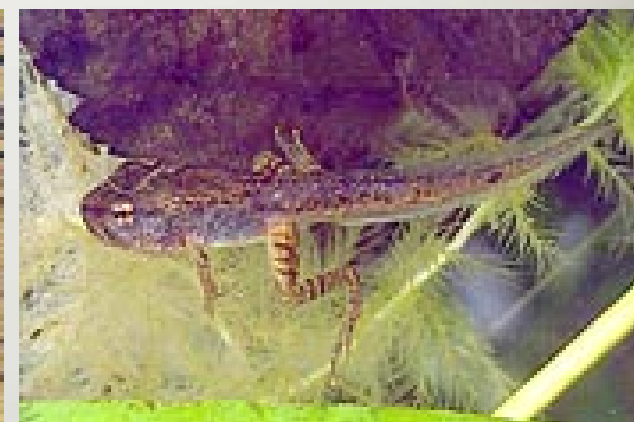
STUDYING THEIR REPRODUCTIVE BIOLOGY



Generalized Life Cycle

FROGS

STUDYING THEIR REPRODUCTIVE BIOLOGY



Generalized Life Cycle

FROGS

STUDYING THEIR REPRODUCTIVE BIOLOGY



Males *vocalize* to attract females

FROGS

STUDYING THEIR REPRODUCTIVE BIOLOGY



Males *vocalize* to attract females

FROGS

STUDYING THEIR REPRODUCTIVE BIOLOGY



Male - Male Encounter

Release Call

FROGS

STUDYING THEIR REPRODUCTIVE BIOLOGY



Male - Male Encounter

Release Call

FROGS

STUDYING THEIR REPRODUCTIVE BIOLOGY



Western Toads

Loss of Advertisement Call

FROGS

STUDYING THEIR REPRODUCTIVE BIOLOGY

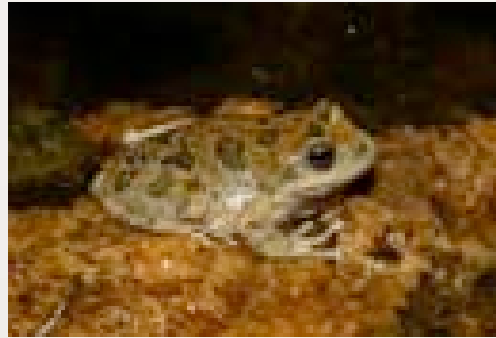
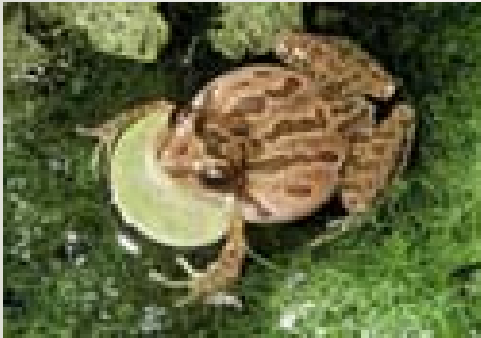


Western Toads

Loss of Advertisement Call

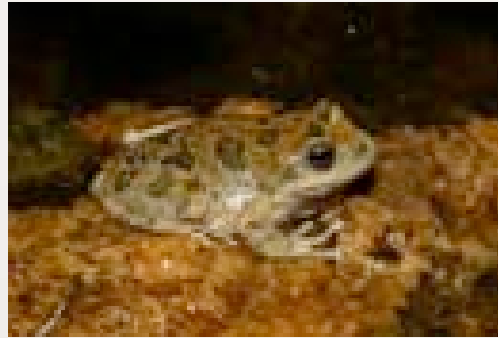
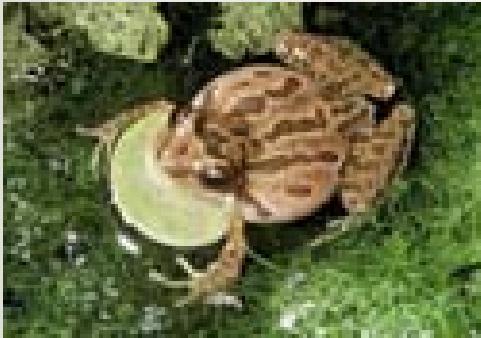
COMPLEX VOCAL REPERTOIRE

LOCAL FROG SPECIES



COMPLEX VOCAL REPERTOIRE

LOCAL FROG SPECIES



PLETHODONTIDAE

LUNGLESS SALAMANDERS

Stephen M. Deban, Ph.D.

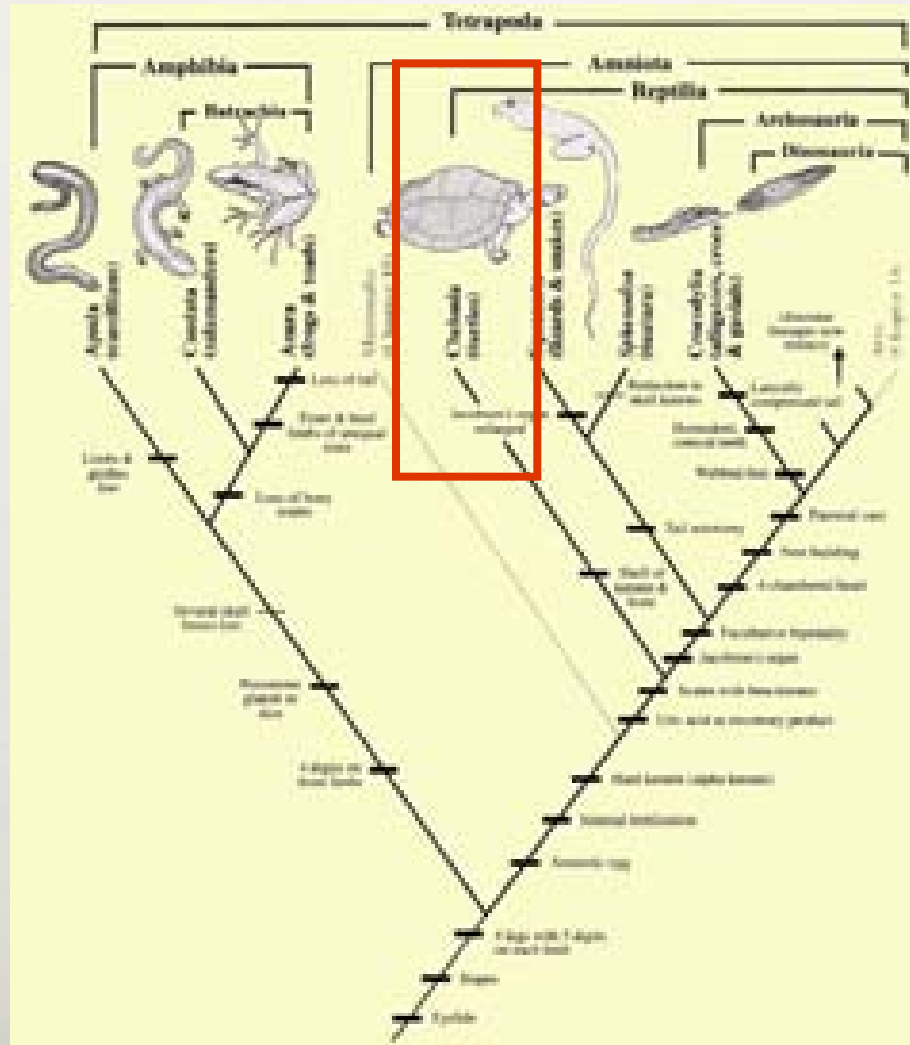
University of South Florida



Toads (Bufonidae)

NON-AVIAN REPTILES

CHELONIA



TESTUDINES

TURTLES



Lack teeth & Jaw is modified into a beak

TESTUDINES

TURTLES



Carapace



Plastron

Shell modified from ribs and vertebrae

TESTUDINES

TURTLES



Freshwater Turtles

TESTUDINES

TURTLES



Freshwater Turtles

TESTUDINES

TURTLES



Freshwater Turtles

TESTUDINES

TURTLES

Seaturtle

TESTUDINES

TURTLES



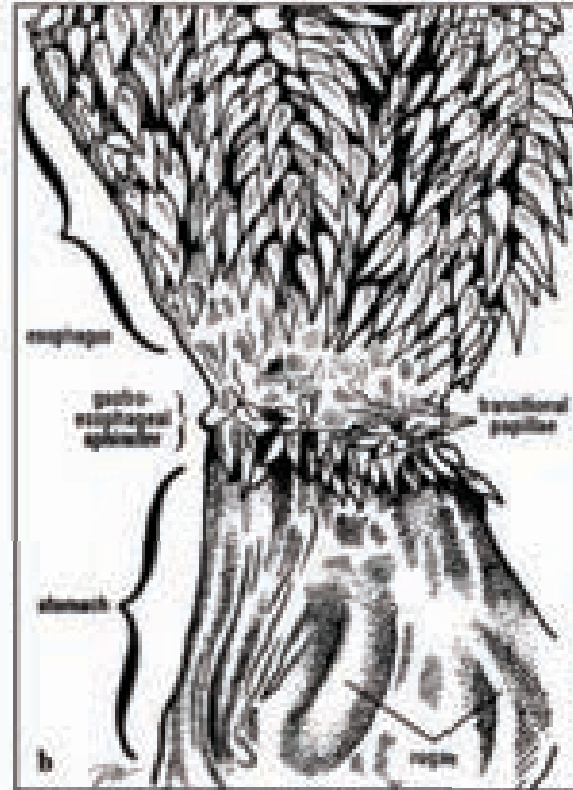
Seaturtle

TESTUDINES

TURTLES



Figs. 166a and 166b. The esophagus and anterior stomach lining. The papillae that line the esophagus are keratinized for most of the length of the esophagus. They end abruptly; several flat, transitional papillae, lacking keratin line the



esophageal wall at the level of the gastroesophageal sphincter. Posterior to this sphincter, the stomach lining is very smooth and has no papillae.

TESTUDINES

TURTLES

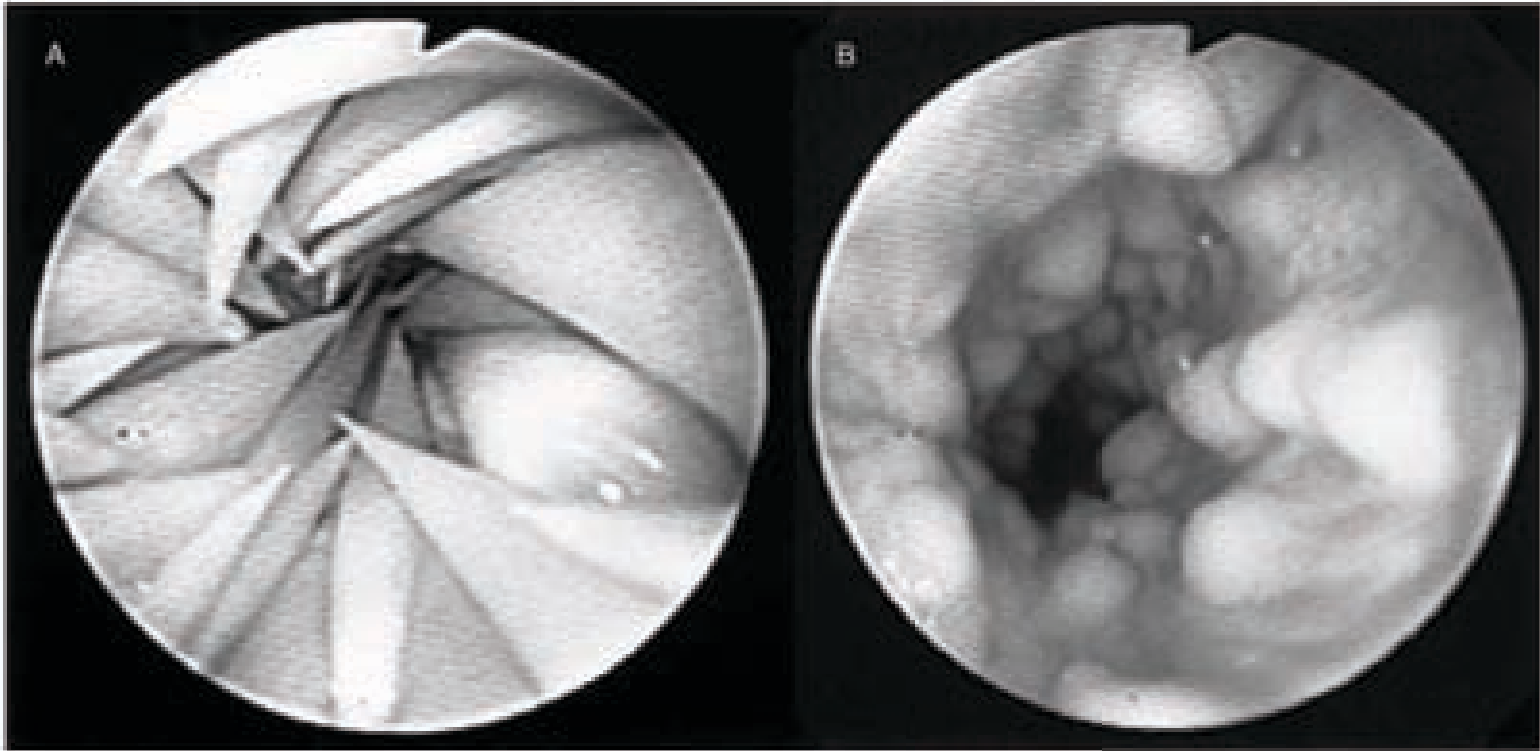


Figure 3. Endoscopic appearance of the papillated region of the esophagus of (A) a loggerhead sea turtle (turtle 3) and (B) a Malaysian giant turtle (turtle 4).

SQUAMATA

LIZARDS & SNAKES



Caudal Autotomy
Ability to lose tail

SQUAMATA

LIZARDS & SNAKES

Caudal Autotomy

SQUAMATA

LIZARDS & SNAKES



Caudal Autotomy

SQUAMATA

INTEGUMENT



SQUAMATA

INTEGUMENT



SQUAMATA

INTEGUMENT



SQUAMATA

INTEGUMENT



SQUAMATA

INTEGUMENT



SQUAMATA

INTEGUMENT



SQUAMATA

INTEGUMENT

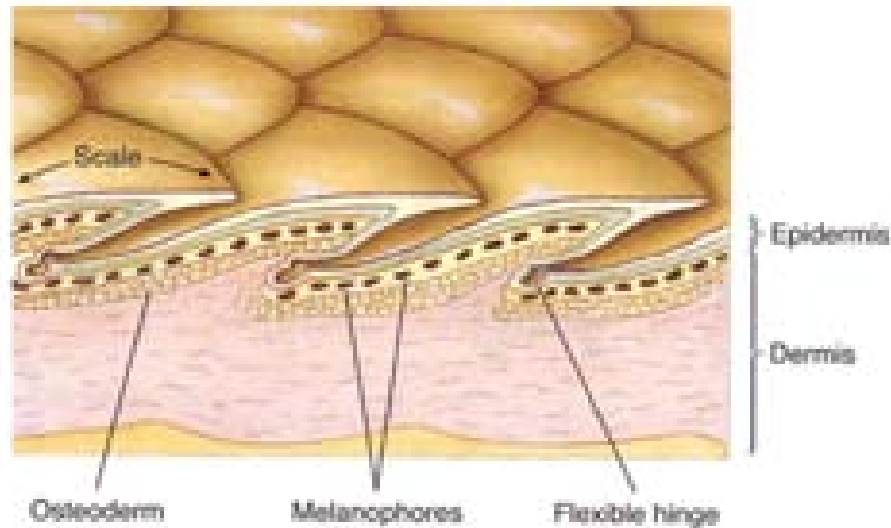


figure 18.3

Section of the skin of a reptile showing overlapping epidermal scales and bony osteoderms in the dermis.

Body covered by scales
containing both alpha and beta-keratin

SQUAMATA

INTEGUMENT

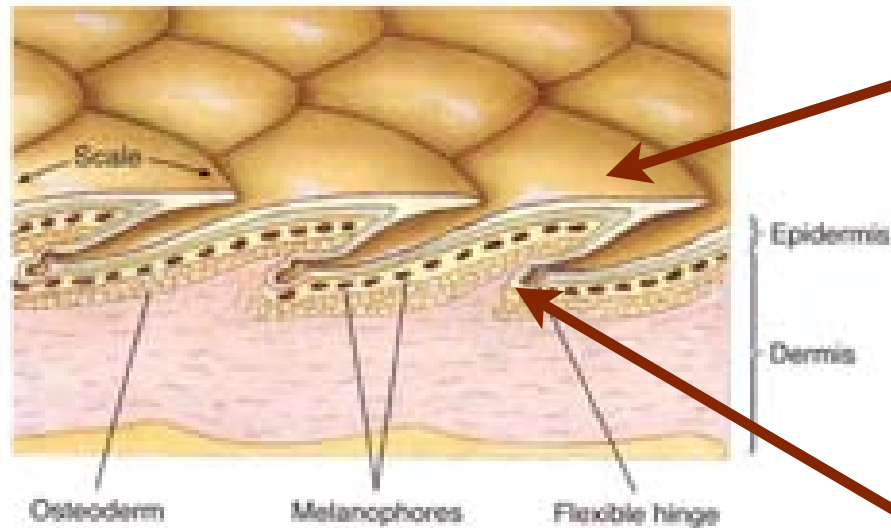


figure 18.3

Section of the skin of a reptile showing overlapping epidermal scales and bony osteoderms in the dermis.

Body covered by scales
containing both alpha and beta-keratin

SQUAMATA

INTEGUMENT

Scale Types

Scales, Plates, Scutes, Shields, Laminae, Lamellae,
Scansors, and Tubercules



SQUAMATA

INTEGUMENT

COLORATION



SQUAMATA

INTEGUMENT

COLORATION



SQUAMATA

INTEGUMENT

COLORATION



SQUAMATA

INTEGUMENT

COLORATION



SQUAMATA

INTEGUMENT

COLORATION



SQUAMATA

INTEGUMENT

COLORATION



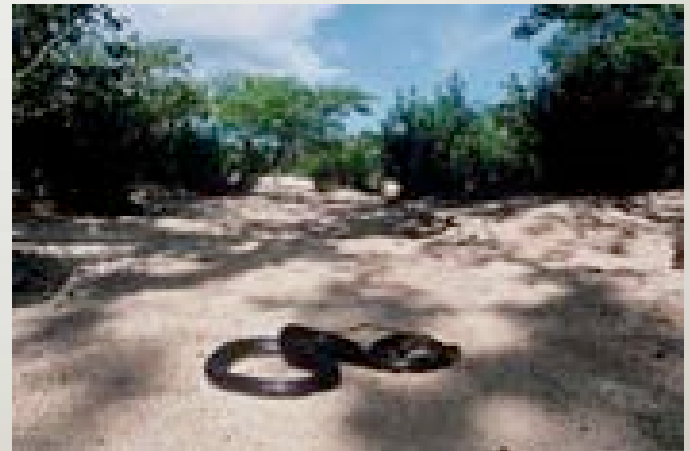
SQUAMATA

COLORATION

- Lizards
Cryptic coloration
Sexual dichromatic



- Snakes
Cryptic coloration
Warning colors



SQUAMATA

NATURAL SELECTION

ADAPTATIONS

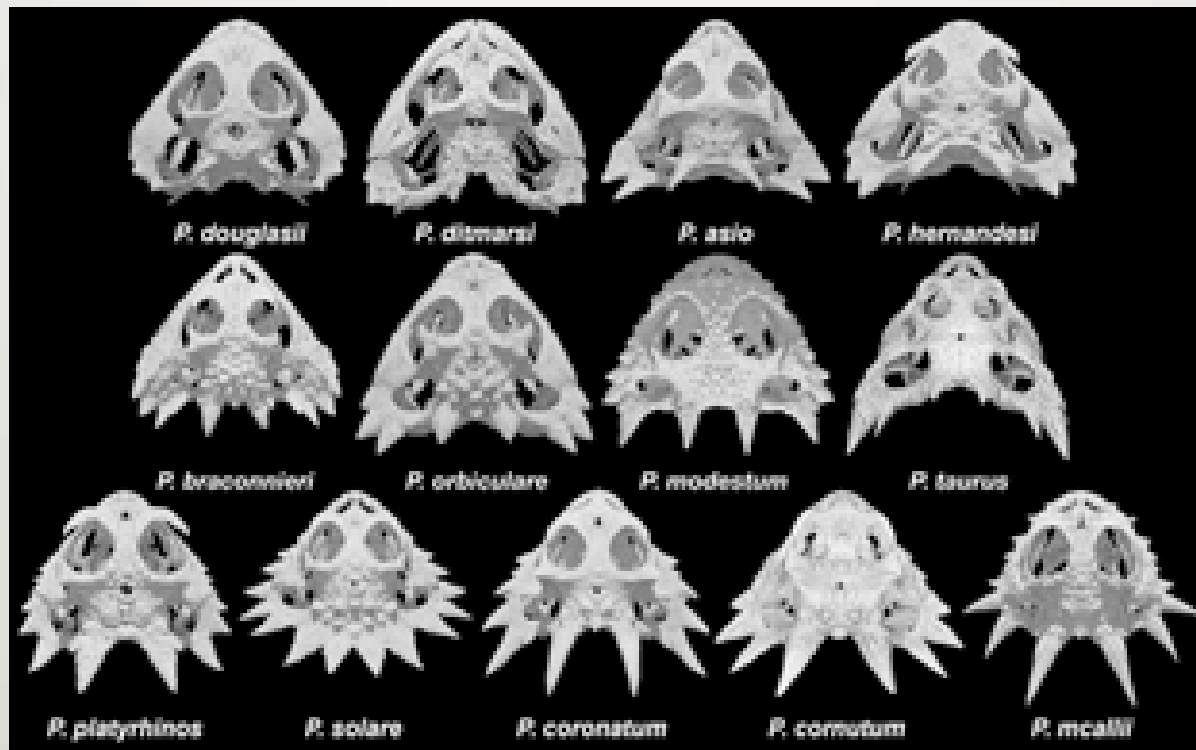


Phrynosoma coronatum
Coast Horned Lizard

SQUAMATA

NATURAL SELECTION

SKELETAL ORNAMENTATION

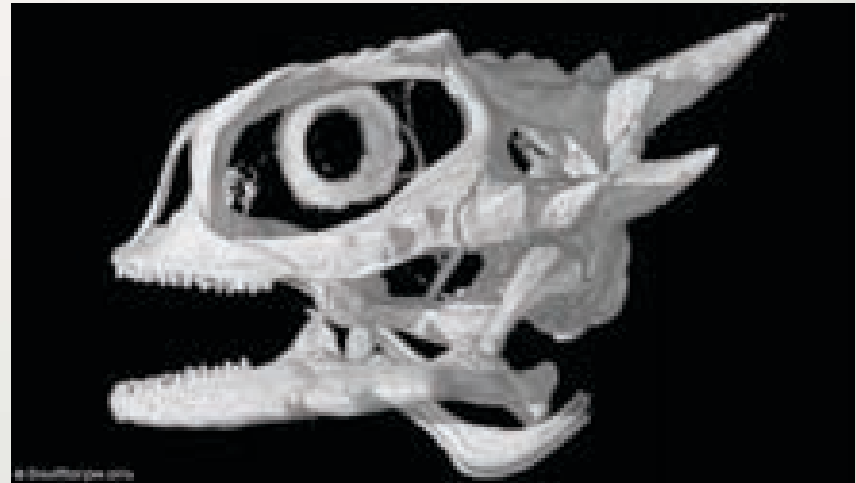


Horned Lizard Skulls

DigiMorph

SQUAMATA

NATURAL SELECTION



Horned Lizard Skulls

DigiMorph

SQUAMATA

NATURAL SELECTION



SQUAMATA

NATURAL SELECTION

- BLOOD SQUIRTING IN RESPONSE TO CANID PREDATORS
- CAPILLARY BED IN CORNER OF EYE RUPTURES
- OLFACTORY WARNING AND DISTRACTION



SQUAMATA

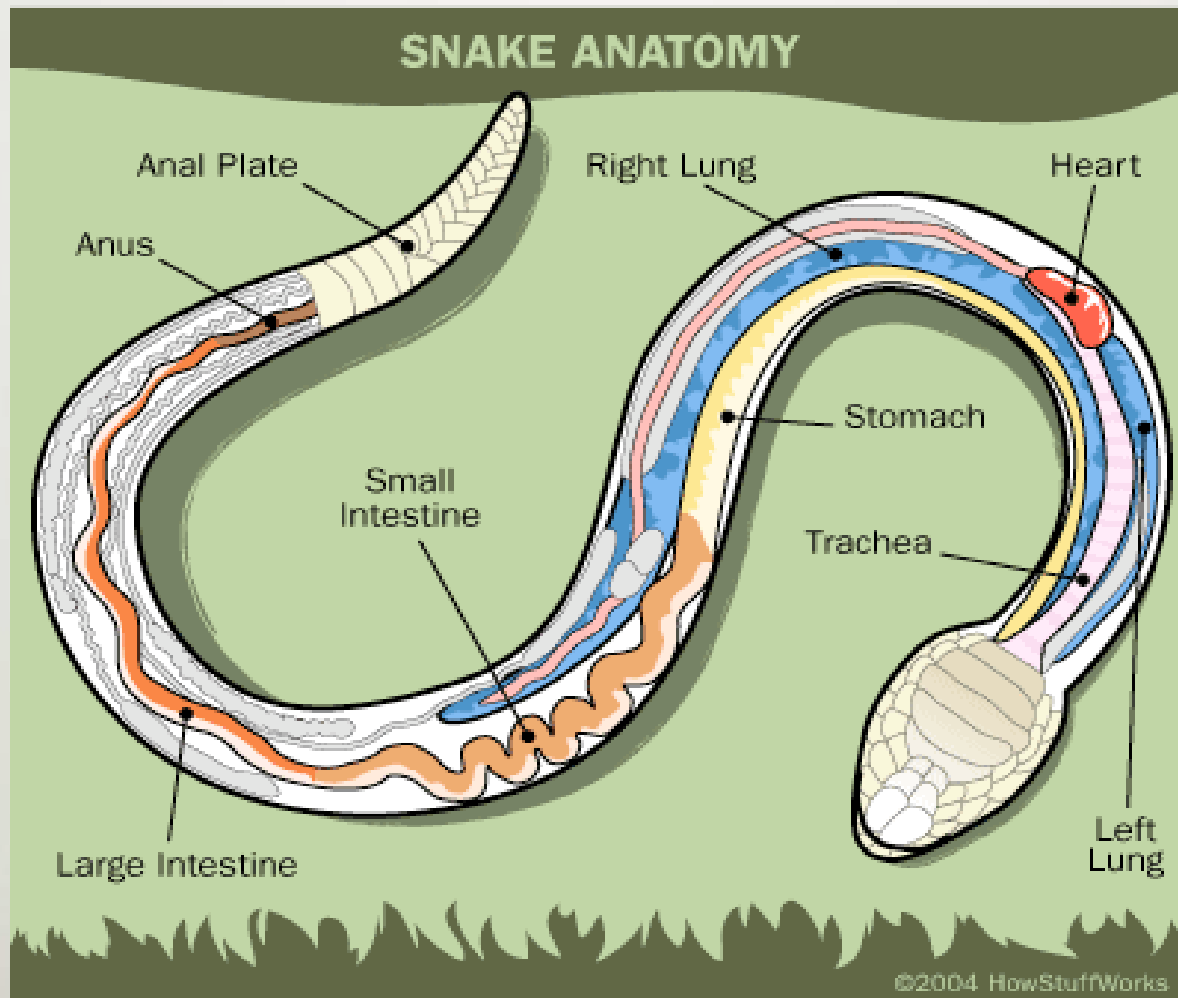
SNAKES

- Evolved from lizards
- Loss of limbs and external ears
- Elongate body
- Loss of left lung
- Internal organs elongate
- Predators
- 2,987 species



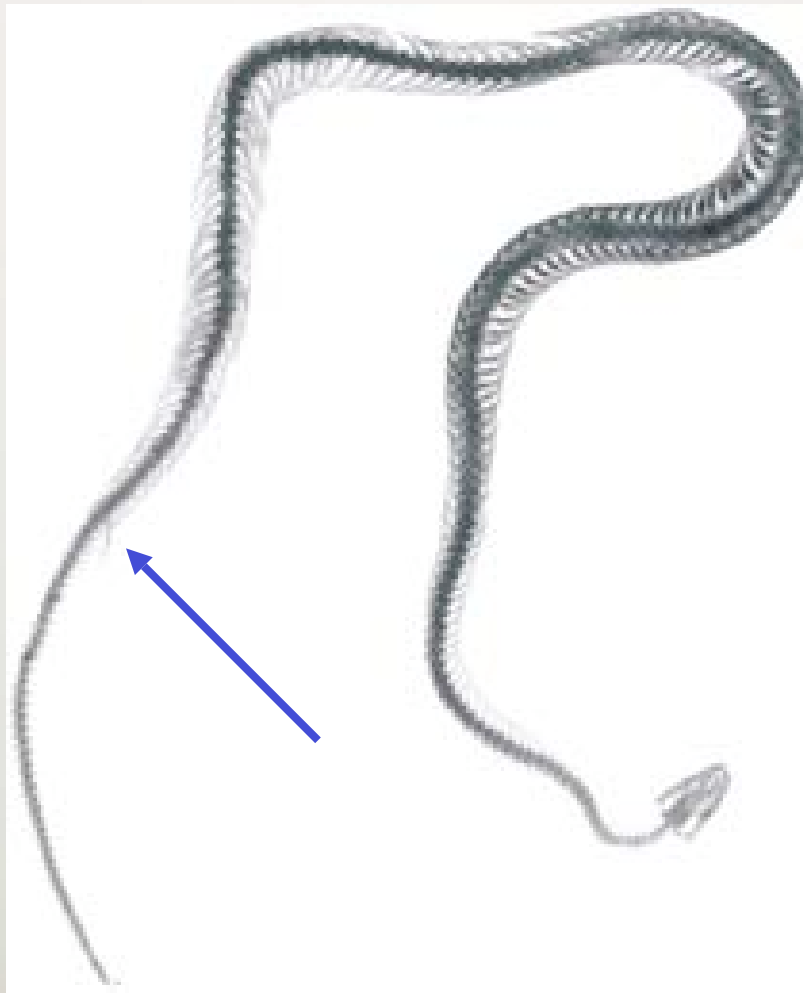
SQUAMATA

SNAKES



SQUAMATA

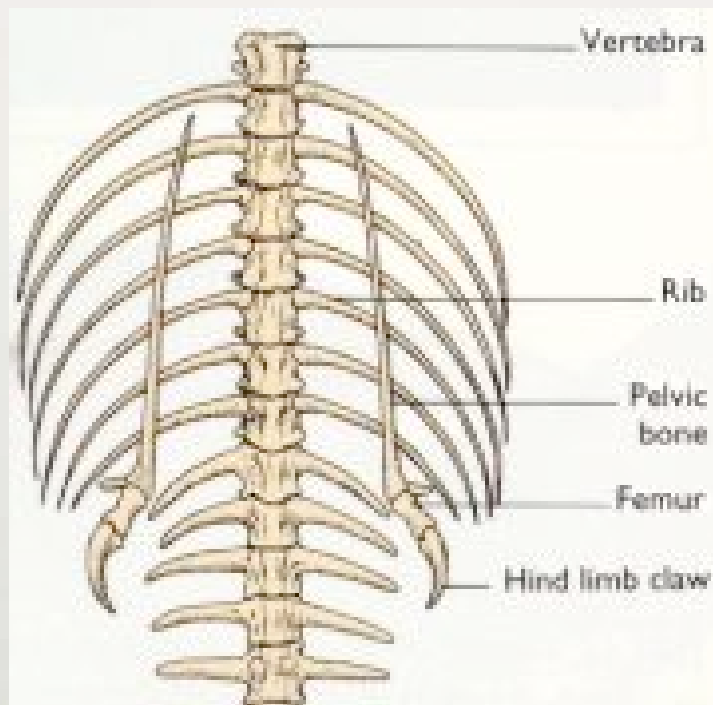
SNAKES



Haasiophis terrasanctus

SQUAMATA

SNAKES



Anaconda

SQUAMATA

SNAKES



Highly Kinetic Skull

SQUAMATA

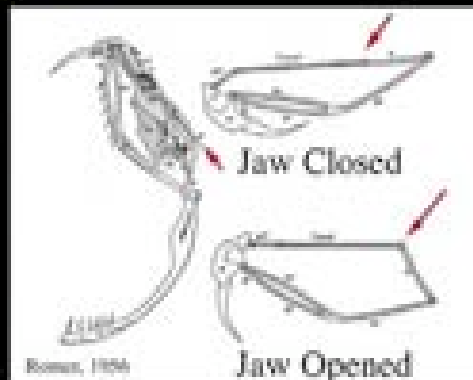
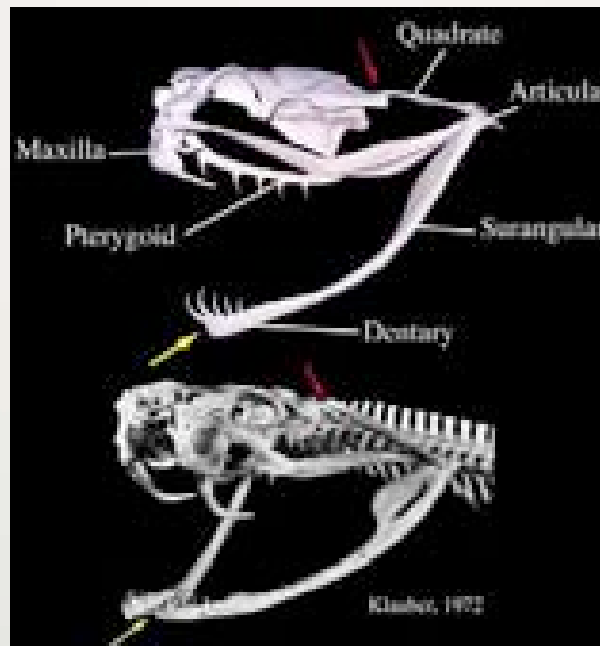
SNAKES



Highly Kinetic Skull

SQUAMATA

RATTLESNAKES



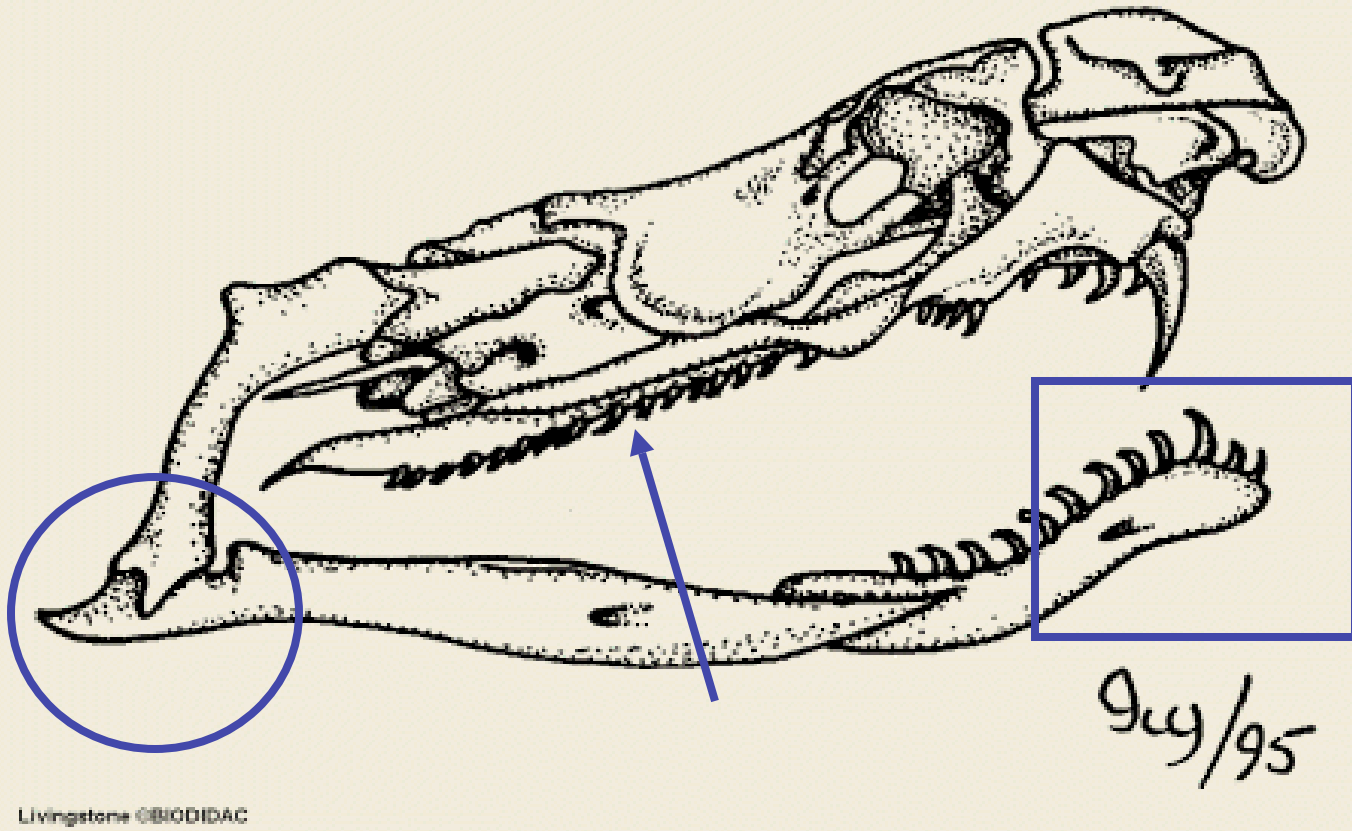
SQUAMATA

SNAKES



SQUAMATA

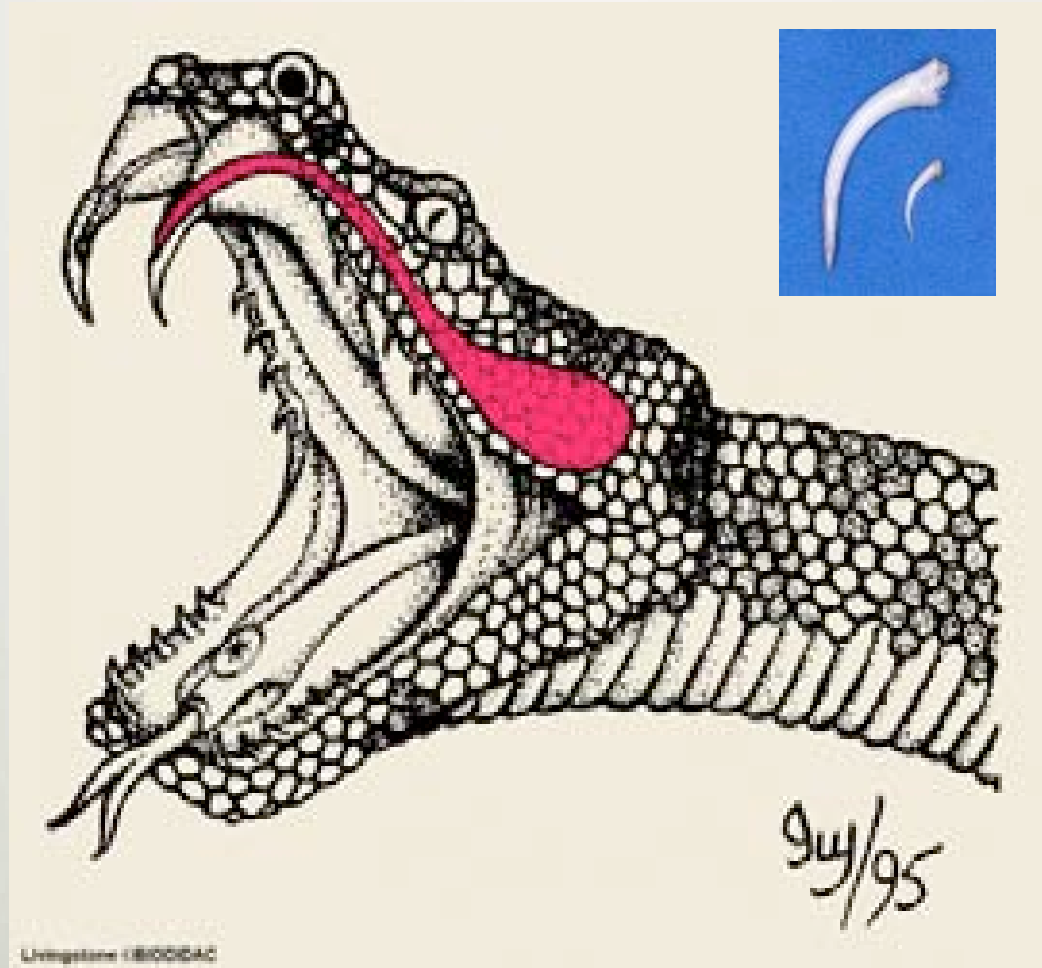
SNAKES



Highly Kinetic Skull

SQUAMATA

RATTLESNAKES



SQUAMATA

RATTLESNAKES

Red Diamond Rattlesnake



Plate 1388. Hemorrhagic blebs and swelling six hours after a *Crotalus ruber* bite to the long finger. The patient experienced a severe decrease in his platelet count. Photo by Sean Bush.



Plate 1389. Tissue necrosis seven weeks after a *Crotalus ruber* bite, same patient as Plate 1388. Photo by Sean Bush.

RATTLESNAKES

DEFENSIVE BEHAVIOR



RATTLESNAKES

RATTLE



RATTLESNAKES

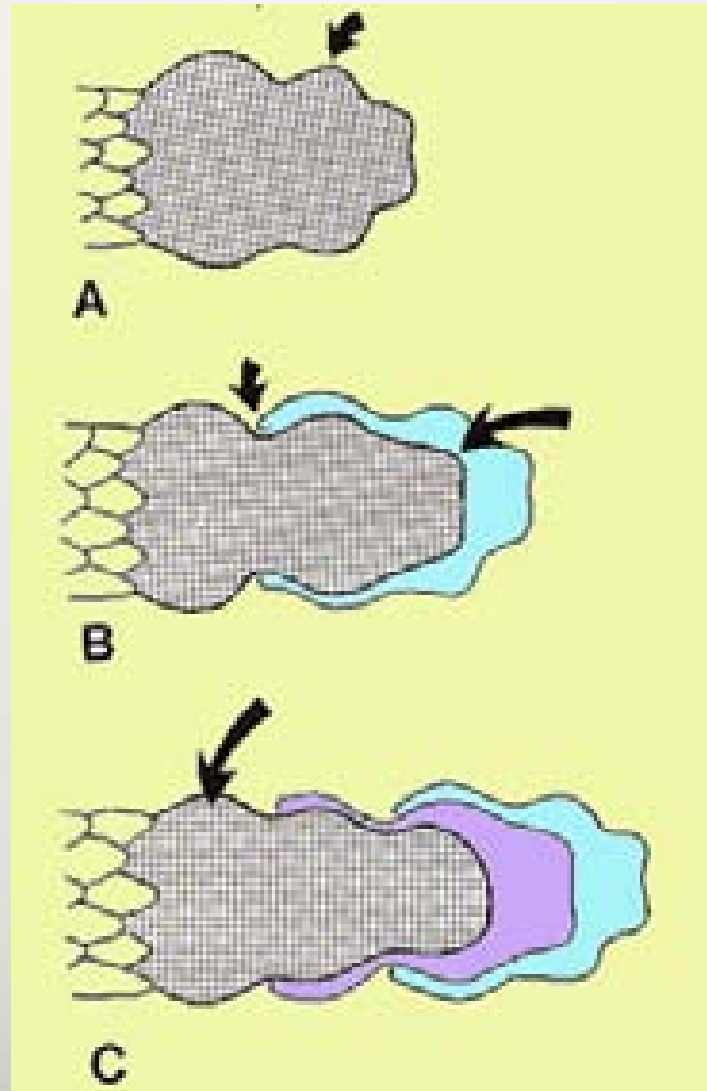
RATTLE



*The rattle from a western diamondback rattlesnake, *Crotalus atrox*. This string contains six segments; it has lost some of the older segments from its tip and so the button is missing.*

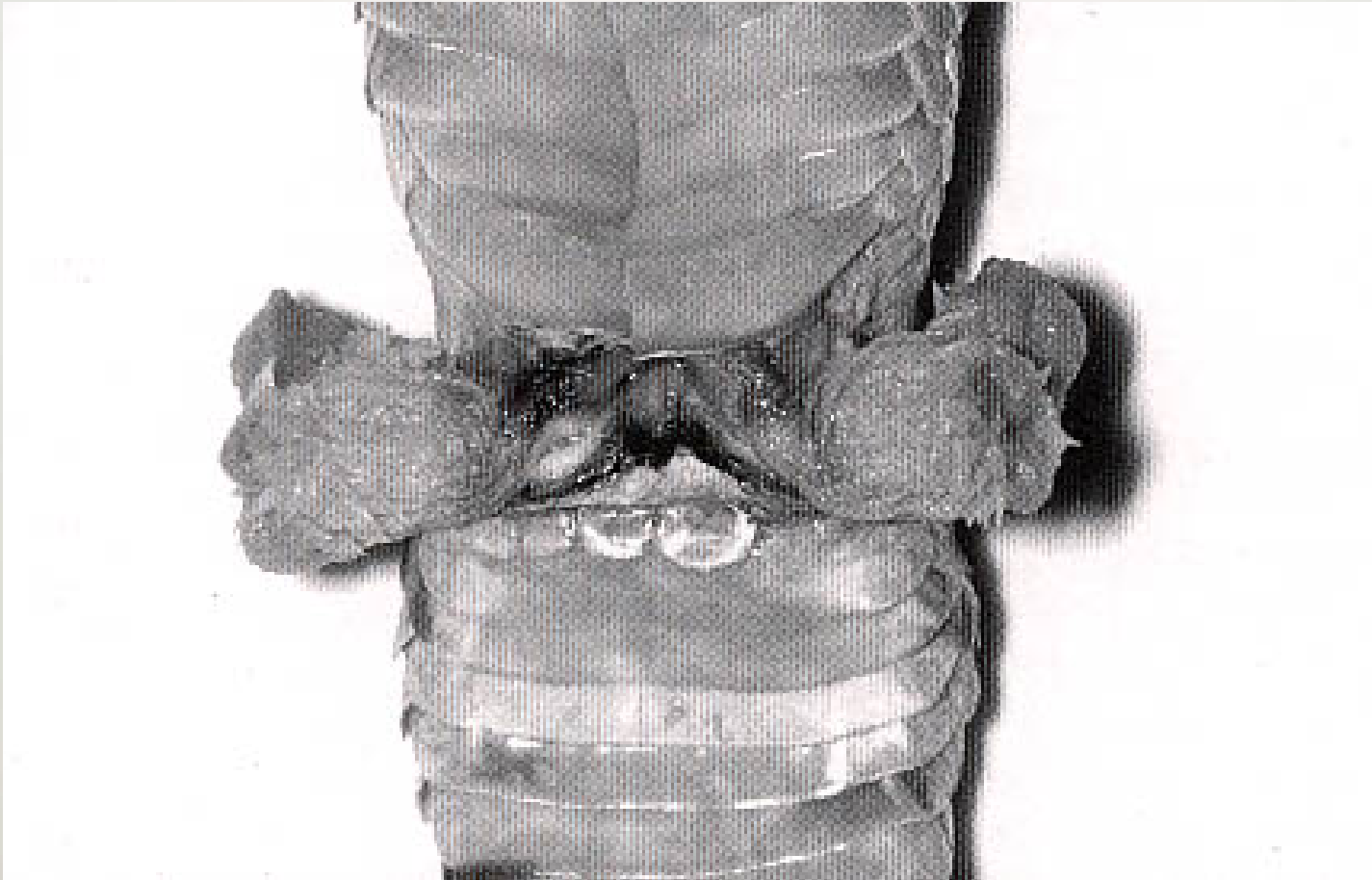
RATTLESNAKES

RATTLE



RATTLESNAKES

REPRODUCTION



RATTLESNAKES

FANGS

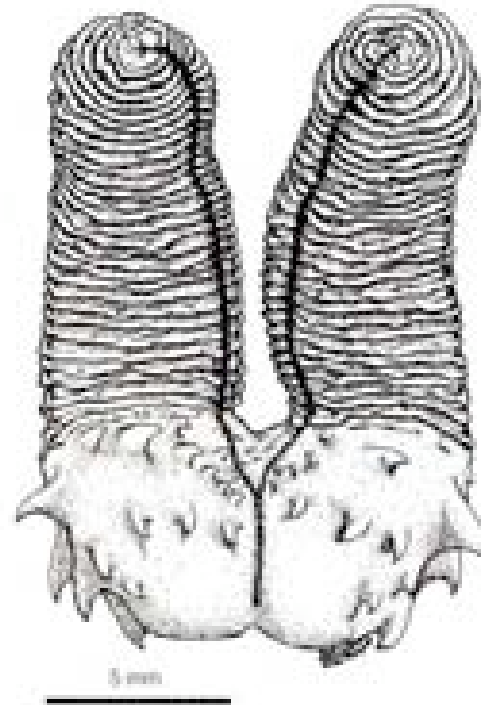


Fig. 191. Sulcate aspect of right hemipenis of *Crotalus rarus* (UTA R-4536). From McCranie, 1988. Published by permission of the Herpetologists' League.

RATTLESNAKES

REPRODUCTION



Male - Male Combat

RATTLESNAKES

REPRODUCTION



Male - Male Combat

RATTLESNAKES

REPRODUCTION



Male - Male Combat

RATTLESNAKES

REPRODUCTION



Male - Male Combat

RATTLESNAKES

REPRODUCTION



Male - Male Combat

RATTLESNAKES

REPRODUCTION



Male - Male Combat

RATTLESNAKES

REPRODUCTION



Male - Male Combat

RATTLESNAKES

REPRODUCTION



Male - Male Combat

Thanks

**BIOLOGICAL DIVERSITY IS THE KEY TO
THE MAINTENANCE OF THE WORLD AS
WE KNOW IT.**

E.O. WILSON

THE DIVERSITY OF LIFE 1992

