

FROGS & TOADS OF SOUTHERN NEW JERSEY

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WHY STUDY ANURANS IN
NEW JERSEY?

THREATS



Frogs that died due to
Chytridiomycosis

Photo by Vance Vredenberg,
Amphibia Web

- Climate change
- Habitat degradation & loss
- Over-exploitation
- Introduction of invasive species
- **Disease**

Global Amphibian Assessment (2004)

- 48% of species declining
- 33% of species globally threatened
- >400 species listed as critically endangered
- ~200 species extinct in last few decades

2019: Disease spread is implicated as the main cause for declines in over 500 amphibian species, including 90 presumed extinctions (Scheele et al.)

PHENOLOGY

What Frogs Are You Hearing?

Virginia Frog Phenology (Calling/ Breeding Periods)

Species	Calling/ Breeding Period									
	Late Jan.	February	March	April	May	June	July	August	September	October
American Bullfrog					Early Season	Mid-season	Late Season			
Green Frog					Early Season	Mid-season	Late Season			
Pickerel Frog				Early Season	Mid-season	Late Season				
Southern Leopard Frog*			Early Season	Mid-season	Late Season					Late Season
Atlantic Coast Leopard Frog**			Early Season	Mid-season	Late Season					
Wood Frog	Early Season	Mid-season	Late Season							
Carpenter Frog				Early Season	Mid-season	Late Season				
Barking Treefrog					Early Season	Mid-season	Late Season			
Green Treefrog				Early Season	Mid-season	Late Season				
Squirrel Treefrog				Early Season	Mid-season	Late Season				
Pine Woods Treefrog					Early Season	Mid-season	Late Season			
Gray Treefrog				Early Season	Mid-season	Late Season				
Cope's Gray Treefrog				Early Season	Mid-season	Late Season				
Eastern Cricket Frog				Early Season	Mid-season	Late Season				
Southern Cricket Frog				Early Season	Mid-season	Late Season				
Spring Peeper*		Early Season	Mid-season	Late Season						Late Season
Little Grass Frog	Early Season	Mid-season	Late Season							
Mountain Chorus Frog			Early Season	Mid-season	Late Season					
Brimley's Chorus Frog		Early Season	Mid-season	Late Season						
Upland Chorus Frog		Early Season	Mid-season	Late Season						
New Jersey Chorus Frog		Early Season	Mid-season	Late Season						
Southern Chorus Frog			Early Season	Mid-season	Late Season					
American Toad			Early Season	Mid-season	Late Season					
Fowler's Toad				Early Season	Mid-season	Late Season				
Southern Toad			Early Season	Mid-season	Late Season					
Oak Toad				Early Season	Mid-season	Late Season				
Eastern Narrow-mouthed Toad					Early Season	Mid-season	Late Season			
Eastern Spadefoot			Early Season	Mid-season	Late Season					

* Southern Leopard Frogs and Spring Peepers are known to periodically call during warm, rainy evenings in the fall.

** Recently described species to Virginia and calling/breeding phenology is not fully understood.

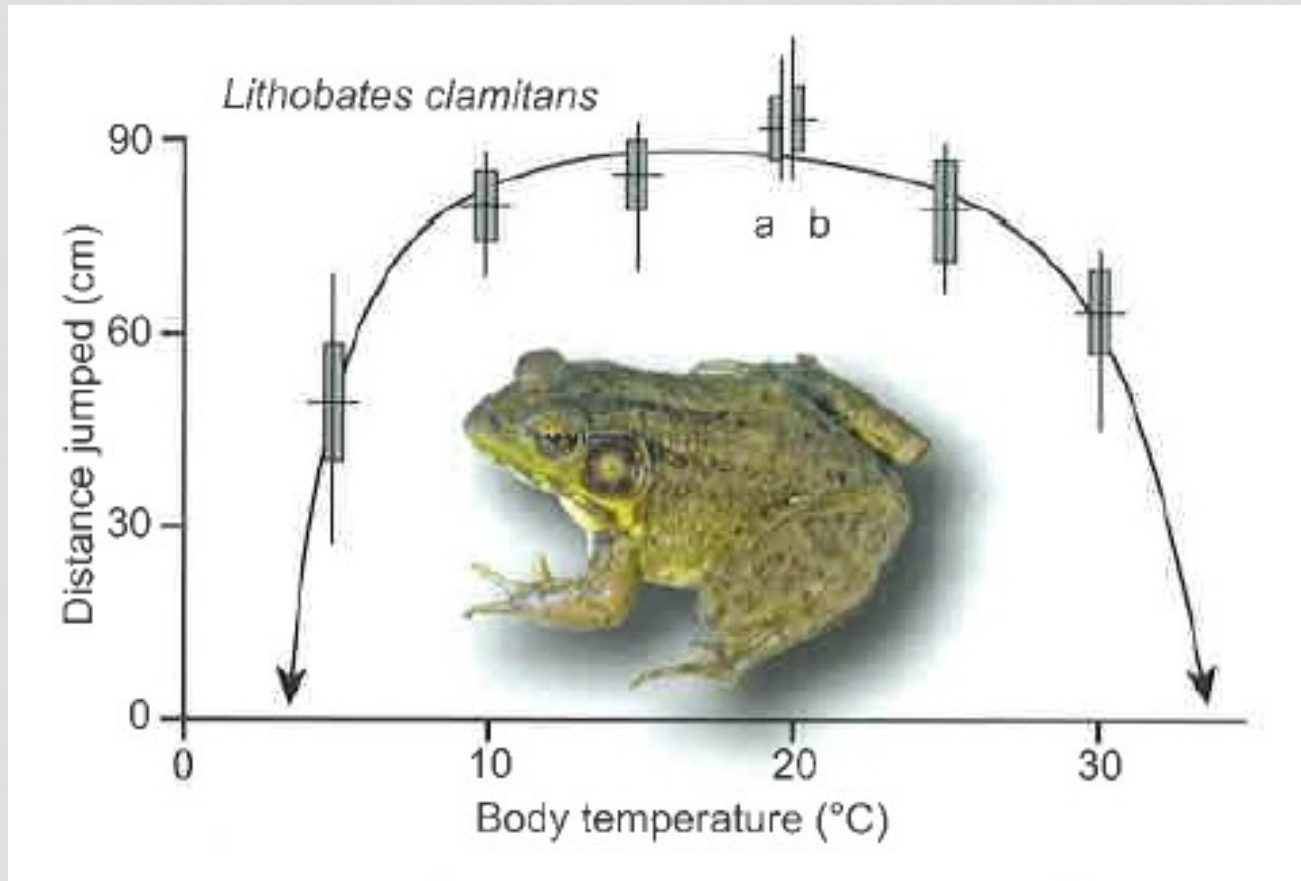


THERMOREGULATION

- The goal is to center ones activity within a range of temperatures that optimizes behavior/physiology while reducing the risk of death.
- PERFORMANCE!



EXAMPLE



HEAT EXCHANGE

- Heat exchange with the environment occurs via
 - Radiation (solar radiation)
 - convection, (both heat loss and gain)
 - conduction (both gain and loss to substrate)

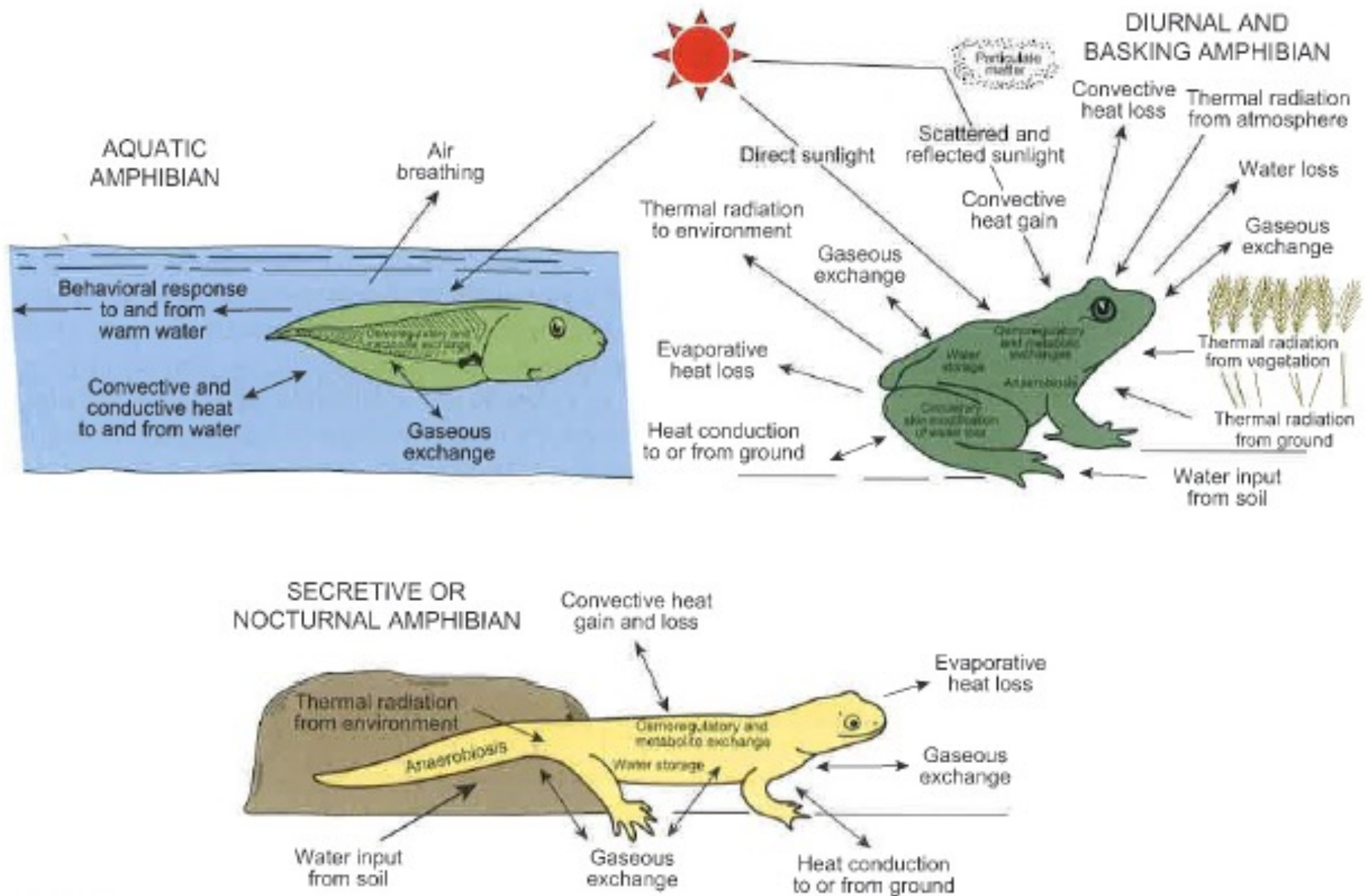


FIGURE 7.4 Environments in which individual amphibians and reptiles live provide different opportunities for heat exchange based on the medium and the physical structure of the habitat. A reptile differs from the amphibians shown because water loss is much lower and influences body temperature much less. The reptile also is limited in its ability to absorb water directly from the environment. *Adapted from Brattstrom, 1979.*

BEHAVIORAL TEMP REGULATION

- Remember how amphibians regulate water loss and now extend that water loss to evaporative cooling!

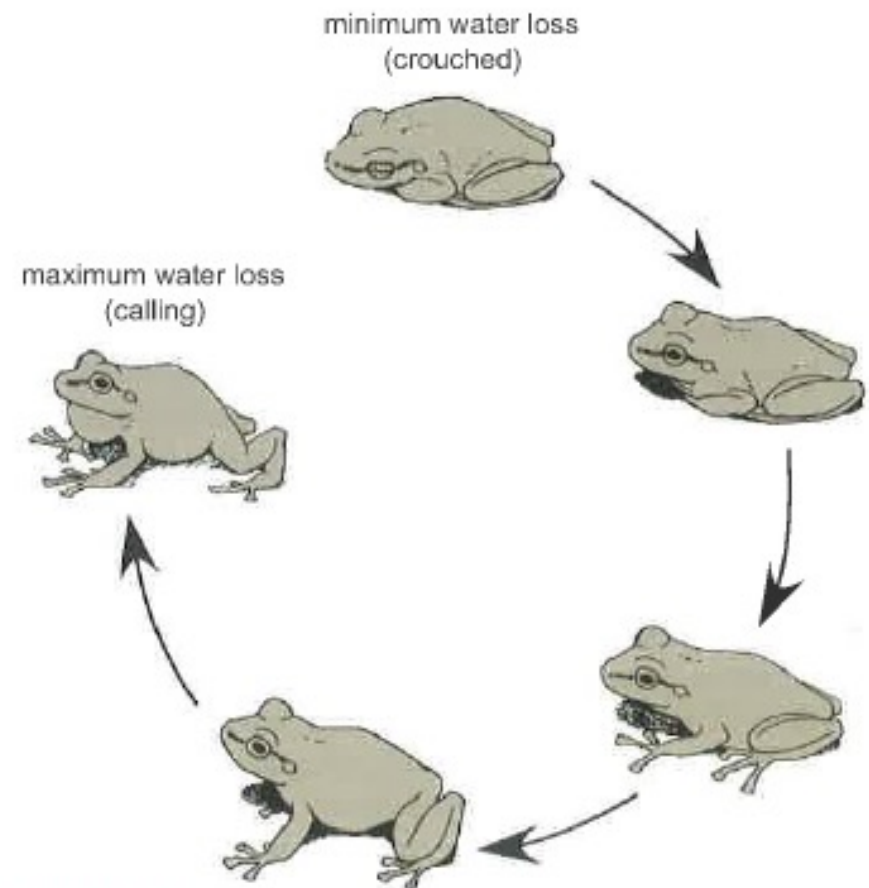


FIGURE 6.7 *Eleutherodactylus coqui* uses different postures to regulate water loss. The chin-down posture with legs underneath the body minimizes water loss. Water loss is greatest during bouts of calling by males when the greatest amount of skin surface area is exposed. Adapted from Pough et al., 1983.

THE TOADS

SPADE FOOT TOAD

SCAPHIOPUS HOLBROOKII



SPADE FOOT TOAD

SCAPHIOPUS HOLBROOKII



FOWLERS TOAD

ANAXYRUS FOWLERI



FOWLERS TOAD

ANAXYRUS FOWLERI



THE FROGS

SPRING PEEPER

PSEUDACRIS CRUCIFER



SPRING PEEPER

PSEUDACRIS CRUCIFER



NJ CHORUS FROG

PSEUDACRIS FERIARUM



NJ CHORUS FROG

PSEUDACRIS FERIARUM



SOUTHERN LEOPARD FROG

LITHOBATES SPHENOCEPHALUS



SOUTHERN LEOPARD FROG

LITHOBATES SPHENOCEPHALUS



ATLANTIC COAST LEOPARD FROG

RANA KAUFFELDI



ATLANTIC COAST LEOPARD FROG

RANA KAUFFELDI



PICKEREL FROG

LITHOBATES PALUSTRIS



PICKEREL FROG

LITHOBATES PALUSTRIS



GREEN FROG

LITHOBATES CLAMITANS



GREEN FROG

LITHOBATES CLAMITANS



BULL FROG

LITHOBATES CATESBEIANUS



BULL FROG

LITHOBATES CATESBEIANUS



PINE BARRENS TREE FROG

HYLA ANDERSONII



PINE BARRENS TREE FROG

HYLA ANDERSONII



NORTHERN GRAY (COPE'S) TREEFROG

Hyla versicolor



NORTHERN GRAY (COPE'S) TREEFROG

Hyla versicolor



SOUTHERN GRAY TREEFROG

HYLA CHRYSOSCELIS



SOUTHERN GREY TREEFROG

HYLA CHRYSOSCELIS



CARPENTER FROG

LITHOBATES VIRGATIPES



CARPENTER FROG

LITHOBATES VIRGATIPES



WOOD FROG

LITHOBATES SYLVATICUS



WOOD FROG

LITHOBATES SYLVATICUS



