

Brief introduction to Vermont's herps

Why are herps unique?

Example projects

H.230



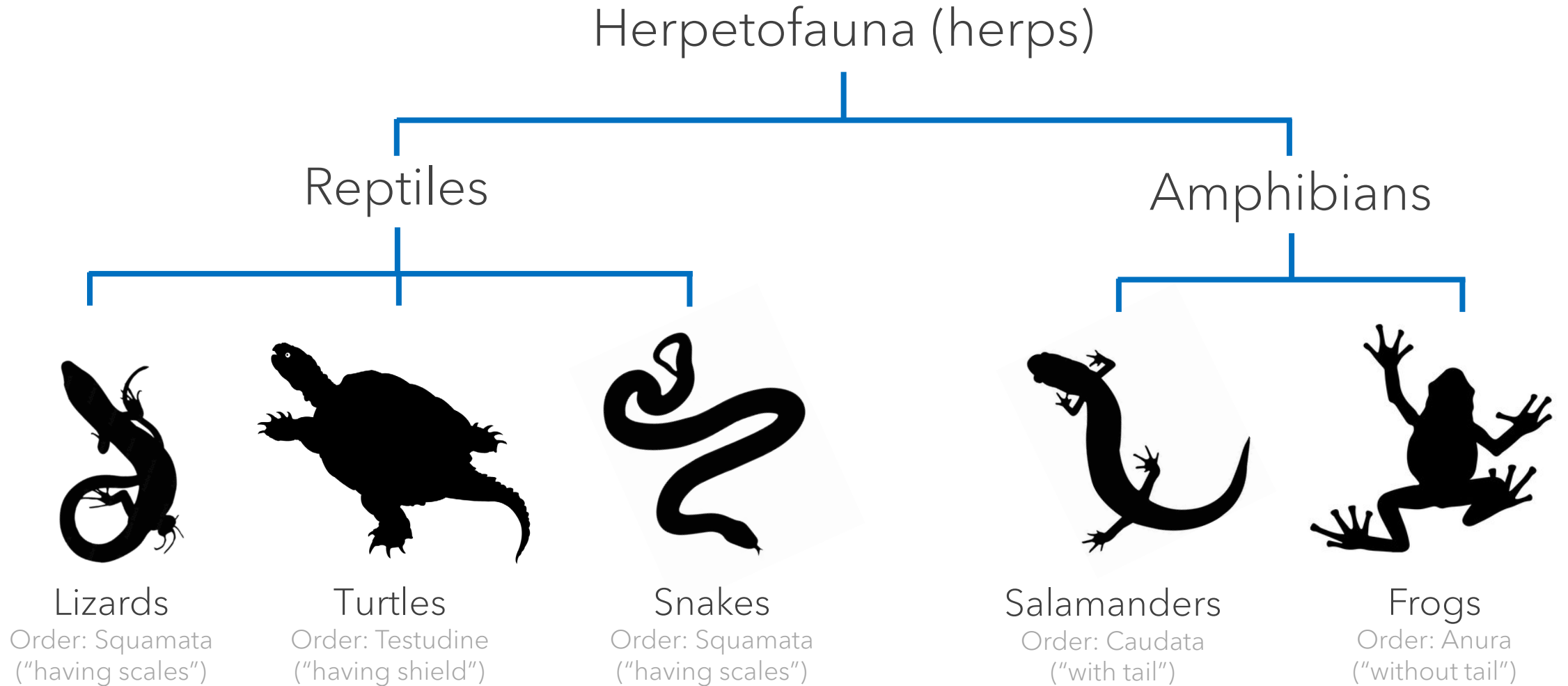
Four-toed Salamander



Presentation Overview

Luke Groff, herpetologist
Vermont Fish and Wildlife

What's a Herp?



Vermont's Native Herps

19 reptiles

3 endangered species

3 threatened species

4 species of special concern

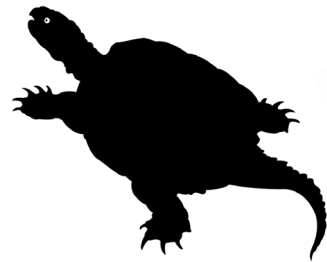
21 amphibians

2 endangered species

4 species of special concern



1 lizard



7 turtles



11 snakes



10 salamanders



11 frogs

Endangered Species



Fowler's Toad



Boreal Chorus Frog



Spotted Turtle



Common Five-lined
Skink



Timber Rattlesnake

Threatened Species



Spiny Softshell



North American Racer



Eastern Ratsnake

Why Are Herps Unique?

Unique characteristics

Ectothermic, adaptations

Delayed sexual maturity

Low reproductive output

Irregular birthing frequencies

High egg, larvae, juvenile mortality

Slow moving, low mobility

Specific habitat requirements

Long lifespans

Threats ...

Potential Consequences

Small populations

Age and sex-skewed populations

High mortality from roads, agriculture

Patchy distributions

Limited population exchange

Population declines and extirpation ...

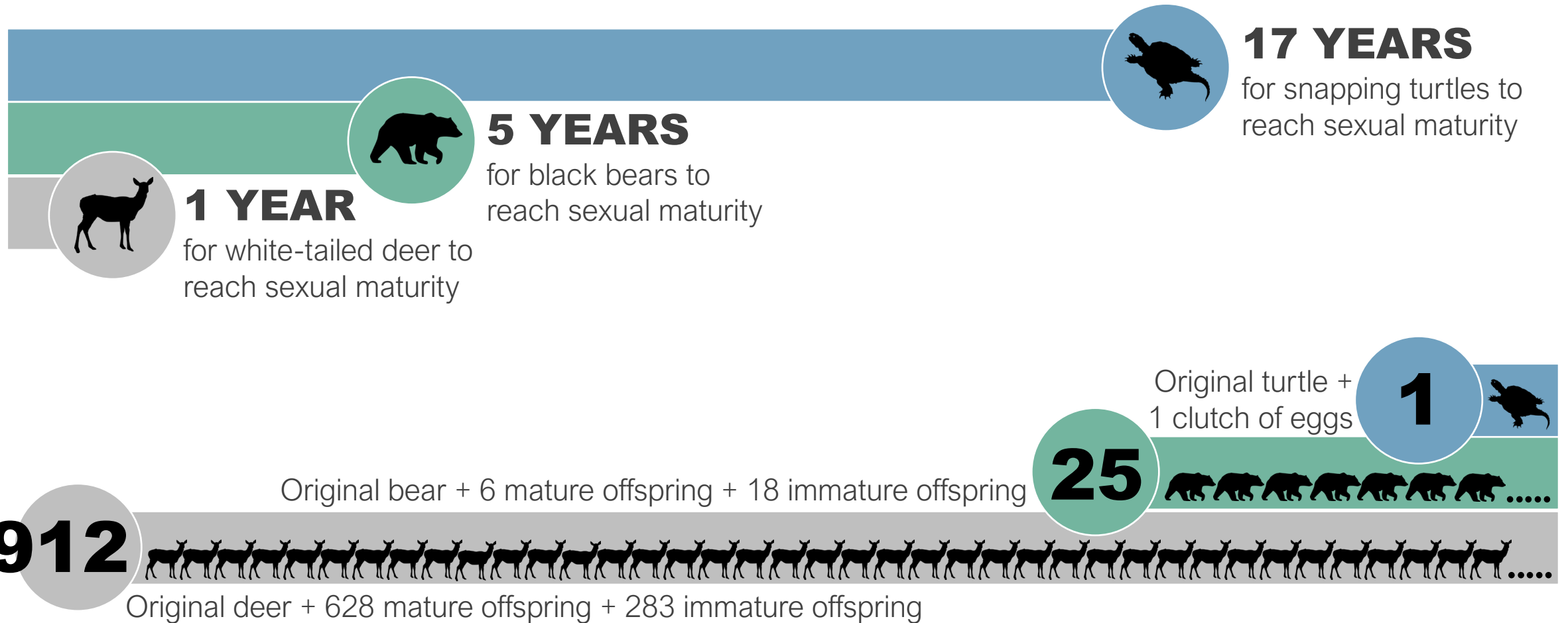


Smooth Greensnake

Comparison of Reproductive Potential



Comparison of Reproductive Potential

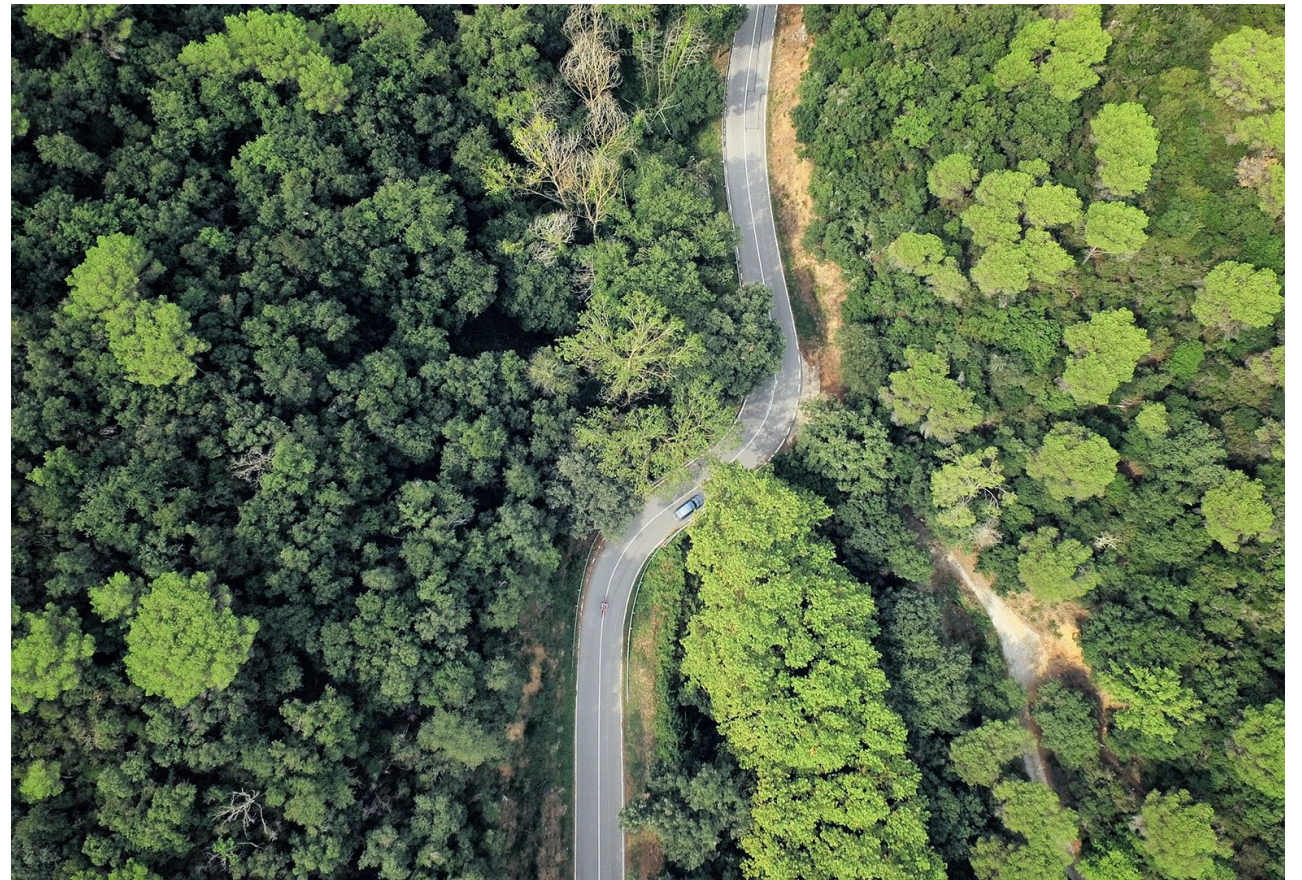


Population-level Threats

Habitat loss, fragmentation
Vehicles, ag. equipment
Predation
Poor water quality
Diseases
Illegal collection
Invasive species
Persecution
Climate change ...



American Toad



Illegal Collection



CCITT
COLLABORATIVE TO COMBAT
THE ILLEGAL TRADE IN TURTLES



Mission: advance efforts to better understand, prevent, and eliminate the illegal collection and trade of North America's native turtles



May 2022

North Carolina: 722 eastern box turtles, 122 spotted turtles.



October 2021

Florida: 3500 turtles including three-striped mud turtles and Florida box turtles.



September 2021

Kentucky: 915 eastern box turtles.



May 2021

Multiple States: 134 Florida box turtles, 178 eastern box turtles, 127 wood turtles, 220 spotted turtles, 77 diamondback terrapins, etc.



December 2020

Georgia: 5952 loggerhead musk turtles, 743 common musk turtles, etc.



December 2020

Multiple States: 1500 turtles including eastern box turtles, Florida box turtles, spotted turtles, wood turtles.



January 2020

Oklahoma: 1000 eastern box turtles.



August 2019

Florida: 4000 turtles including Florida box turtles, eastern box turtles, spotted turtles, diamondback terrapins, and others.




July 2018

New Jersey: 3500 diamondback terrapins.

Fear & Persecution



Don't Miss The **BIG**



**SNAKE HUNT
and
BAR-B-QUE**

At Chadwick, Missouri
Sat. July 26, 1969

Look!

\$2500 FOR FIRST LIVE RATTLESNAKE OVER FOUR FEET	\$1000 FOR LARGEST LIVE COPPERHEAD OF THE HUNT	\$500 FOR MOST LIVE POISONOUS SNAKES OF THE HUNT
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Judging At 9:00 P. M.

Entertainment
By Local Talent Throughout The Entire Evening

ALL PROCEEDS FOR CHADWICK CEMETERY, INC. MEAL TICKETS MAY BE PURCHASED IN ADVANCE OR AT BARBECUE NOT RESPONSIBLE FOR SNAKEBITE OR ACCIDENT

Example Projects & Collaborations

Amphibian mortality event response
North American Racer surveys, habitat management
Mudpuppy translocation, movements, survival
Smooth Greensnake population assessments

Spiny Softshell nest protection

Spotted Turtle population assessments, movements, habitat u
Timber Rattlesnake population assessment, threat monitoring
Wood Turtle post-flooding relocation movements
Wood Turtle population assessments



Eastern Musk Turtle, Spiny Softshell research (University of Vermont)
Eastern Ratsnake movements, home range, denning (Cindy Sprague)
Distribution data (VT Reptile and Amphibian Atlas)
Spiny Softshell headstarting (ECHO, Leahy Center for Lake Champlain)
Spotted Turtle distribution (UVM, Orianna Society, Smithsonian Institute, USFWS)
Timber Rattlesnake habitat protection, management (The Nature Conservancy)
Vernal Pool Atlas (VT Center for Ecostudies)
Wildlife ecopassages (VT Agency of Transportation)

Spiny Softshell Nest Protection

Goals | Actions

Protect nests
Monitor annual reproduction
Conserve, improve nesting habitat

Clear nesting beaches
Install wire mesh panels
Install multiple layers of exclusion fencing
Count nests and hatchlings
Headstart a subset of hatchlings



Spiny Softshell Nest Protection

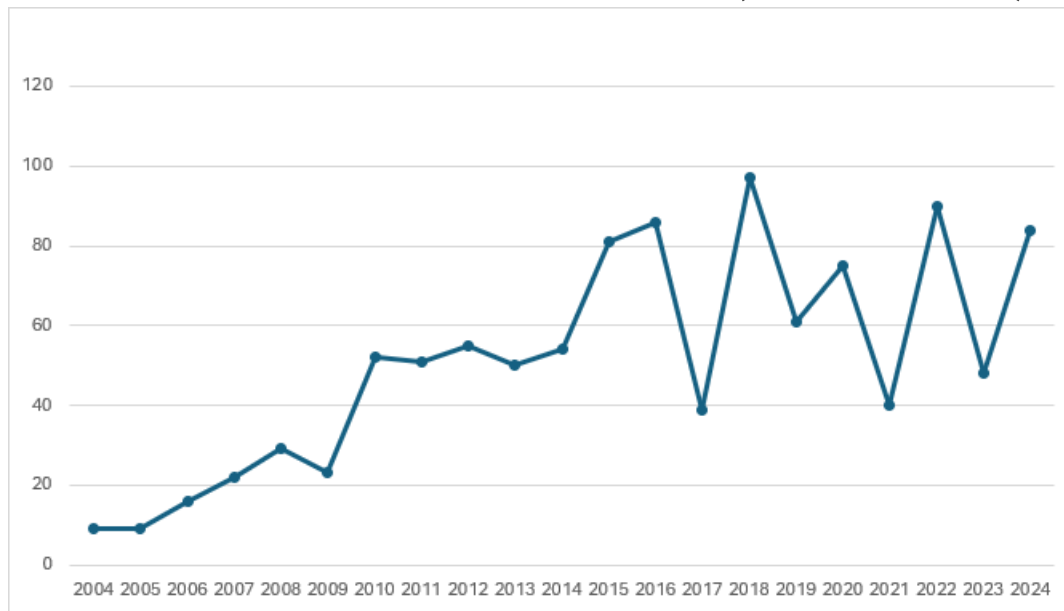


Spiny Softshell Nest Protection

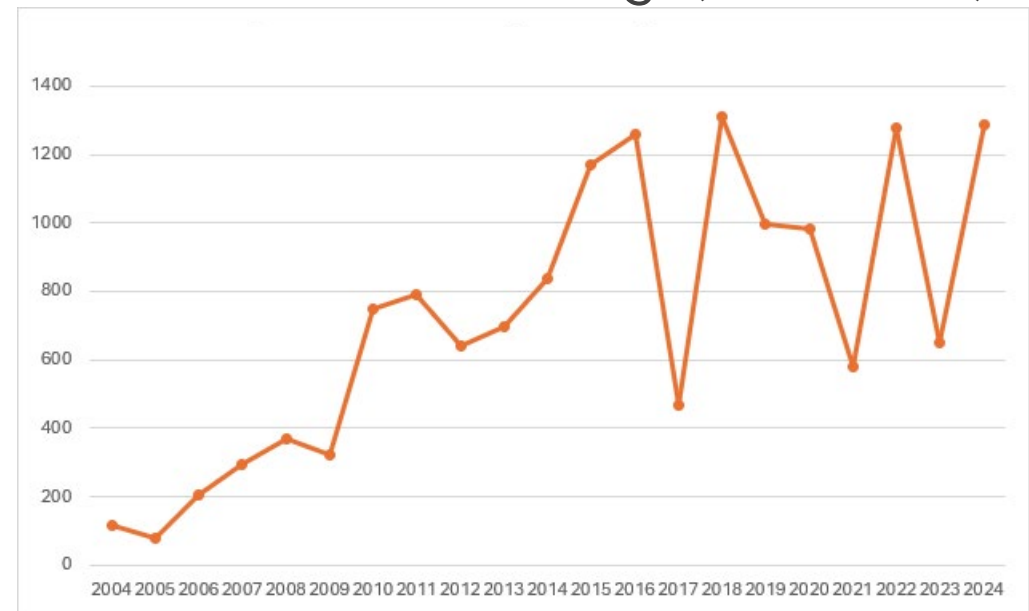
2022-2024 Nests
228 (54%) successful
203 (48%) predated

2022-2024 Hatchlings
419 nests examined
3,195 hatchlings produced

Number of successful nests (2004-2024)



Number of live hatchlings (2004-2024)



Spotted Turtle Distribution

Goals

Find new populations
Better understand species' distribution

Partners

University of Vermont
The Orianna Society
USGS Vermont Cooperative Fish and
Wildlife Research Unit
Smithsonian Conservation Biology
Institute's Center for Conservation
Genomics
US Fish and Wildlife Service's Fish and
Wildlife Partners Program

Anila Kalonia
UVM



Dr. Brittany Mosher
UVM



Kiley Briggs
Orianna Society



Spotted Turtle Distribution

Develop a habitat suitability **model**



Conduct multi-method **surveys**, sampling at prioritized sites



Implement **habitat management** actions

Develop best practices for **eDNA** sampling



GHarris

Spotted Turtle Distribution

Effort | Results

Statewide predictive model

eDNA sampling: 6 sites, 162 samples

Traditional trapping: 18 sites, 826 trap nights

Camera trapping: 8 sites, 3492 trap nights

No new populations found

Developed effective eDNA protocols

Habitat conservation

Camera traps



Luke Groff



Luke Groff

eDNA sampling



Kiley Briggs



Smith-Root

Baited trap



Luke Groff



Samantha Dillion

H.230 Overview

Sec. 6. 10 V.S.A. § 4085 – REPTILES AND AMPHIBIANS

- Allows Commissioner to restrict non-native species that pose threats to native species and ecosystems
- Allows pet owners to keep non-native species that were legally obtained before they became restricted
- Protects non-T&E reptiles and amphibians

Sec. 7. 10 V.S.A. § 4709 – TRANSPORT, IMPORTATION, POSSESSION, AND STOCKING ...

- Clarifies that reptiles and amphibians are among the species covered by existing transport, importation, and possession restrictions

Sec. 8. 10 V.S.A. § 5403 – PROTECTION OF ENDANGERED AND THREATENED SPECIES

Sec. 9. 10 V.S.A. § 5408 – AUTHORIZED TAKINGS; INCIDENTAL TAKINGS; ...

Sec. 10. 10 V.S.A. § 5410 – LOCATION CONFIDENTIAL

- Extends T&E species protections to include interstate importation and export and intrastate sale, transport, shipping, delivery, etc.
- Exempts Secretary from disclosing locations of select T&E species during public input processes

Sec. 6. 10 V.S.A. § 4085

Allows Commissioner to restrict non-native species that pose threats to native species and ecosystems
Allows pet owners to keep non-native species that were legally obtained before they became restricted

Currently

- Pond Sliders are allowed to be imported, kept, sold, possessed, etc., but ...
- Released Pond Sliders spread diseases and outcompete native turtles for limited resources
- VT Reptile and Amphibian Atlas has received 22 reports from 16 towns since 2000
- No known established populations in VT (yet)

H.230 would allow the Commissioner to...

- Restrict non-native species that pose threats to native species and ecosystems
- Allow pet owners to keep non-native species that were legally obtained before they became restricted

One of the "World's 100 Worst Invasive Alien Species"



Pond Slider

Sec. 6. 10 V.S.A. § 4085

Protects non-T&E reptiles and amphibians

Currently

- Only T&E species are afforded legal protection
- Any non-T&E reptile or amphibian may be taken with either a hunting or fishing license
- There are no seasons, limits, reporting requirements, or restrictions on the number of animals that can be taken
- Do people actually use reptiles and amphibians for target practice? [Yes!](#)

H.230 would allow the Commissioner to...

- Prohibit take and possession of certain reptile and amphibian species, while regulating the take of other species
- Establish guardrails on the harvest of select species
- Require reporting of harvested animals



Snapping Turtle

Sec. 7. 10 V.S.A. § 4709

Clarifies that reptiles and amphibians are among the species covered by existing transport, importation, and possession restrictions

Currently

- It's not clear whether existing transport, importation, and possession restrictions apply to native reptile and amphibian species

H.230 would make it clear that...

- Native reptiles and amphibians are among the species covered by existing transport, importation, and possession restrictions
- Native reptiles and amphibians are not to be taken, collected, sold, exported, etc. for **commercial** purposes unless authorized
- Native reptiles and amphibians are not to be taken, collected, sold, exported, etc. for **personal use** unless authorized



Wood Frog

Sec. 8. 10 V.S.A. § 5403

Extends T&E species protections to include interstate importation and export and intrastate sale, transport, shipping, delivery, etc.

Currently

- Only the take, possession, and transport of T&E wildlife and wild plants is restricted

H.230 would make it clear that...

- T&E species cannot be imported into VT or exported out of VT
- T&E species cannot be sold, delivered, transported, shipped, etc. within VT



Spotted Salamander

Sec. 9. 10 V.S.A. § 5408

Sec. 10. 10 V.S.A. § 5410

Exempts Secretary from disclosing locations of select T&E species during public input processes

Currently

- The names and locations of T&E species are disclosed during public input processes
- Illegal collectors use publicly available information to identify population locations

H.230 would allow the Secretary to...

- Avoid disclosing the names and locations of certain T&E species during public input processes
 - Pertains to species that are vulnerable to illegal collection, commercial trade, human-caused mortality, and habitat destruction



Wood Turtle