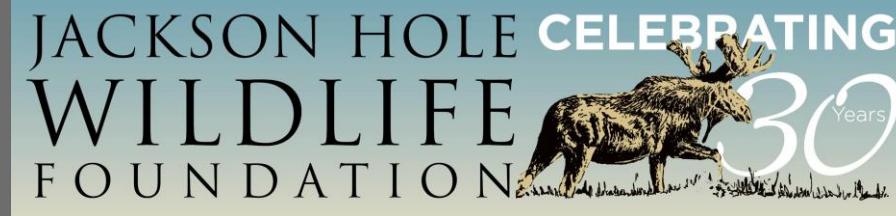


# Reptiles of the Greater Yellowstone Area in Wyoming

11 May 2023



**Charles R. Peterson**

Herpetology Laboratory

Department of Biological Sciences  
Idaho Museum of Natural History

Idaho State University

[petechar@isu.edu](mailto:petechar@isu.edu)

<http://www.isu.edu/~petechar>



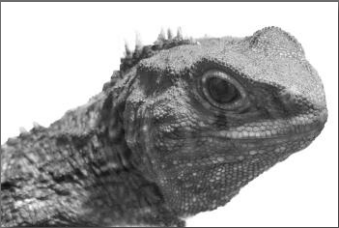
# Outline

- What are reptiles?  
How diverse are they?
- Why are they important?
- Identification, Distribution, and Habitat  
by Species
- Natural History
- How are they doing?  
What can be done to conserve and  
restore their populations?
- Where can you find more information on them?





# The Diversity of Reptiles



<b>Taxon</b>	<b>World*</b>	<b>U.S.</b>	<b>Idaho</b>
Turtles	360	48	2
Crocodylians	27	2	0
Tuatara	1	0	0
Lizards	7144	115	11
Snakes	3956	115	12
Total	11488	280	25
		2.4%	0.2%

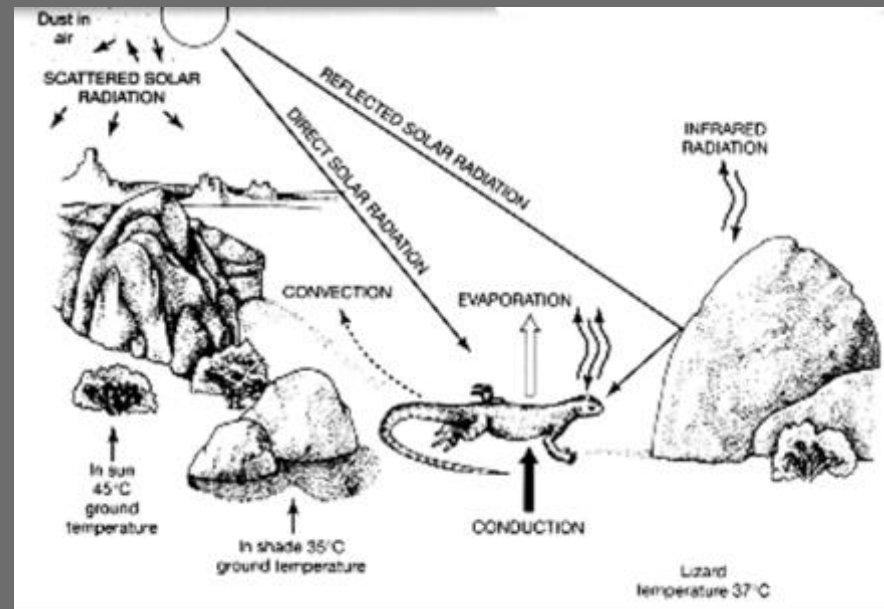


Sources: [\\*Reptile Database](#)

Pough et al. 2016: ~10,000 species

# Characteristics of Reptiles

- Dry, scaly skin
- Breathe via lungs
- Amniotic eggs
- Direct development
- Ectothermic

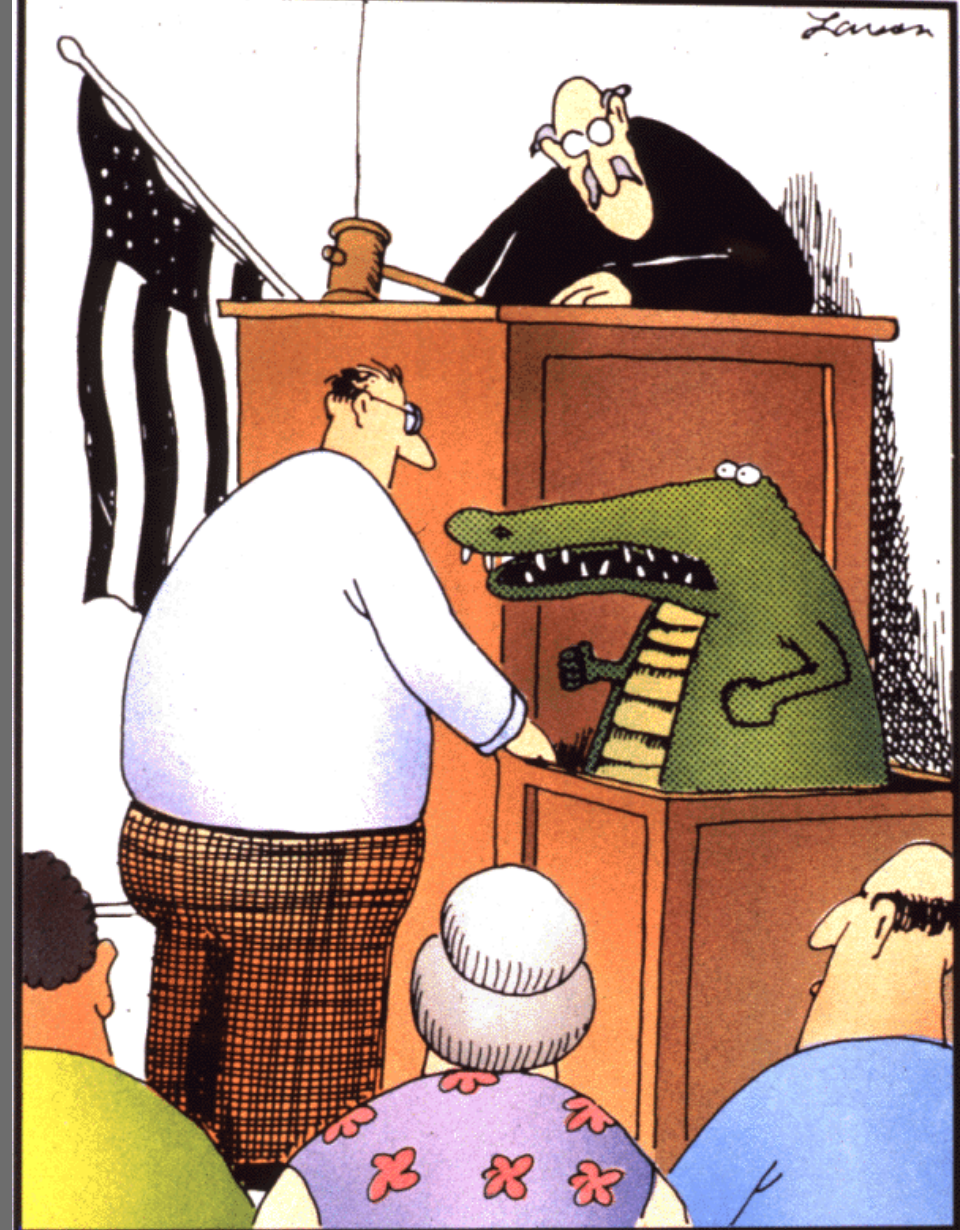




# Ectothermic

---

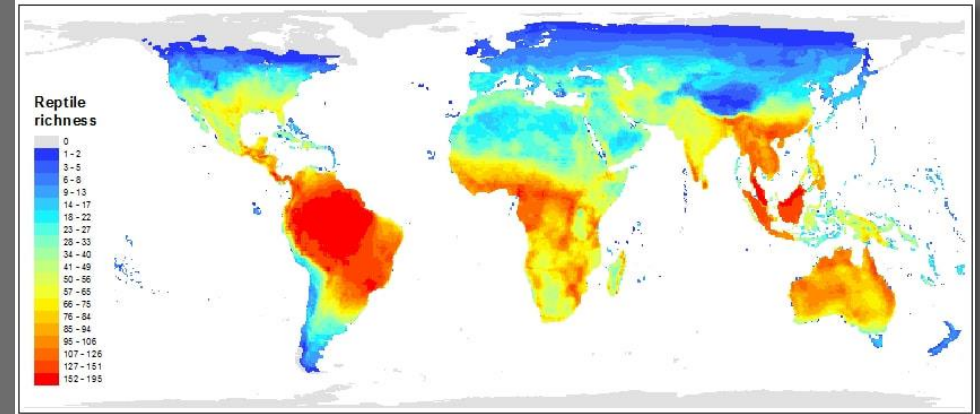
- Closely coupled to environment
- low energetic requirements
- low visibility
- high conversion efficiency
- high biomass




"Well, of COURSE I did it in cold blood, you idiot! ... I'm a reptile!"

# Importance of Reptiles

- Biodiversity
- Functional Roles in Ecosystems
- Bioindicators
- Economic Value
- Model Systems for Research
- Biomedical Applications
- Snake Bite
- Cultural Significance
- Aesthetic Appreciation







## Greater Yellowstone Reptile iNaturalist Collector Project

### About

The purpose of this project is to document reptile biodiversity in the Greater Yellowstone Area.

[Read More >](#) [Your Membership](#)

[Members](#) 1

[Edit Project](#) [Project Journal](#)

Overview

**834**  
OBSERVATIONS

**14**  
SPECIES

**288**  
IDENTIFIERS

**557**  
OBSERVERS

**Stats**

### Most Observations

<b>1st</b> makeyourownway	20
calfirecap	17
jacob1452	11
mountainmanmiller	10
looselucy47	9
petechar1	9

[View All](#) [View Yours](#)

### Most Species

<b>1st</b> milletman	5
gagefuller	5
hydapse	4
kathylich	4
petechar1	4
grsbigsy	3

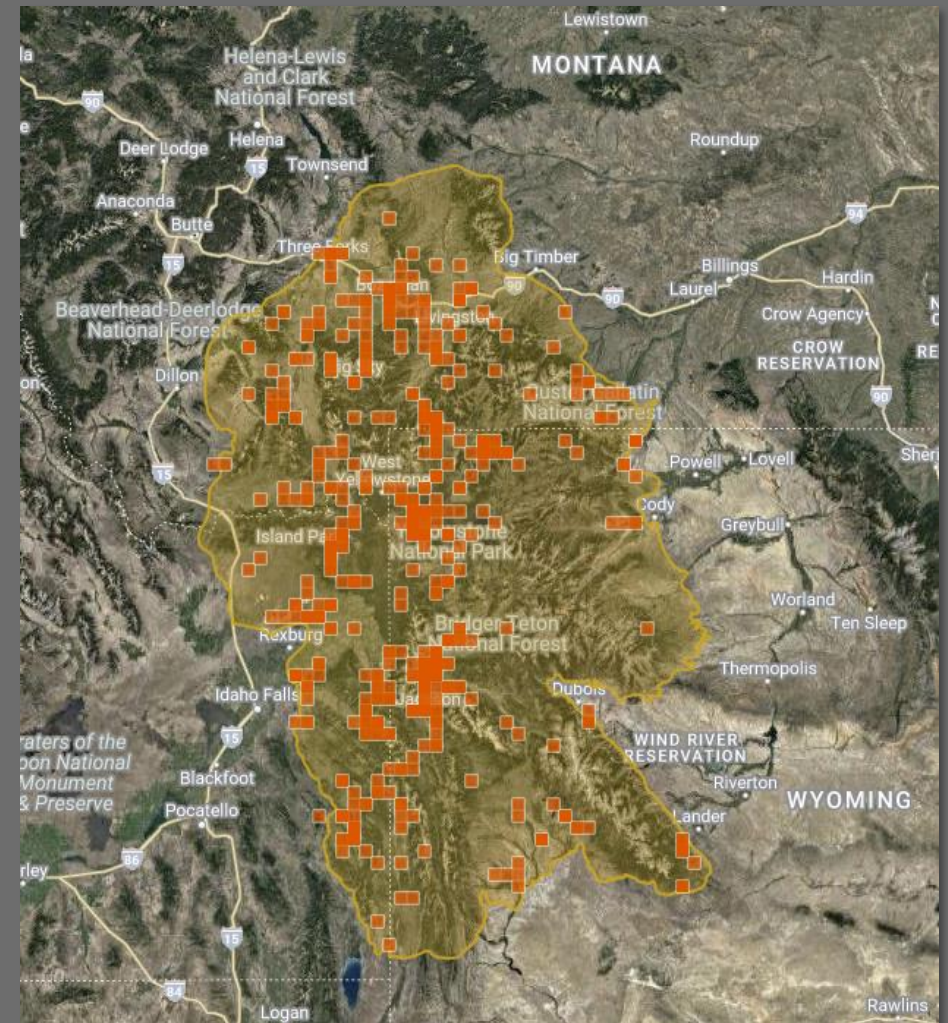
[View All](#) [View Yours](#)

### Most Observed Species

Western Terrestrial Garter Snake	561
Gopher Snake	92
Northern Rubber Boa	39
Prairie Rattlesnake	31
Common Sagebrush Lizard	30
Common Garter Snake	26

[View All](#) [View Yours](#)

Map of Observations





# Reptiles of Greater Yellowstone Area

## Family Emydidae

Western Painted Turtle (*Chrysemys picta*)

## Family Phrynosomatidae

Greater Short-horned Lizard (*Phrynosoma hernandesi*)

Pigmy Short-horned Lizard (*Phrynosoma douglassii*)

Common Sagebrush Lizard (*Sceloporus graciosus*)

## Family Scincidae

Western Skink (*Plestiodon skiltonianus*)

## Family Boidae

Northern Rubber Boa (*Charina bottae*)

## Family Colubridae

Racer (*Coluber constrictor*)

Gopher (Bull) Snake (*Pituophis catenifer sayi*)

Western Terrestrial Garter Snake (*Thamnophis elegans*)

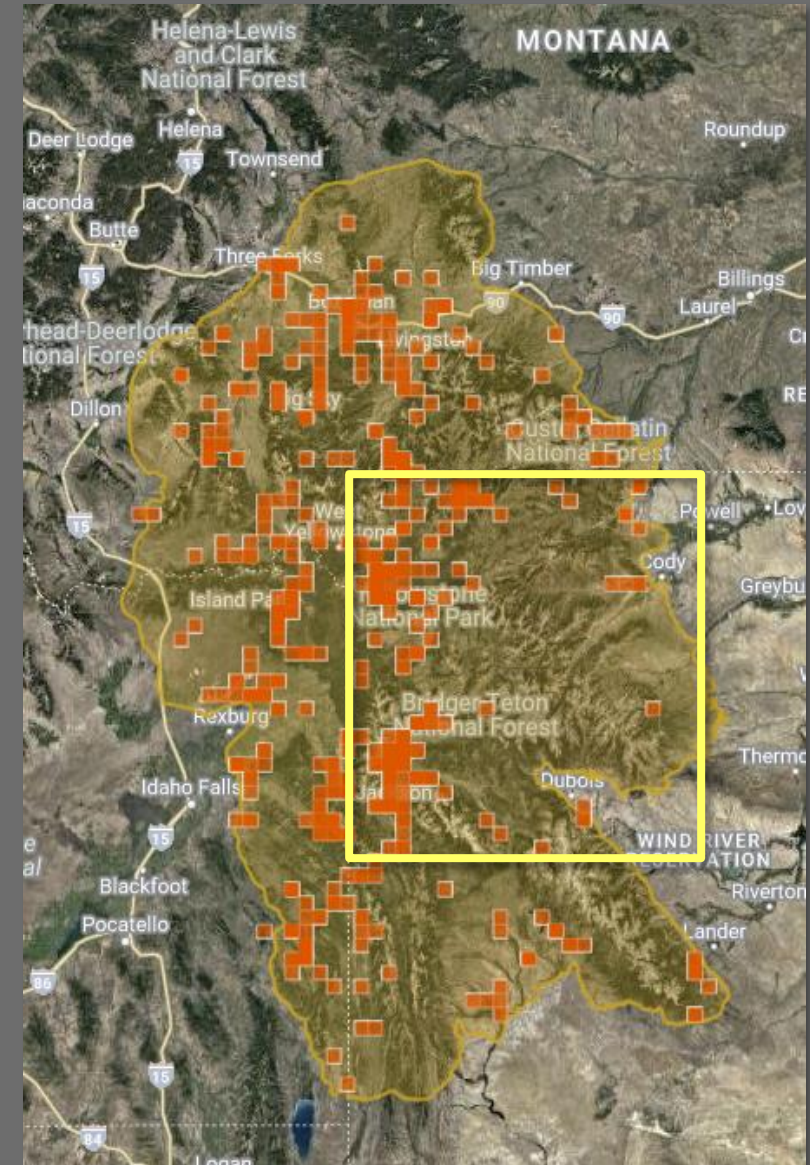
Common Garter Snake (*Thamnophis sirtalis*)

## Family Viperidae

Western (Great Basin) Rattlesnake (*Crotalus oreganus lutosus*)

Prairie Rattlesnake (*Crotalus viridis*)

Greater Yellowstone Reptile iNaturalist Collector Project





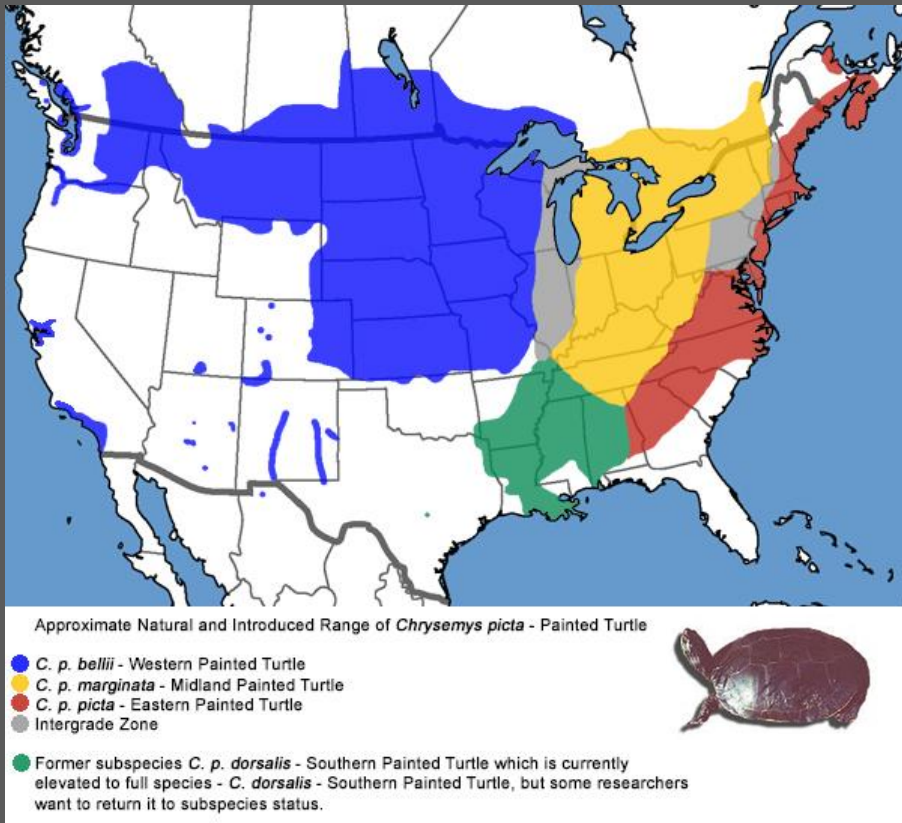
# Painted Turtle

- Olive to black carapace
- Red bridge and plastron
- Webbing between toes
- Yellow and/or red lines on neck and limbs





# Painted Turtle Distribution and Habitat



iNaturalist Observations

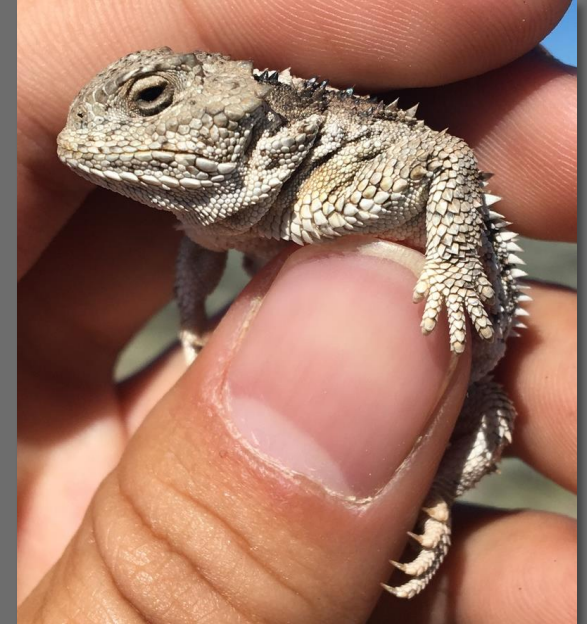


Inhabits mostly marshy ponds and small lakes, but may also be found in slow-moving streams and rivers.



# Greater Short-horned Lizard

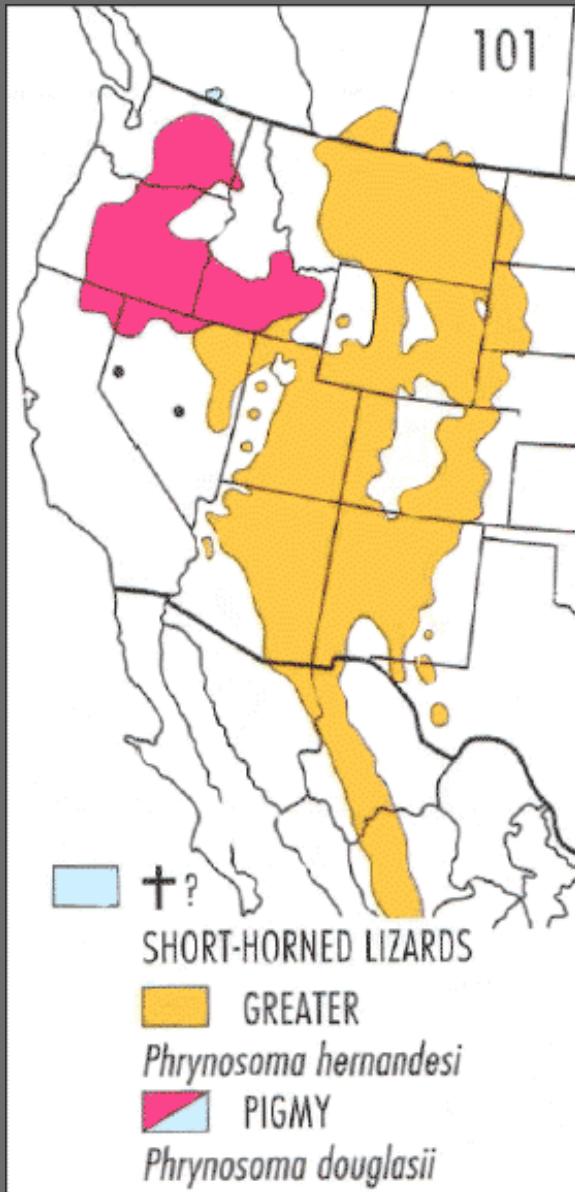
- Total length:  
5.75 inches / 140 mm
- Snout vent length:  
4.25 inches / 110 mm
- Flattened body
- stubby horns project almost horizontally from the rear of the head
- wide, deep notch on the back of the head. separates left and right horns, creating a heart-shaped appearance when viewed from above.



iNaturalist Observation © Kai Victor  
Sublette County, Wyoming



# Greater Short-horned Lizard Distribution and Habitat



iNaturalist Observations



Flaming Gorge, Sweetwater County, Wyoming

- Desert, sagebrush steppe, prairies, and open juniper-pines woodlands
- Usually sandy areas, but sometimes gravelly/stony soils
- Sparse shrub and grass cover, especially near ant hills.



# Common Sagebrush Lizard



Photo by John Cossell, Jr.

- Total length:  
5.9 inches / 150 mm
- Snout vent length:  
2.4 inches / 62 mm
- Striped appearance
- small pointed dorsal scales



Adult, Yellowstone River Trail



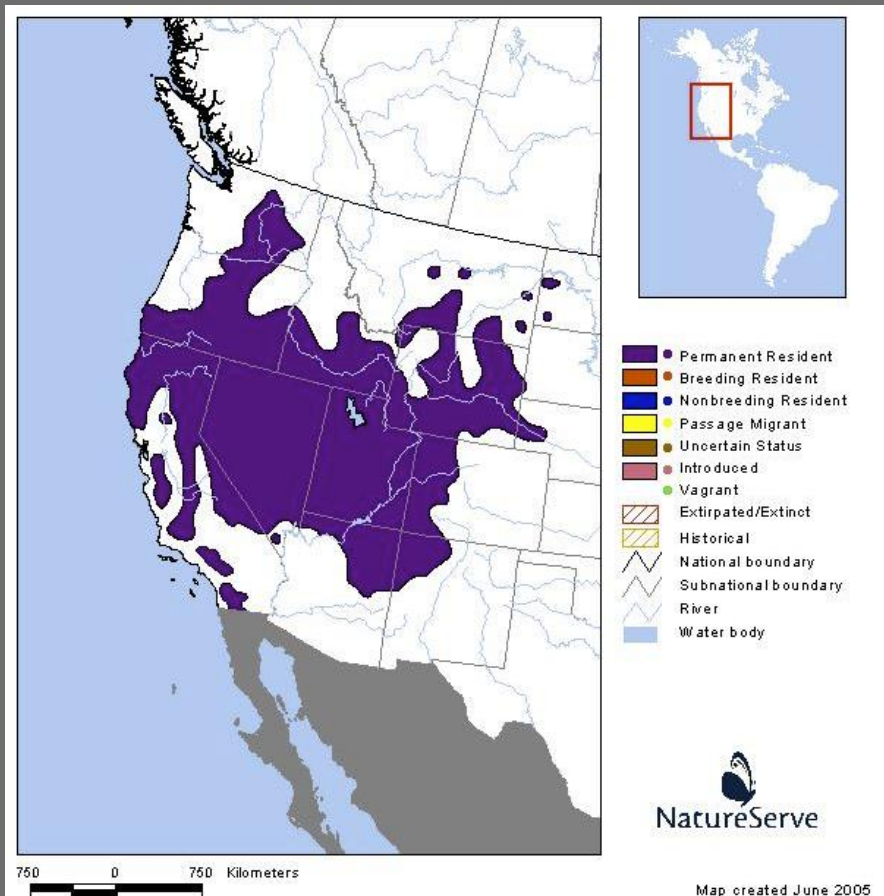
Bill Leonard



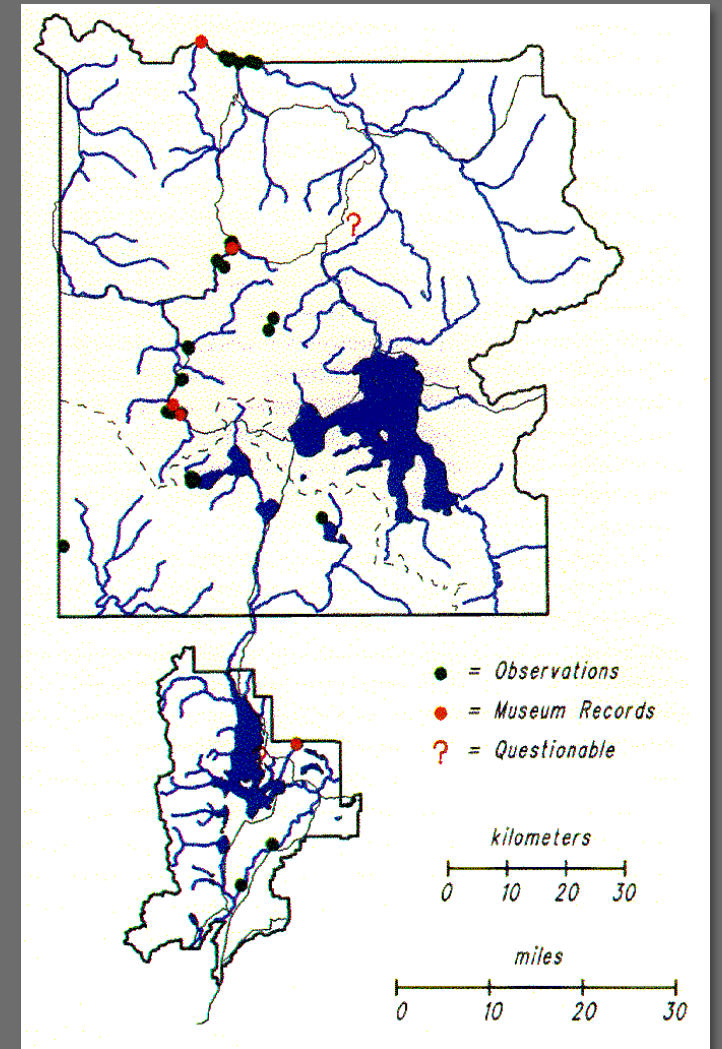
# Common Sagebrush Lizard Distribution



Photo by John Cossel, Jr.



iNaturalist Observations





# Common Sagebrush Lizard Habitat



- Rocky areas
- Forest edge with logs on the ground
- Geothermal areas



Yellowstone River Trail



Norris Geyser Basin



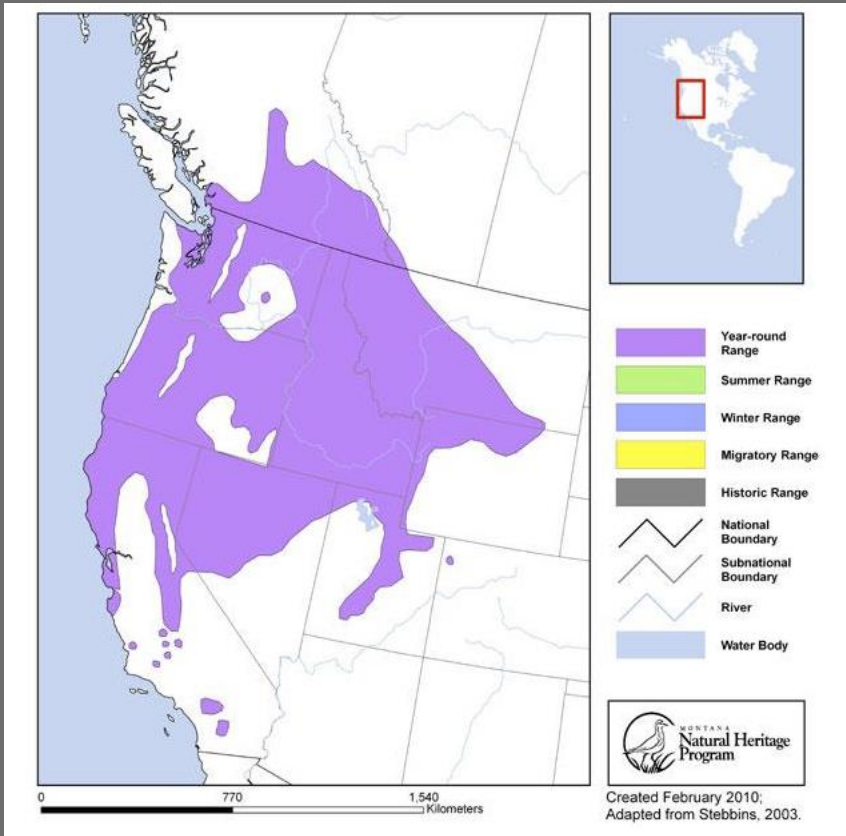
# Northern Rubber Boa

- Medium Size  
Total length:  
17 - 27 inches / 43 - 69 cm
- smooth scales
- short, blunt tail
- males with anal spurs
- light tan to dark brown dorsally
- cream colored ventrally
- small eyes with vertical pupils
- “rubbery” appearance and feel

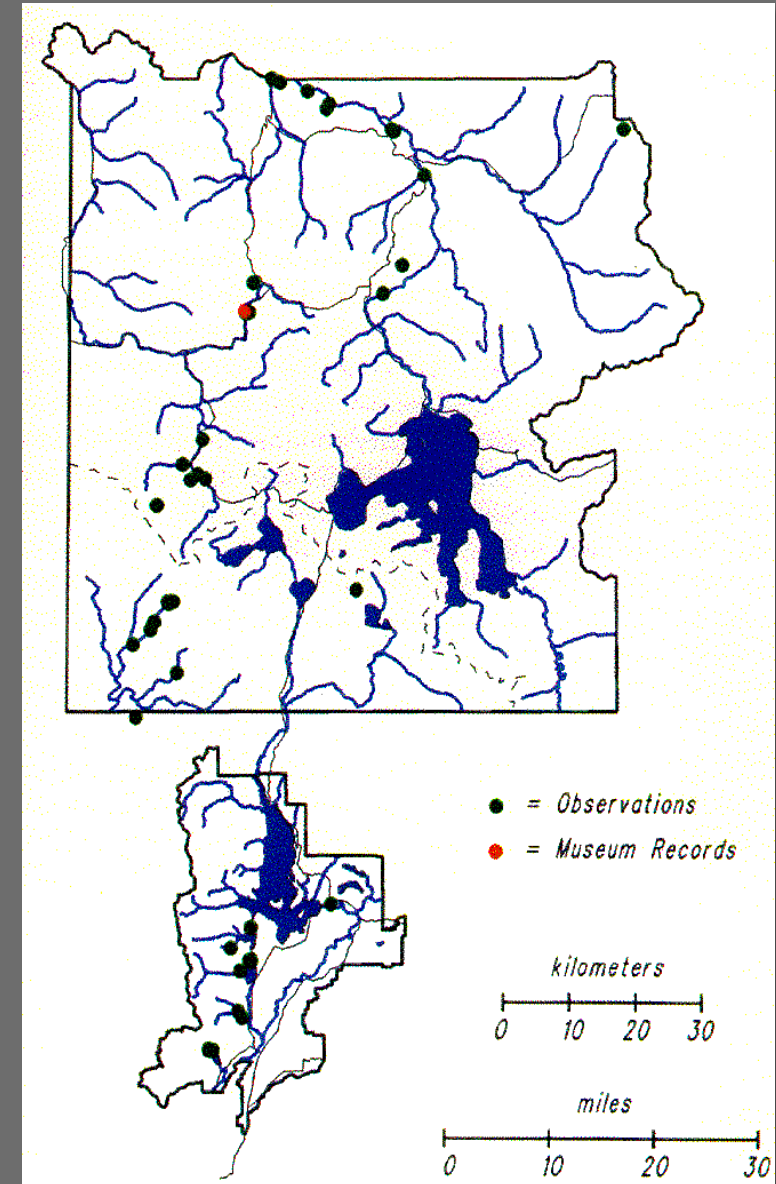




# Northern Rubber Boa Distribution



iNaturalist Observations





# Northern Rubber Boa Habitat



<https://thegoodthebadandtherv.com/2020/10/06/bechler-short-loop-yellowstone/>



<https://www.10adventures.com/hikes/grand-teton/death-canyon-and-phelps-lake-loop-hike/>



Bannock County, Idaho



Michael Dorcas



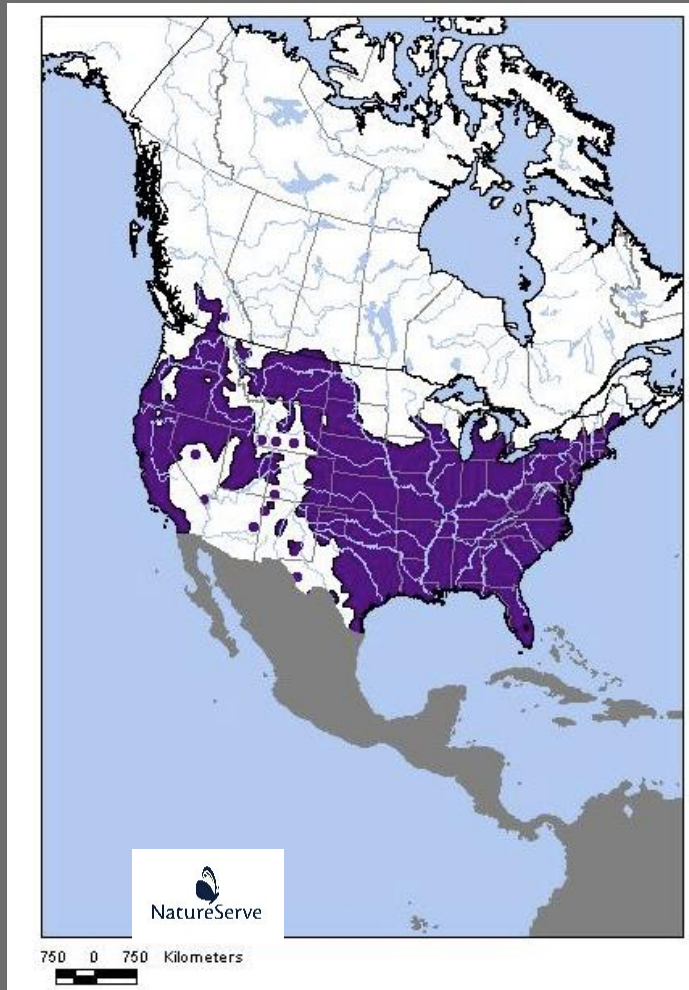
# Racer

- Medium size  
Total length:  
20-48 inches / 51 – 122 cm
- Uniform dorsal color of tan, olive, or grayish brown (adults)
- Blotched juveniles
- Large eyes with round pupils
- Smooth scales





# Racer Distribution and Habitat



iNaturalist Observations



Yellowstone River Trail



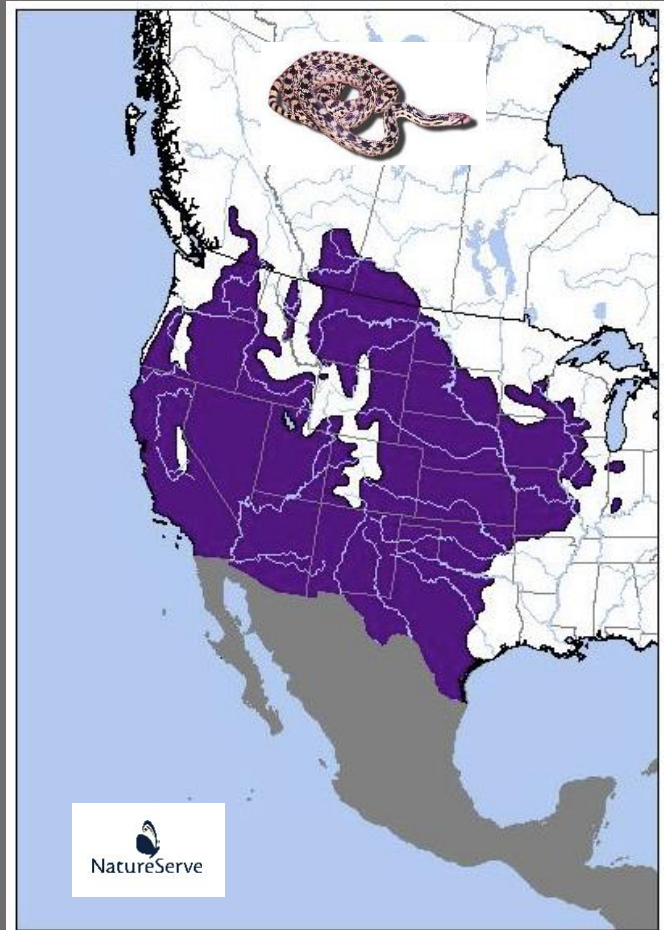
# Gopher Snake

- Large, up to 170 cm (67") in Idaho.
- light colored dorsally (white to beige), with contrasting dark saddles and blotches.
- dark line that extends across the snout and on past each eye.
- eyes with round pupils
- keeled scales

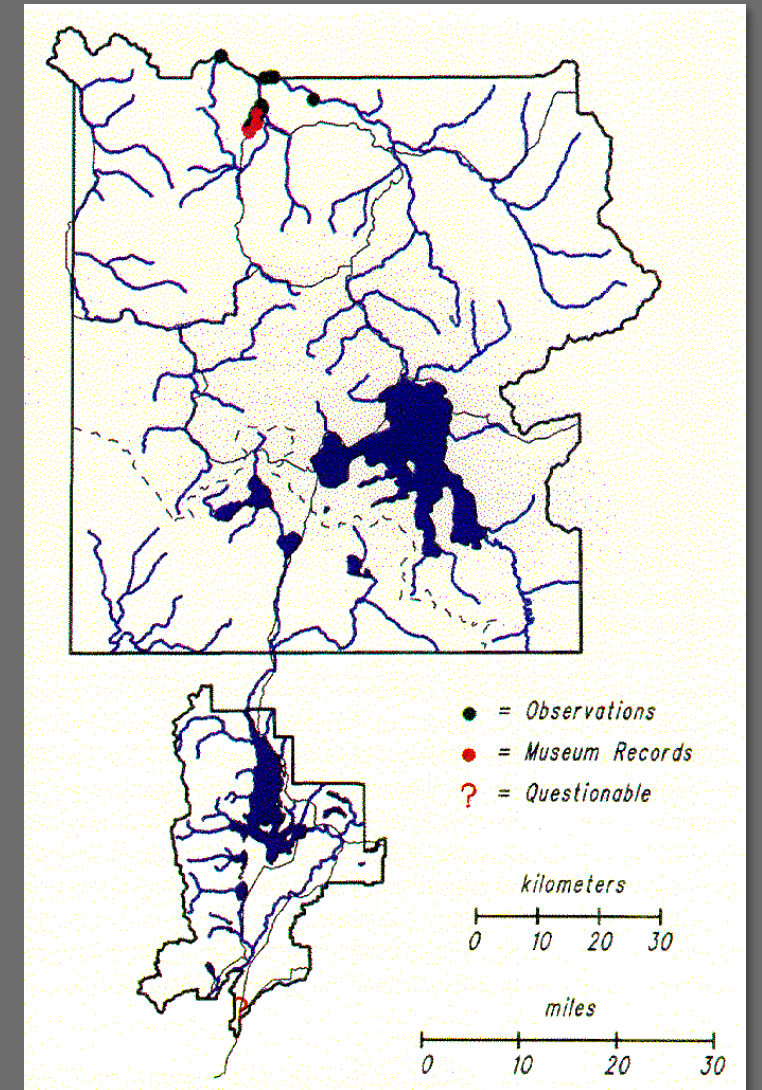




# Gopher Snake Distribution



iNaturalist Observations





# Gopher Snake Habitat



Yellowstone River Trail



Mammoth Hot Springs



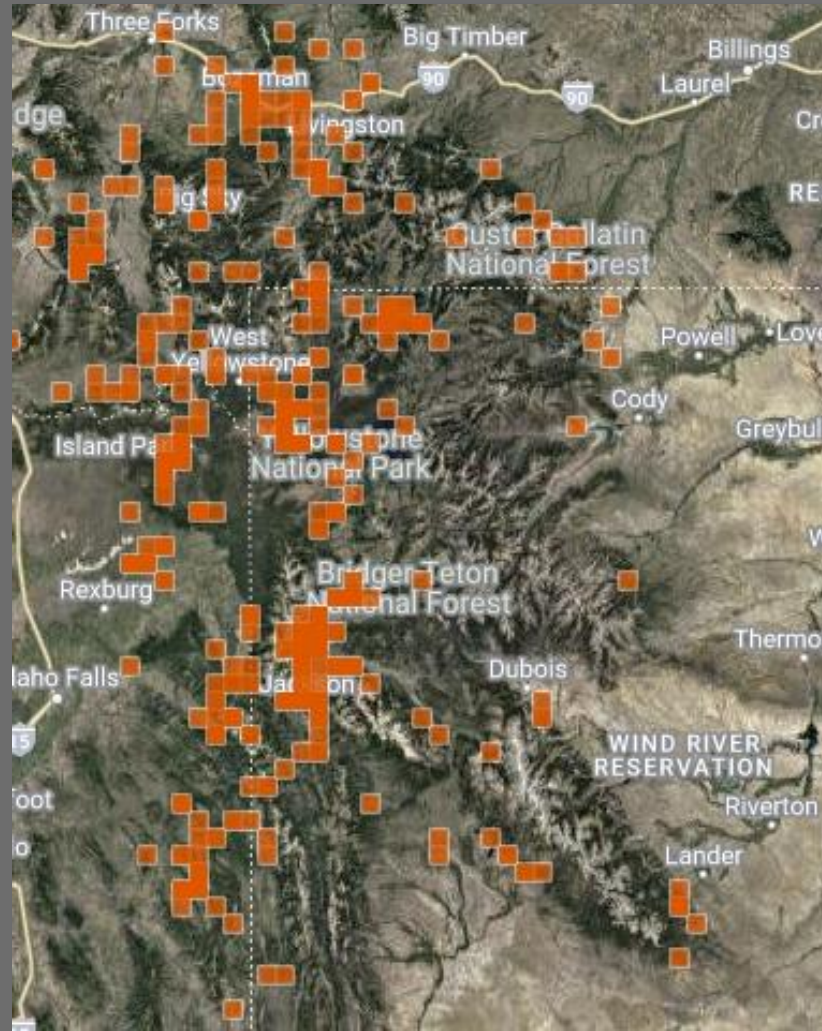
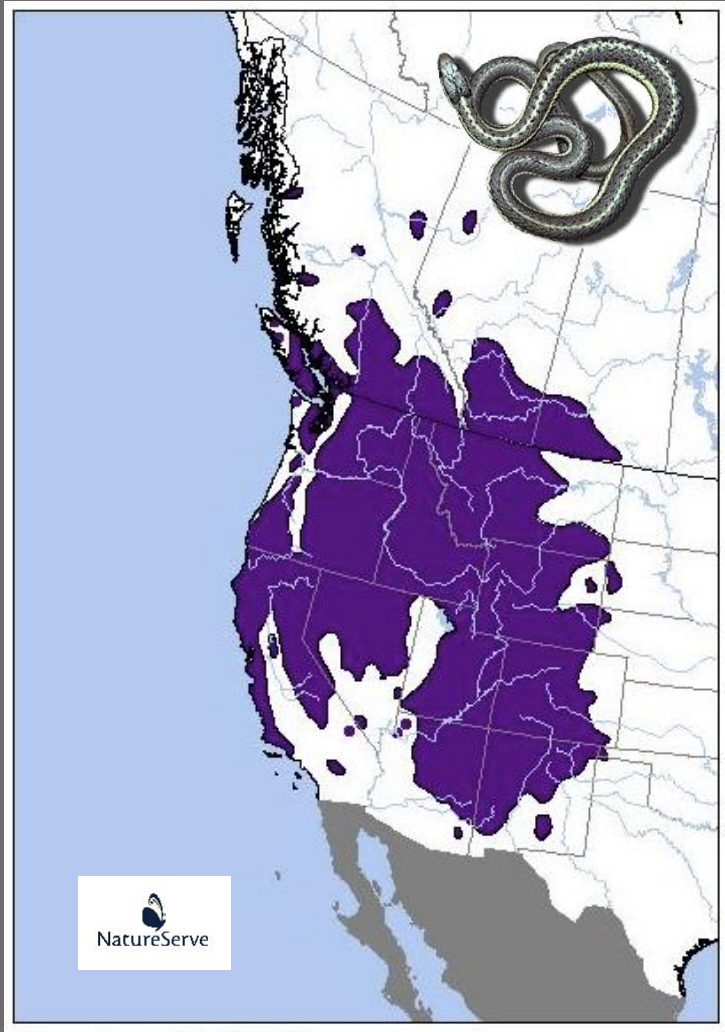
# Terrestrial Garter Snake

- Medium size  
Total length:  
18 - 43 inches / 46 - 109 cm
- Variable ground color
- Usually with light vertebral and lateral stripes
- Dorsal spots invade stripe
- 8 upper labial scales
- Keeled dorsal scales

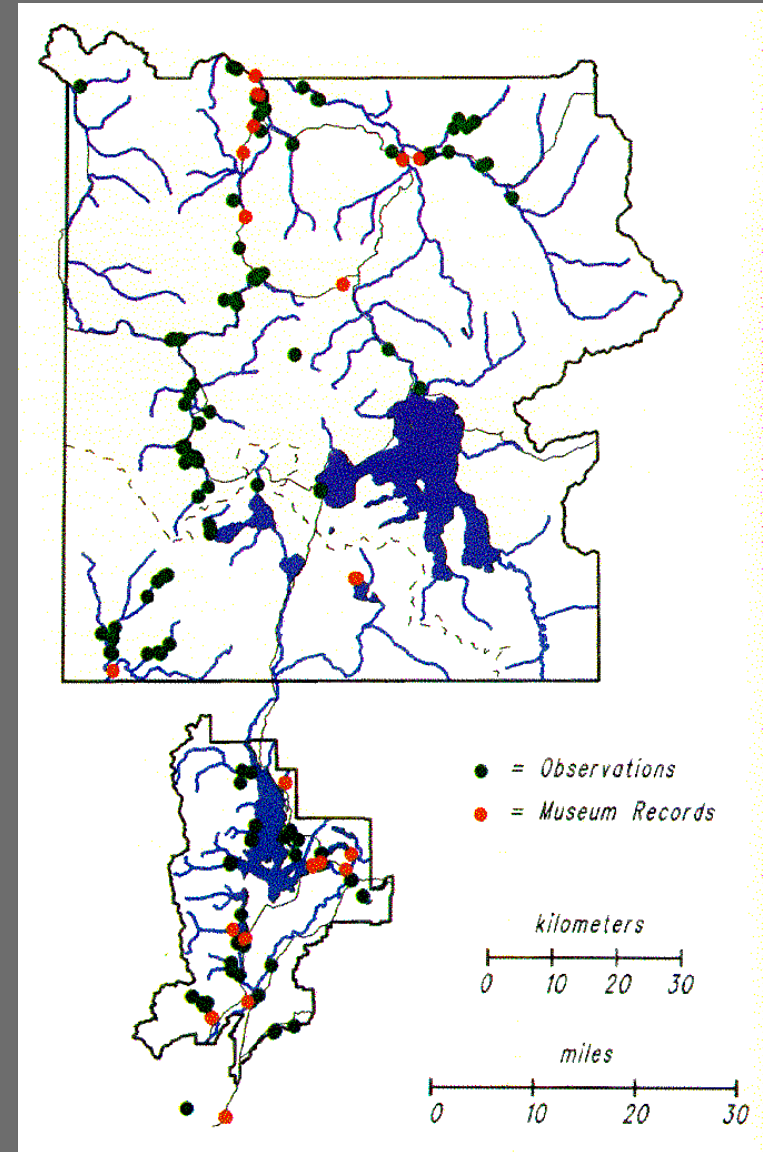




# Terrestrial Garter Snake Distribution



iNaturalist Observations





# Terrestrial Garter Snake Habitat



Targhee National Forest



South Entrance, Yellowstone National Park



# Common Garter Snake

- Medium size  
Total length:  
18 - 36 inches / 46 - 91 cm
- Dark ground color
- Distinct vertebral and lateral stripes
- Often with red spots
- Usually 7 upper labial scales
- Keeled dorsal scales



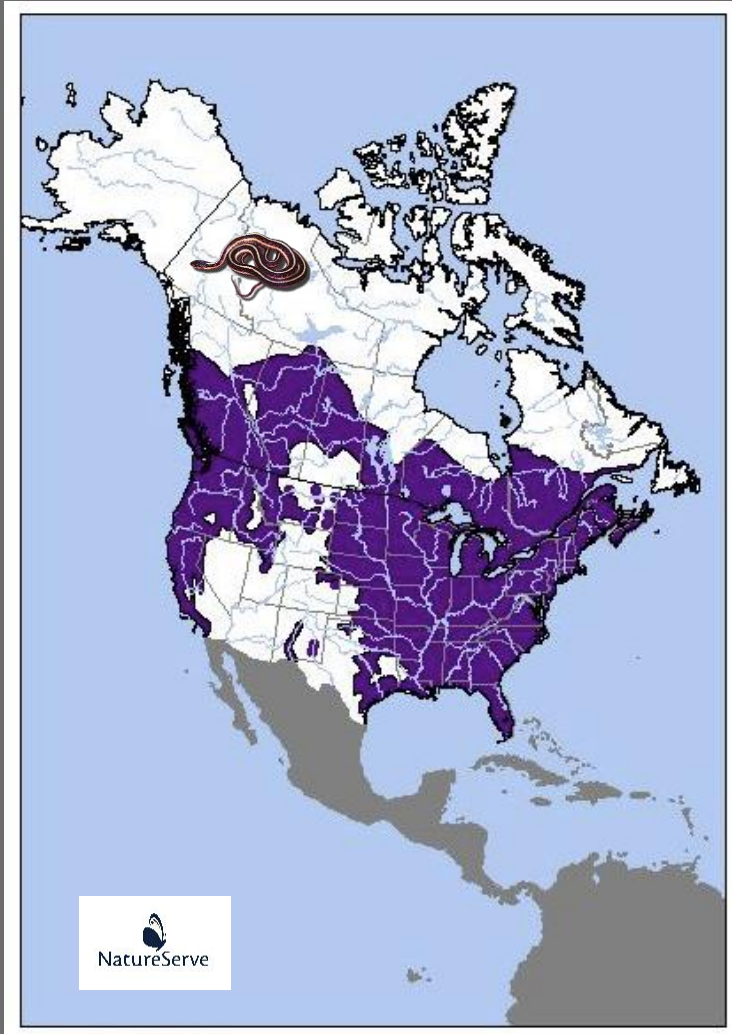
Common



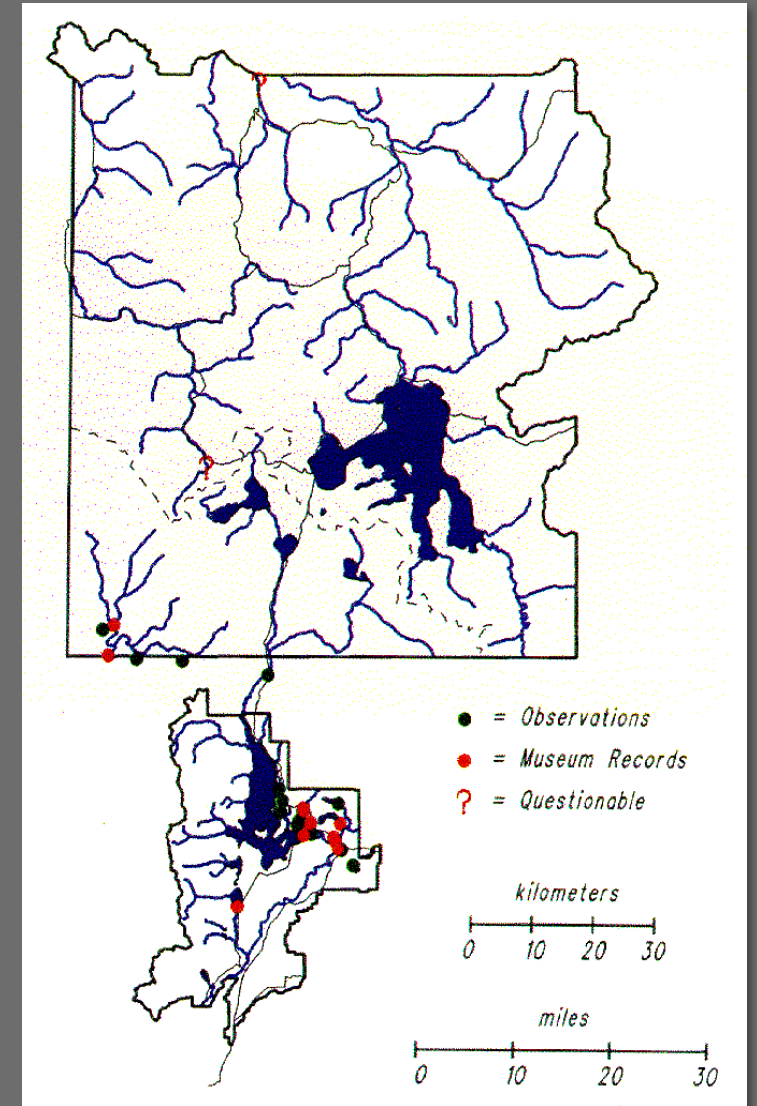
Terrestrial



# Common Garter Snake Distribution



iNaturalist Observations





# Common Garter Snake Habitat





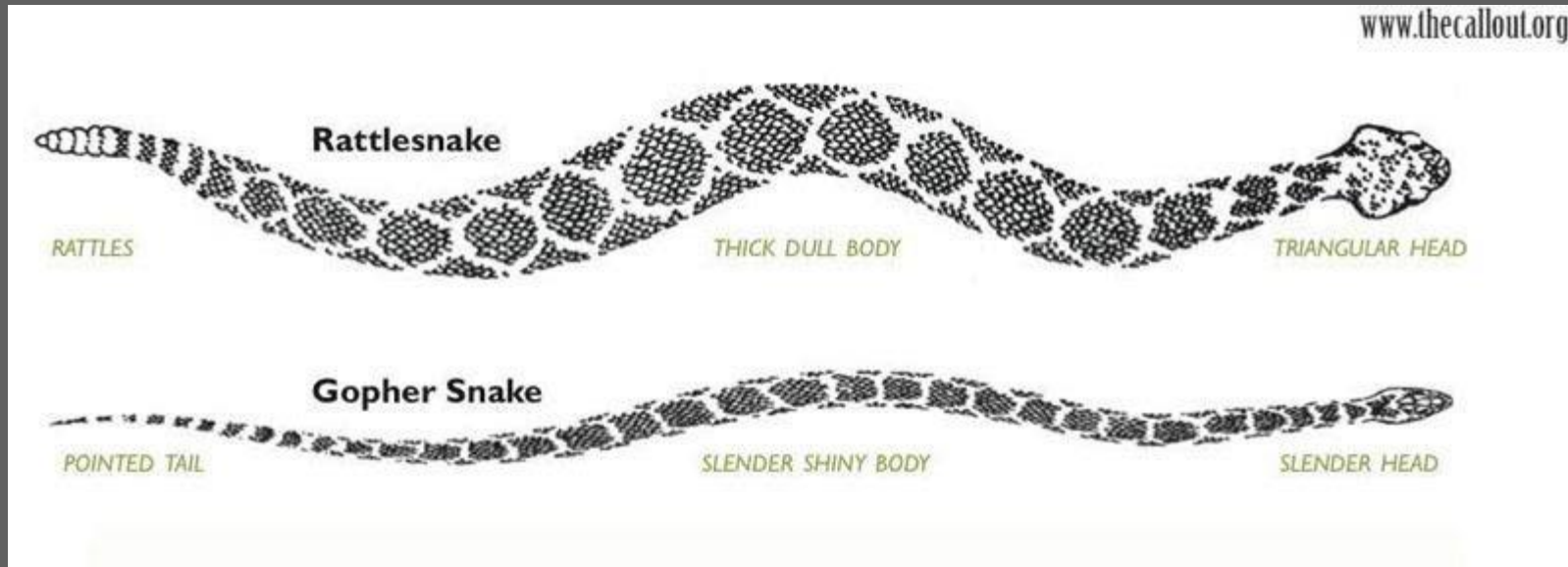
# Prairie Rattlesnake

- Relatively Large size
  - Total length:  
15 - 48 inches / 38 - 120 cm
  - Stout body
- Variable color pattern
- Light ground color, often greenish or yellowish
- Dark blotches usually with light edges
- Keeled dorsal scales
- Triangular head, narrow neck
- Vertical pupils
- Loreal pits
- Rattle



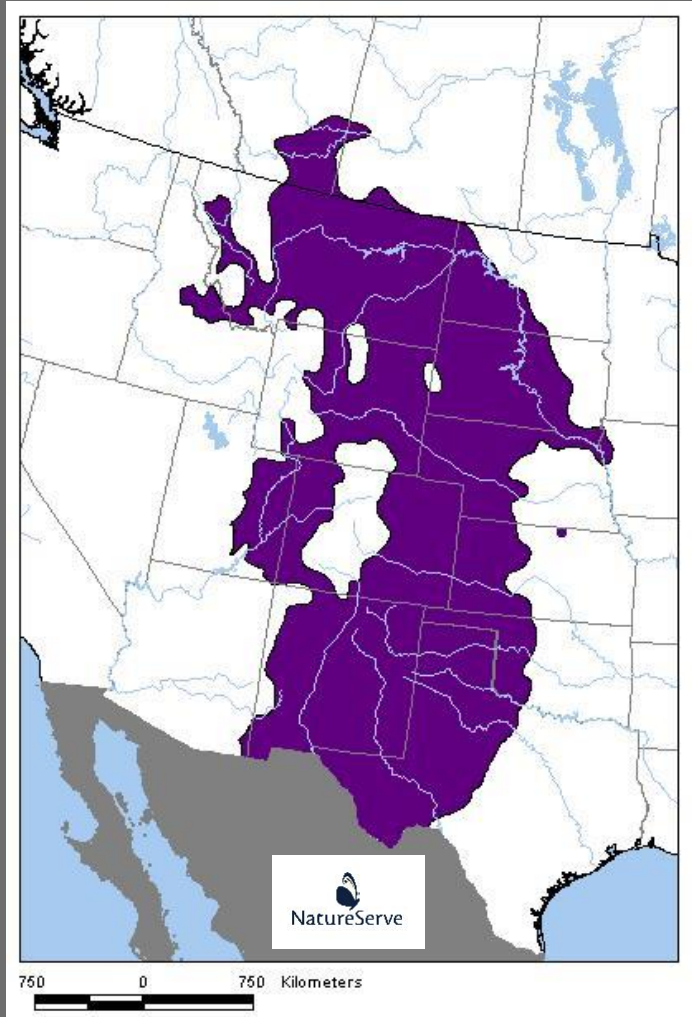


# Rattlesnake vs. Gopher Snake



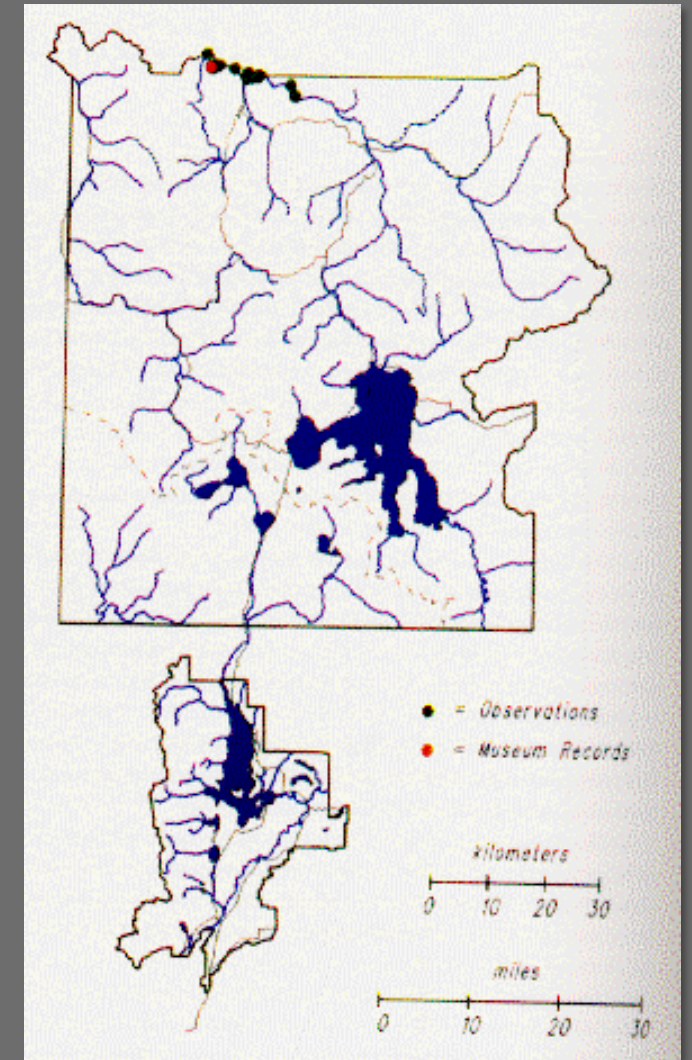


# Prairie Rattlesnake Distribution



iNaturalist

- up to about 6000 ft / 1800 m in elevation in GYA ?





# Prairie Rattlesnake Habitat



- terrestrial
- drier regions with sparse vegetation
  - sagebrush-steppe
  - grasslands
  - juniper and pine woodlands
- rocky areas (cliffs, talus, buttes)
- rodent burrows
- communal den sites



Yellowstone National Park, Montana





# Outline

- What are reptiles?  
How diverse are they?
- Why are they important?
- Identification, Distribution,  
and Habitat by Species
- **Natural History**
- How are they doing?  
What can be done to conserve and  
restore their populations?
- Where can you find more information on them?





# Daily Activity Patterns

- diurnal



- nocturnal



- crepuscular



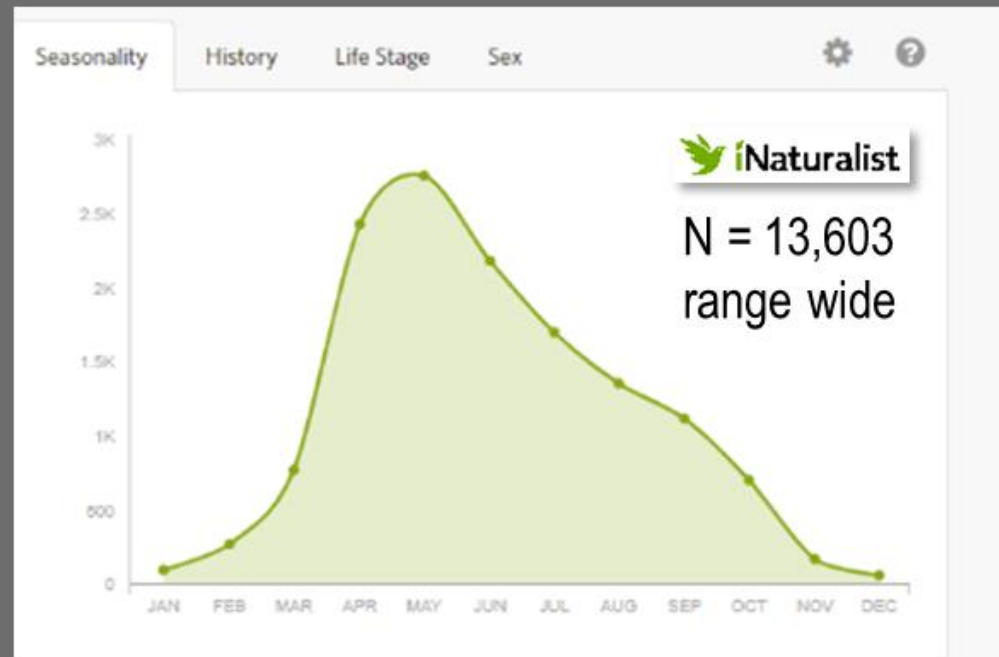
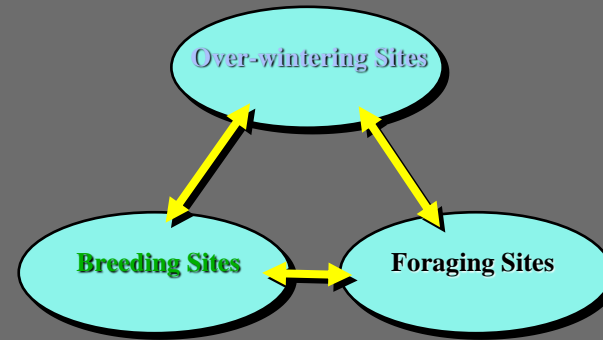
- variable





# Seasonal Activity Patterns

- Overwintering
- Breeding
- Gestation
- Foraging









# Feeding: Diets

---

- Painted Turtle:  
omnivorous
- Lizards:  
primarily carnivorous
- Snakes:  
exclusively carnivorous





# Feeding: Foraging Mode

Sit and wait

vs.

Active foraging



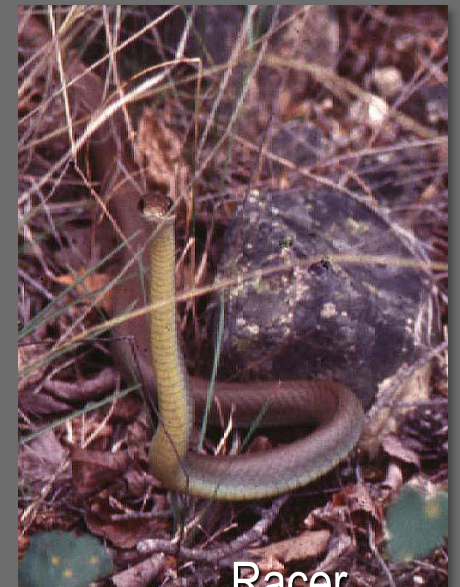
Sagebrush Lizard



Greater  
Short-horned  
Lizard



Western Rattlesnake



Racer



# Feeding - Prey Capture

## Examples

- Grasping
- Constriction
- Envenomation





# Feeding: Energetic Requirements

---



Rubber Boa (*Charina bottae*)



# Defense

- Hiding/crypsis



- Evasion



- Engagement



# Rattlesnake Enemies and Defensive Adaptations

- Predators:

- birds (e.g., magpies and owls)
- mammals, esp. badgers
- snakes



<http://www.raptor.cvm.umn.edu>



<http://animaldiversity.ummz.umich.edu>

- Defensive adaptations

- crypsis
- escape
- rattling
- striking / biting
- head hiding



REI Uncommon  
Path



Vince Cobb



# Reproduction and Life History

- Reproductive Modes
- Reproductive Schedules
- Mating Systems
- Gestation
- Sex Determination
- Parental Care
- Age to sexual maturity
- Longevity



# Reproduction and Life History: Longevity

## Examples

- Sagebrush Lizards 6 years
- Gartersnakes - teens
- Rattlesnakes > 50 years
- Rubber Boas > 50 years
- Painted Turtles > 60 years



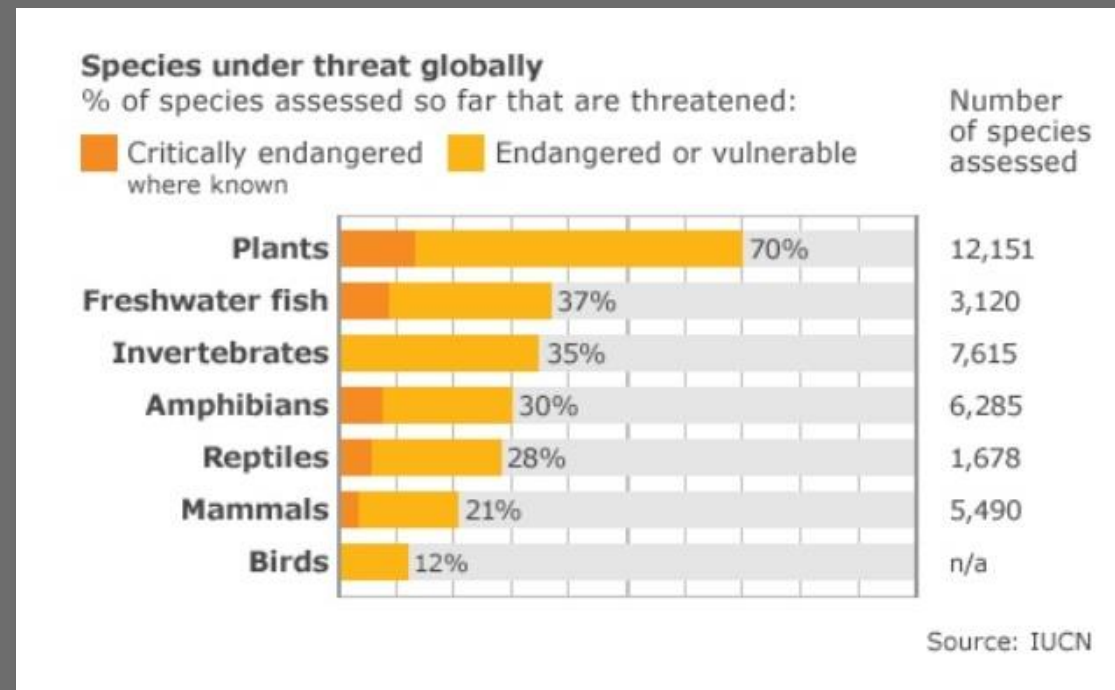



# Reptile Population Declines

Articles

## The Global Decline of Reptiles, Déjà Vu Amphibians

J. WHITFIELD GIBBONS, DAVID E. SCOTT, TRAVIS J. RYAN, KURT A. BUHLMANN, TRACEY D. TUBERVILLE, BRIAN S. METTS, JUDITH L. GREENE, TONY MILLS, YALE LEIDEN, SEAN POPPY, AND CHRISTOPHER T. WINNE



# Reptile Conservation Status

- Northern Rubber Boa – S2 (Imperiled)
- Valley Gartersnakes – S2 (Imperiled)  
have declined in southeastern Idaho, probably due to declines in Northern Leopard Frogs.





# Conservation Threats

---

## General

- Habitat destruction, modification, and fragmentation.
- Global warming
- Introduced species
- Disease
- Pollution
- Overutilization / Persecution

## GYA

- Agriculture, urbanization, altered fire regimes, roads
- Range Expansion vs Fire
- Cheat grass
- Snake Fungal Disease ?
- Pesticides?
- Rattlesnakes

# Conservation Actions

- Inventory and Monitoring Programs
- Prevention of Invasive Species / Diseases

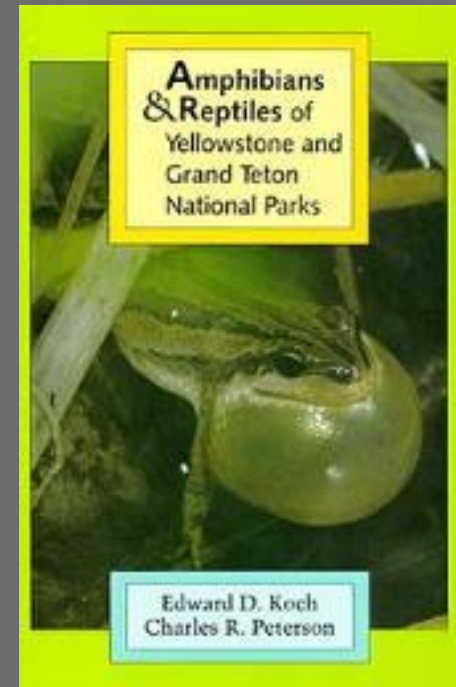
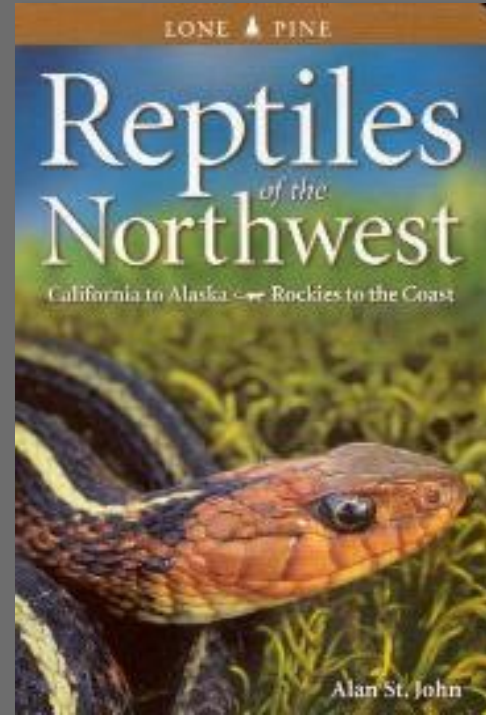
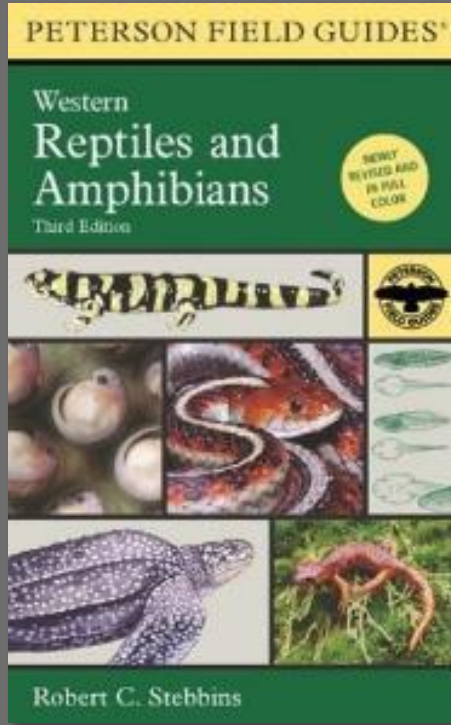
**Don't release any captive reptiles!**

- Habitat Protection and Restoration
- Disturbance Research
- Education
- Legislation and Regulations





# Books



# National Partners in Amphibian and Reptile Conservation (PARC)

**PARC**  
PARTNERS  
IN  
AMPHIBIAN AND REPTILE CONSERVATION

The Mission of Partners in Amphibian and Reptile Conservation:  
"To conserve amphibians, reptiles and their habitats as integral parts of our ecosystem and culture through proactive and coordinated public-private partnerships."

Home - About PARC - Publications - News & Events - Resources - Support PARC

Search...

Partners in Amphibian and Reptile Conservation

The Wildlife Society Recognizes PARC  
PARC Receives 2013 TWS Group Achievement Award

<http://www.parcplace.org/>



# Northwest Partners in Amphibian and Reptile Conservation (NW PARC)

[www.nwparc.org](http://www.nwparc.org)



**NORTHWEST  
PARC  
PARTNERS  
IN  
AMPHIBIAN AND REPTILE CONSERVATION**

HOME | ABOUT | EVENTS | MEMBERSHIP | PRODUCTS | NEWSLETTER | LINKS

## WELCOME TO NW PARC

Welcome members and friends of Northwest Partners in Amphibian and Reptile Conservation!

NW PARC is now in its third year and we are continuing to make progress in building partnerships, developing useful products, and increasing public awareness of amphibian and reptile conservation in the greater Northwest.

### What is PARC?

Partners in Amphibian and Reptile Conservation (PARC) is an inclusive



Contact NW PARC at:  
[contact@nwparc.org](mailto:contact@nwparc.org)  
NWPARC on Facebook

# Greater Yellowstone Amphibian and Reptile iNaturalist Project

iNaturalist.org

« Projects

Terms & Rules | Edit Project



Greater Yellowstone Amphibian and Reptile iNaturalis...

Add Observations to This Project

## Stats

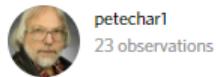
Totals

257  
Observations »

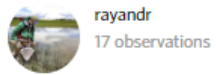
23  
Species »

128  
People »

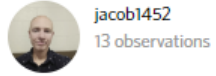
## Most Observations



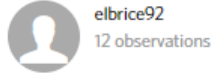
petechar1  
23 observations



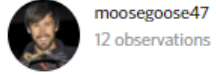
rayandr  
17 observations



jacob1452  
13 observations

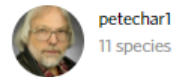


elbrice92  
12 observations

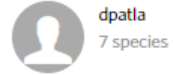


moosegoose47  
12 observations

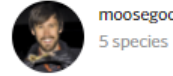
## Most Species



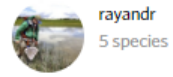
petechar1  
11 species



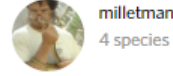
dpatla  
7 species



moosegoose47  
5 species



rayandr  
5 species



milletman  
4 species

## Most Observed Species



Western Terrestrial Garter Snake  
43 observations



Western Toad  
33 observations



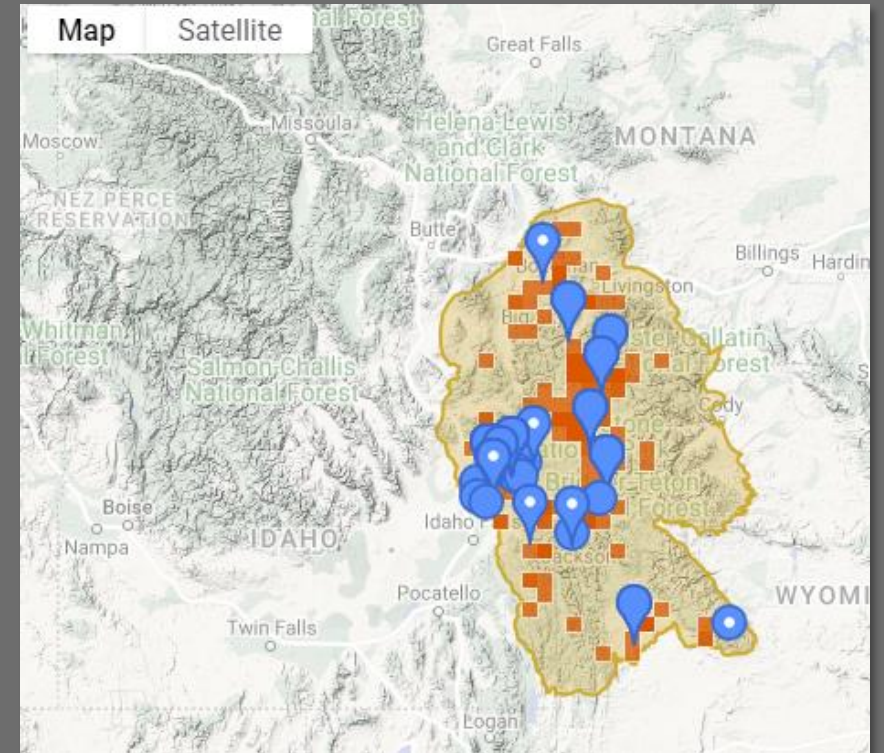
Columbia Spotted Frog  
29 observations



Boreal Chorus Frog  
26 observations



Gopher Snake  
24 observations



<https://www.inaturalist.org/projects/greater-yellowstone-amphibian-and-reptile-inaturalist-project>



# Charles Peterson – Idaho Reptiles Flickr Set

<https://www.flickr.com/photos/petechar/albums/72157626208981213/>

flickr You Explore Prints  
Flickr logo. If you click it, you'll go home

Photos, people, or groups

← Back to albums list Edit in Organizr

## Reptiles

*These photos are grouped by Order and Suborder, then alphabetically by Family, Genus, and Species. See the Idaho Reptiles set for for photographs of individuals of species from Idaho.*

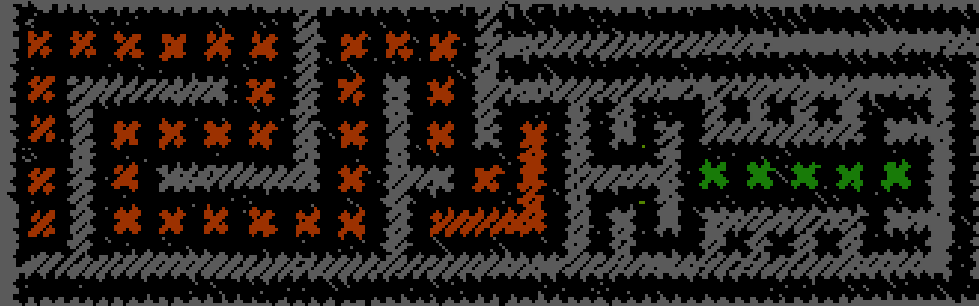
Show more

125 photos • 154 views

Share Bookmark Download

By: Charles (Chuck) Peterson  
PRO

# Questions?



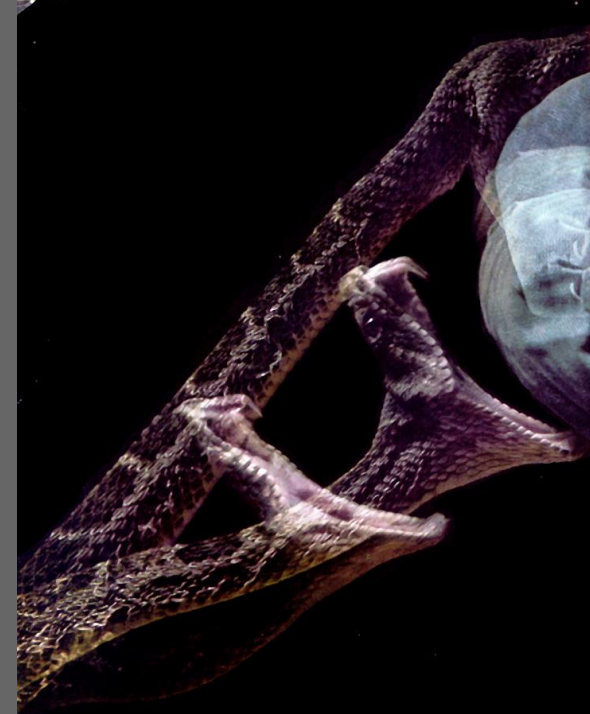
[petechar@isu.edu](mailto:petechar@isu.edu)



# Outline for Snake Safety Presentation

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- Snake Identification
- Rattlesnake Natural History
- What is the risk of snake bite?
- How can you avoid being bitten?
- What are the consequences of snake bite?
- What should you do if bitten?
- Questions?



# How can you avoid being bitten?

- Maximize your chances of detecting snakes
  - Listen for rattling snakes
  - Look where you step or reach
  - Check potential hand holds when climbing
  - Stay on trails
- Minimize potential contact with snakes
  - Dress appropriately for field work
    - e.g., long pants and boots.
  - Keep the area around your home “clean”
  - Avoid denning areas in the fall and spring
  - Step on rocks (not next to or over them)
  - Lift objects by grasping the far edge and pulling up
  - Simply go around snakes in your way
  - **Do not handle live or recently killed snakes**





# What to do if someone is bitten:

- Get away from the snake and check for the presence of other snakes
- Take a photo of snake if you can do it safely.
- Try to remain remain calm
- Minimize physical activity
- Keep the bite site still and elevated above heart level
- Remove rings, watches or other tight items
- Obtain proper medical treatment
  - Inform emergency facility of incoming victim
  - Arrive at emergency facility as soon as possible
  - DO NOT attempt to take the snake in for identification



Recommended treatments change over time!

# Medical Treatment

- Because snakebite in Wyoming is rare, your physician may be unfamiliar with the best treatments.
- It is recommended that they contact experts at a Poison Control Center for up-to-date advice.
- Recommended treatments change over time.

Need help now? Call the Poison Help line at [1-800-222-1222](tel:1-800-222-1222) or visit [PoisonHelp.org](http://PoisonHelp.org)



## American Association of Poison Control Centers

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### Poison Control Centers

There are 55 poison control centers in the United States. Each provides free, 24-hour professional advice to anyone in the 50 states, Puerto Rico, the Federated States of Micronesia, American Samoa, the U.S. Virgin Islands and Guam. On occasion, some have even helped American soldiers serving overseas.

Poison centers provide poison expertise and treatment advice by phone. All poison centers can be reached by calling the same telephone number, **1-800-222-1222**. Poison centers are staffed by pharmacists, physicians, nurses and poison information providers who are toxicology specialists.

**NATIONAL SNAKEBITE SUPPORT**

"The sole purpose of National Snakebite Support is to connect snakebite victims with experts who practice the proper management of snake envenomations."  
- Albert Coritz, NSS Creator

**CALL 911**

**DO NOT USE**

- ✗ TOURNIQUETS
- ✗ LYMPHATIC BANDAGE
- ✗ PRESSURE IMMOBILIZATION
- ✗ CUTTING OR SUCTION
- ✗ EXTRACTION DEVICE
- ✗ ELECTRICAL STIMULATION
- ✗ PACK EXTREMITY IN ICE

Timber Rattlesnake (Crotalus horridus)

**National Snakebite Support**

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1-800-222-1222



# “Tubing” a Rattlesnake

