

# **RATTLESNAKES** *of* **ARIZONA**



**BRYAN D. HUGHES**  
**RATTLESNAKE SOLUTIONS**

# **WHO THE #^\$ IS THIS GUY AND WHY SHOULD WE CARE?**

**RATTLESNAKE SOLUTIONS RELOCATES OVER 1,100  
SNAKES PER YEAR IN PHOENIX AND TUCSON**

pays for:

- **INTENSIVE, ONGOING FIELD STUDY OF WILD SNAKES**
- **RESEARCHING URBAN RATTLESNAKE CONSERVATION**
- **10-40 HOURS FIELD TIME EACH WEEK**
- **>1,000 OF UNIQUE ENCOUNTERS YEARLY AS WELL AS**
- **CAPTIVE CARE AND RESIDENTIAL CAPTURE/RELEASE**



**15 Species**  
(17 Inc. Subspecies)

**6 Species in**  
Phoenix City Limits

More Than  
**Any Other State.**





Largest rattlesnake species in Arizona, adult size ~ 4'+.

Though they may get bigger elsewhere, in Arizona, 5' is an incredibly rare size.

Brown, tan, or grey, and even pink in some parts of their range.

**WESTERN DIAMONDBACK RATTLESNAKE**

*Crotalus atrox*



Defensive posture  
is the famous  
“S” strike position  
made famous in  
desert truck stops  
and bad taxidermy  
shops everywhere.

**WESTERN DIAMONDBACK RATTLESNAKE**

*Crotalus atrox*



Very commonly found in regional parks and near homes that border the desert.

**WESTERN DIAMONDBACK RATTLESNAKE**

*Crotalus atrox*



Medium-sized  
rattlesnake, adult  
sizes from 2-3'.

Specialist ...  
the most variable  
coloration of any  
rattlesnake.

**SOUTHWESTERN SPECKLED RATTLESNAKE** *Crotalus pyrrhus*



Color matches  
rock color in each  
mountain system  
where they live.

**SOUTHWESTERN SPECKLED RATTLESNAKE** *Crotalus pyrrhus*





In context, their  
camouflage is  
nearly perfect ...

**SOUTHWESTERN SPECKLED RATTLESNAKE**

*Crotalus pyrrhus*



In context, their  
camouflage is  
nearly perfect ...

... an invisible  
rattlesnake.

**SOUTHWESTERN SPECKLED RATTLESNAKE**

*Crotalus pyrrhus*



Large-sized  
rattlesnake, adult  
sizes from 3-4'+.

**NORTHERN BLACKTAILED RATTLESNAKE**

*Crotalus molossus molossus*



Large-sized  
rattlesnake, adult  
sizes from 3-4'+.

Green, yellow,  
tan, brown, and  
black.

**NORTHERN BLACKTAILED RATTLESNAKE**

*Crotalus molossus molossus*



Large-sized  
rattlesnake, adult  
sizes from 3-4'+.

Green, yellow,  
tan, brown, and  
black.

Most likely to be  
mistaken for the  
“Mojave Green”  
rattlesnake.

**NORTHERN BLACKTAILED RATTLESNAKE**

*Crotalus molossus molossus*



Small-sized  
rattlesnake, adult  
sizes from 2-3'.

Grey, blueish, pink,  
with tiny head,  
oversized rattle,  
and bands.

**TIGER RATTLESNAKE**

*Crotalus tigris*



Small-sized  
rattlesnake, adult  
sizes from 2-3'.

Grey, blueish, pink,  
with tiny head,  
oversized rattle,  
and bands.

**TIGER RATTLESNAKE**

*Crotalus tigris*



Very common in most city and regional parks, near trails, but rarely seen by most people.

**TIGER RATTLESNAKE**

*Crotalus tigris*





Small-sized  
rattlesnake, adult  
sizes usually <2'.

“Horn” over each eye,  
heavy-bodied, moves  
with side-winding  
motion at times.

**SONORAN SIDEWINDER**

*Crotalus cerastes cercobombus*



Small-sized  
rattlesnake, adult  
sizes usually <2'.

“Horn” over each eye,  
heavy-bodied, moves  
with side-winding  
motion at times.

**SONORAN SIDEWINDER**

*Crotalus cerastes cercobombus*



Small-sized  
rattlesnake, adult  
sizes usually <2'.

“Horn” over each eye,  
heavy-bodied, moves  
with side-winding  
motion at times.

**SONORAN SIDEWINDER**

*Crotalus cerastes cercobombus*



Large-sized  
rattlesnake, adult  
size about 3'.

Brown, tan, or green  
in color.

**NORTHERN MOJAVE RATTLESNAKE**

*Crotalus scutulatus scutulatus*



Center of many  
rattlesnake myths

No such thing as a  
"Mojave Green"

**NORTHERN MOJAVE RATTLESNAKE** *Crotalus scutulatus scutulatus*



Can be very defensive,  
but not aggressive.

Does not jump, chase,  
strike great distances,  
bite through tires,  
run down cars or  
horses, leap into  
open windows, eat  
children, etc., etc. ...

**NORTHERN MOJAVE RATTLESNAKE**

*Crotalus scutulatus scutulatus*



Often misidentified  
due to notoriety

Prefers sandy, low  
desert; avoids rocky,  
mountainous areas.

**NORTHERN MOJAVE RATTLESNAKE**

*Crotalus scutulatus scutulatus*



Large-sized  
rattlesnake, adult  
size about 3.5'.

Brown, black, with  
white bands.

**ARIZONA BLACK RATTLESNAKE**     *Crotalus cerberus*





Woodland, forest  
and chaparral areas,  
some very near  
Phoenix.

**ARIZONA BLACK RATTLESNAKE** *Crotalus cerberus*



Often referred to by locals as a Timber Rattlesnake, but is very different.

**ARIZONA BLACK RATTLESNAKE**

*Crotalus cerberus*



Only species of  
venomous lizard  
in the United States.

Protected in AZ.

**GILA MONSTER** *Heloderma suspectum*



Only species of  
venomous lizard  
in the United States.

Protected in AZ.

Venomous, but  
not dangerous ...

**GILA MONSTER** *Heloderma suspectum*



Only species of  
venomous lizard  
in the United States.

Protected in AZ.

Venomous, but  
not dangerous . . .

. . . unless you're  
doing dumb stuff.

**GILA MONSTER** *Heloderma suspectum*



Only species of  
venomous lizard  
in the United States.

Protected in AZ.

Venomous, but  
not dangerous ...

... unless you're  
doing dumb stuff.

**GILA MONSTER** *Heloderma suspectum*



Only non-viper  
venomous snake  
species in AZ.

Small, rarely seen.

**SONORAN CORALSNAKE** *Micruroides euryxanthus*



Only non-viper  
venomous snake  
species in AZ.

Small, rarely seen.

Rhymes don't work.

**SONORAN CORALSNAKE**

*Micruroides euryxanthus*





Only non-viper  
venomous snake  
species in AZ.

Small, rarely seen.

Rhymes don't work.

If you're bitten by  
one, it's your fault.

**SONORAN CORALSNAKE**

*Micruroides euryxanthus*

# ***RATTLESNAKES***

## ***FACT & FICTION***





*Lots of people  
+  
Lots of snakes:  
=  
Lots of snake  
stories.*

WHY ALL THE DRAMA?

**WHERE DO WE GET THIS STUFF?**

**WHERE DO WE GET THIS STUFF?**



**MOVIES & TV**

# WHERE DO WE GET THIS STUFF?

**Drought may be causing higher rates of snakebites in Southern California**



**Four-Year-Old Girl Survives Rattlesnake Attack**

November 17, 2014 9:27 PM

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72

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3



[Share](#)

15

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# THE MEDIA

# WHERE DO WE GET THIS STUFF?



**UNCLES, COWORKERS,  
AND "MY FRIEND'S COUSIN"**

A photograph of a snake with iridescent scales, likely a copperhead, coiled on a light-colored rock. The background is a blurred landscape at sunset, with warm orange and yellow light filtering through trees. A dark grey rectangular box is overlaid on the right side of the image, containing the text 'TOP 10 MYTHS' in white, italicized, sans-serif font.

*TOP  
10  
MYTHS*



1

**MYTH**  
"Rattlesnake Attack"



**1**

**MYTH**

“Rattlesnake Attack”

**REALITY**

“Defensive” is a more accurate word.



2

**MYTH**

"It showed its fangs and was ready to lunge."

# 2

## **MYTH**

"It showed its fangs and was ready to lunge."

## **REALITY**

Rattlesnakes don't open mouth as defensive display, and don't jump or perform magical stunts.

# Sonoran Gophersnake Defensive Behavior

[www.phoenixsnakeremoval.com](http://www.phoenixsnakeremoval.com) | [www.facebook.com/snakeremoval](https://www.facebook.com/snakeremoval)



3

**MYTH**

"Babies are more dangerous than adults."

# 3



## **MYTH**

"Babies are more dangerous than adults."

## **REALITY**

Babies venom may be slightly more toxic, but the amount of venom matters.

Pp. 191-220 in W. K. Hayes, K. R. Beaman, M. D. Cardwell, and S. P. Bush (eds.),  
*The Biology of Rattlesnakes*. Loma Linda University Press, Loma Linda, California.

## The Snake Venom-Metering Controversy: Levels of Analysis, Assumptions, and Evidence

WILLIAM K. HAYES<sup>1,2</sup>

<sup>1</sup>*Department of Earth and Biological Sciences, Loma Linda University, Loma Linda, CA 92350 USA*

**ABSTRACT.**—The amount of venom that a snake injects into a target varies with snake size, bite context (predatory or defensive), target identity (species and size), and a host of other factors. A number of studies have provided evidence that snakes possess the cognitive (decision-making) capacity to control, or meter, venom expenditure during both predatory and defensive contexts. However, several recent papers dismissed the evidence for venom metering and presented an alternative explanation, the pressure-balance hypothesis, which attributes differences in venom expenditure to variation in strike kinematics and/or target surface features. As for many conflicts in science, this controversy has arisen largely because the authors of the recent papers pitted two hypotheses against each other (the venom-metering and pressure-balance hypotheses) that represent fundamentally different levels of analysis (cognitive and physiological, respectively) and, therefore, are not mutually exclusive. Partly because of this, the authors relied on faulty assumptions and succumbed to logical errors when examining evidence for the venom-metering hypothesis. Properly understood, the venom-metering hypothesis rests on two assumptions: 1) that the snake can accurately assess the target (which is well-supported by previous studies), and 2) that it has cognitive control over the venom delivery system (which remains less clear). Analyses of the duration and kinematics of venom flow based on videos of venom extractions provide new evidence that crotaline snakes possess cognitive control of venom delivery. This control probably derives from numerous mechanisms, including

### **MYTH**

“Babies are more dangerous than adults.”

### **REALITY**

Babies venom may be slightly more toxic, but the amount of venom matters.

Babies have as much control over venom as adults do.



4

**MYTH**  
"Rattlesnakes avoid snake-repellants, mothballs, rope, etc..."







# 4

## **MYTH**

"Rattlesnakes avoid snake-repellants, mothballs, rope, etc..."

## **REALITY**

They don't care, save your money and focus on habitat reduction and snake fencing.



# 4

## **MYTH**

“Rattlesnakes avoid snake-repellants, mothballs, rope, etc...”

## **REALITY**

They don't care, save your money and focus on habitat reduction and snake fencing.



serpents.com

# RATTLESNAKE EGGS



# 5

**MYTH**

"Rattlesnake eggs..."



# 5

## **MYTH**

"Rattlesnake eggs..."

## **REALITY**

Rattlesnakes give live birth and actively care for their young for awhile.

# 5

## **MYTH**

"Rattlesnake eggs..."

## **REALITY**

Rattlesnakes give live birth and actively care for their young for awhile.

These are quail eggs.





6

**MYTH**

"Baby rattlesnakes don't have rattles yet."

# 6

## **MYTH**

"Baby rattlesnakes don't have rattles yet."

## **REALITY**

Baby rattlesnakes are born with a single rattle segment. No rattlesnakes have pointed tails.





7

**MYTH**  
"Suck the venom out!"



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## Snakebite Suction Devices Don't Remove Venom: They Just Suck

Sean P. Bush, MD

*From the Department of Emergency Medicine, Loma Linda University School of Medicine, Medical Center and Children's Hospital, Loma Linda, CA.*

**See related article, p. 181.**

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[*Ann Emerg Med.* 2004;43:187-188.]

It was only a few decades ago that incision and suction were recommended snakebite first aid. However, concerns arose about injuries and infections caused when laypersons made incisions across fang marks and

In their pr  
model was us  
labeled mock  
Extractor aft  
hypodermic  
active count  
venom remov  
moved 0.04%  
authors conc  
amount and t  
The main lim  
use real veno

The study  
that have test  
Using a porci  
randomized

**MYTH**

"Suck the venom out!"

**REALITY**

Never do this.

7



**MYTH**

"Suck the venom out!"

**REALITY**

Never do this.

[home](#) [→](#) [science](#) [→](#) [wildlife](#)

# Some Rattlesnakes Losing Their Warning Rattle In S. Dakota

AUGUST 29, 2013 4:51 PM ET

GARY ELLENBOLT



Listen to the Story

All Things Considered



2:44 | 128 kbps

Playlist

Download

There are few things more chilling than the sound of a nearby rattlesnake. That distinctive sound serves as a warning that trouble could be on the way. The only thing worse than hearing a rattlesnake within striking distance — is not hearing it at all. A herpetologist in South Dakota's Black Hills has discovered a growing number of Prairie Rattlesnakes with atrophied tail muscles; he believes it's a genetic issue that multiplies because those snakes that can rattle usually end up being killed. But others

8

**MYTH****"Rattlesnakes are evolving not to rattle!"**



# 8

## **MYTH**

"Rattlesnakes are evolving not to rattle!"

## **REALITY**

There is no evidence to support this.



9

**MYTH**  
"Check out this giant rattler my buddy done kilt when we was huntin."

# 9

## **MYTH**

“Check out this giant rattler my buddy done kilt when we was huntin.”

## **REALITY**

Forced perspective.



These photos illustrate how the “close-focus wide-angle” technique is used to make snakes and other creatures appear much larger compared to the person holding them. The key is the use of a wide-angle camera lens (usually 20 to 35 mm), taking advantage of its exaggerated depth of field



9

**MYTH**

“Check out this giant rattler my buddy done kilt when we was huntin.”

**REALITY**

Forced perspective.



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9

J Anxiety Disord. Author manuscript; available in PMC Jan 1, 2013.

PMCID: PMC3244514

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NIHMSID: NIHMS320302

[J Anxiety Disord. Jan 2012; 26\(1\): 20-24.](#)

Published online Aug 19, 2011. doi: [10.1016/j.janxdis.2011.08.009](https://doi.org/10.1016/j.janxdis.2011.08.009)

## It Was as Big as My Head, I Swear! Biased Spider Size Estimation in Spider Phobia

[Michael W. Vasey](#), [Michael R. Vilensky](#), [Jacqueline H. Heath](#), [Casaundra N. Harbaugh](#), [Adam G. Buffington](#), and [Russell H. Fazio](#)

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The publisher's final edited version of this article is available at [J Anxiety Disord](#)

See other articles in PMC that [cite](#) the published article.

### Abstract

Go to:

The current study tested the association between fear and perception in spider phobic individuals (n = 57) within the context of a treatment outcome study. Participants completed 5 post-treatment Behavioral Approach Tasks (BATs) in which they encountered a live spider and were asked to provide spider size estimates. Consistent with predictions, results indicated that high levels of fear were associated with magnified perception of phobic stimuli. Specifically, we found a significant positive correlation between size estimates and self-reported fear while encountering spiders. Together with previous findings, these results further support the notion that fear is involved in the encoding and processing of perceptual

### MYTH

“Check out this giant rattler my buddy done kilt when we was huntin.”

### REALITY

Forced perspective.

People are bad at estimating size, especially when excited or scared.



# 10

**MYTH**  
Killing rattlesnakes makes  
an area more safe.



# 10

## Article Citation:

Matthew L. Holding, Julius A. Frazier, Scott W. Dorr, Sloane N. Henningsen, Ignacio T. Moore, and Emily N. Taylor (2014) Physiological and Behavioral Effects of Repeated Handling and Short-Distance Translocations on Free-Ranging Northern Pacific Rattlesnakes (*Crotalus oreganus oreganus*). *Journal of Herpetology*: June 2014, Vol. 48, No. 2, pp. 233-239.

## CONSERVATION

### Physiological and Behavioral Effects of Repeated Handling and Short-Distance Translocations on Free-Ranging Northern Pacific Rattlesnakes (*Crotalus oreganus oreganus*)

Matthew L. Holding<sup>1,4</sup>, Julius A. Frazier<sup>1</sup>, Scott W. Dorr<sup>1</sup>, Sloane N. Henningsen<sup>2</sup>, Ignacio T. Moore<sup>3</sup>, and Emily N. Taylor<sup>1</sup>

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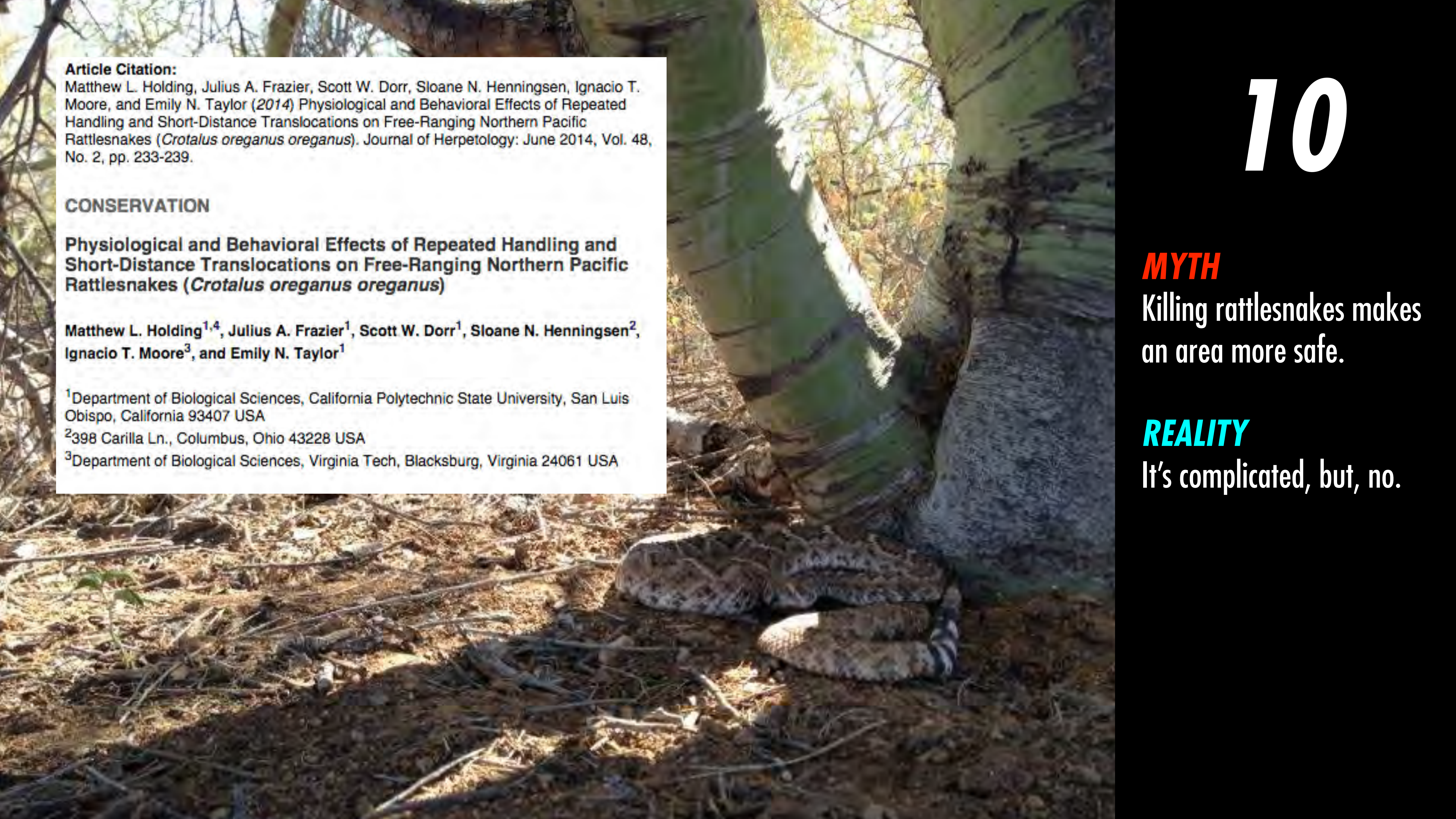
<sup>3</sup>Department of Biological Sciences, Virginia Tech, Blacksburg, Virginia 24061 USA

## MYTH

Killing rattlesnakes makes an area more safe.

## REALITY

It's complicated, but, no.



# 10

Date	Species	Location, comments
July 8, 2014	<a href="#">copperhead</a>	While camping at <a href="#">Sam A. Baker State Park</a> , Levins walked outside, saw the snake and brought it to his son's attention. When he picked it up, the snake bit him. Levins walked back into the cabin, washed his hand off at the kitchen sink and sat down on the couch. When Levins became sick, someone from a neighboring cabin came over to help and applied CPR. Levins was later pronounced dead at an area hospital. <sup>[5]</sup>
Feb 15, 2014	<a href="#">rattlesnake</a>	Coots was bitten on the right hand during a service at his Full Gospel Tabernacle in Jesus Name church in <a href="#">Middlesboro, Kentucky</a> . After the bite, Coots dropped the snakes, but then picked them back up and continued the ceremony. Later, he was driven to his home. When paramedics arrived, his relatives refused medical treatment for him, saying it was inconsistent with his religion. He died at home.
May 28, 2012	<a href="#">Timber Rattlesnake</a>	Wolford was bitten on the thigh while handling a timber rattlesnake as part of an outdoor religious service at <a href="#">Panther State Forest</a> in <a href="#">McDowell County, West Virginia</a> . <sup>[6][7]</sup> Wolford did not initially seek medical treatment for his injury, but was taken to Bluefield Regional Medical Center when his condition began to deteriorate some eight hours later. <sup>[6]</sup> Wolford was a pastor and often handled his pet snake during church services. <sup>[6]</sup> Wolford's father, Mack Wolford, died in 1983 under similar circumstances. <sup>[8]</sup>
January 29, 2011	<a href="#">Copperhead</a>	Westbrook was bitten just above the right elbow while handling a copperhead; he had been attempting to determine the snake's sex. <sup>[9]</sup> According to witnesses, Westbrook "tried to extract the venom with a tool after he was bitten, then he began coughing and vomiting before he collapsed." <sup>[10]</sup> Westbrook was pronounced dead on arrival at <a href="#">Erlanger Hospital</a> in <a href="#">Chattanooga, Tennessee</a> . <sup>[10]</sup> The cause of death was determined to be "anaphylactic shock as a result of the snake bite." <sup>[10]</sup>
October 13, 2010	<a href="#">rattlesnake, probably a Southern Pacific Rattlesnake</a>	Price was bitten above the right ankle while wading across a stream near Cuyamaca Reservoir in <a href="#">Cuyamaca, California</a> . <sup>[11]</sup> Price had been taking part in a study of steelhead trout that was funded by a state Department of Fish and Game grant. <sup>[11]</sup> According to witnesses, Price "stopped breathing within minutes" of being bitten. The bite marks on his foot were reportedly "an inch and a half across." <sup>[11]</sup> Price was airlifted to <a href="#">Palomar Medical Center</a> , but later died.

## MYTH

Killing rattlesnakes makes an area more safe.

## REALITY

It's complicated, but, no.

Over-estimation of abilities  
+ human nature  
= ambulance.

# 10

## IN THE LAST 10 YEARS: 25 SNAKE BITE DEATHS IN U.S.

### #1 REASON: HANDLING

ONLY BITE DEATH AT A RESIDENCE IN THE PAST 15+ YEARS:

“... fire marshal, went to help a neighbor who had spotted a rattlesnake while mowing grass. He shot at the snake; it went under a shed and Guidry was bitten when he reached for it.”

### **MYTH**

Killing rattlesnakes makes an area more safe.

### **REALITY**

It's complicated, but, no.

Over-estimation of abilities  
+ human nature  
= ambulance.



# 10

## **MYTH**

Killing rattlesnakes makes an area more safe.

## **REALITY**

It's complicated, but, no.

Over-estimation of abilities  
+ human nature  
= ambulance.

**Things more dangerous  
than a rattlesnake.**

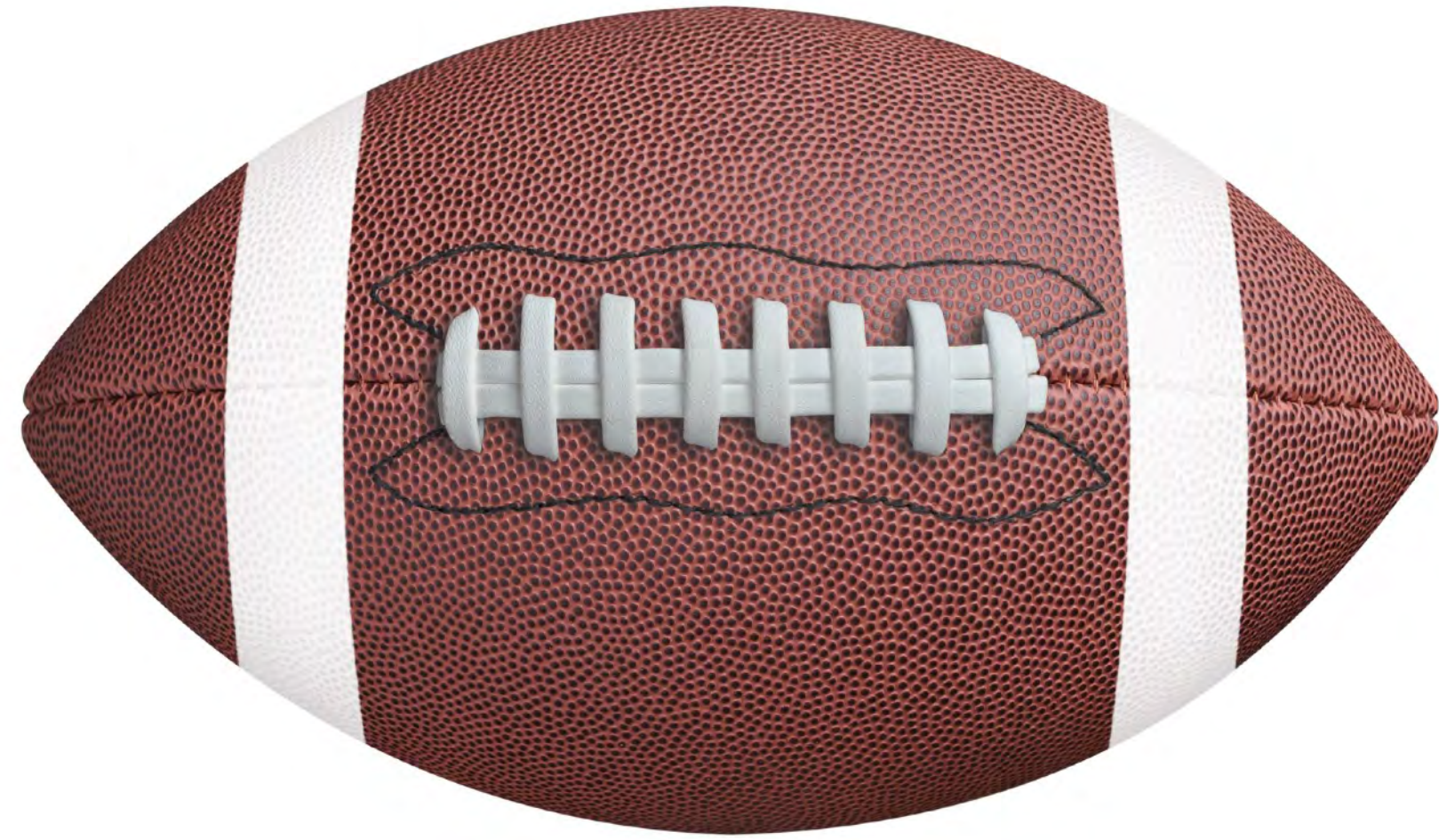


***Falling out of bed. 450 per year.***



***Falling Coconuts. 150 per year.***





***High School Football. 12 per year.***



***Champagne corks. 24 per year.***



***Ants. 30 per year.***



BEVMAX COKE®

*Vending Machines. 13 per year.*



***Christmas Shopping. 1-3 per year.***

**Fact: Rattlesnakes get a bad rap.**



# MORE INFORMATION

[RATTLESNAKESOLUTIONS.COM](http://RATTLESNAKESOLUTIONS.COM)

[FACEBOOK.COM/SNAKEREMOVAL](https://FACEBOOK.COM/SNAKEREMOVAL)

# REPORT SIGHTINGS!

PHOTO & LOCATION (GPS IF POSSIBLE) TO

[INFO@RATTLESNAKESOLUTIONS.COM](mailto:INFO@RATTLESNAKESOLUTIONS.COM)

OR [4806943020](tel:4806943020)

# LEAVE A REVIEW ;)

[RATTLESNAKESOLUTIONS.COM/GOOGLE](http://RATTLESNAKESOLUTIONS.COM/GOOGLE)

[RATTLESNAKESOLUTIONS.COM/YELP](http://RATTLESNAKESOLUTIONS.COM/YELP)

[RATTLESNAKESOLUTIONS.COM/FACEBOOK](http://RATTLESNAKESOLUTIONS.COM/FACEBOOK)