

# The Buzz

Advocates *for* Snake Preservation



Changing how people view & treat snakes

2023 • #11



Madam X, a huge female Western Diamond-backed Rattlesnake, regards one of her newly shed babies in July 2022.

## The Nurturing Nature of Rattlesnakes

*Is it her simple body plan? Her poker face? Or perhaps a vast mythology of her malevolence and supernatural abilities? Humans have a tough time describing what snakes do, let alone understanding why they do it. Proud skeptics that they are, scientists long doubted that snakes are capable of complex behavior. Reports of pitviper aggregations, especially mothers with young, are not new; but, until only recently, they were dismissed as happenstance, even by their biggest fanatics.*

Continued inside...

## Musings from Melissa

While I've always had a fondness for snakes and been drawn to them as underdogs, they weren't always the focus of my life, as they are now. Two things changed that.

First, I saw a presentation by Harry Greene in which he described Black-tailed Rattlesnakes caring for their kids in the Chiricahua Mountains of Arizona. Like most people in 1998, I had no idea snakes did this, and was amazed by this discovery.

The following summer, I visited the Chiricahua Mountains for the first time and looked for rattlesnakes with my friend Brian. All I wanted to find were Black-taileds, those magical mommy snakes, but Brian had different goals and was leading the way. That's how I met my first Rock Rattlesnakes.

Me: BABIES!

Brian: No, these are adults. They're just small snakes.

**"JUST!?"** They were the cutest, most beautiful creatures I'd ever seen. I was hooked, and determined to return to the Chiricahuas and study parental care in Rock Rattlesnakes.



Melissa admires a pink Coachwhip.

Over the past couple decades I have been lucky enough to study Rock Rattlesnakes in the Chiricahuas and observe rattlesnake parental care in other species, but seeing Rock Rattlesnakes care for their kids eluded me... until this past summer (*New Mexico really is the Land of Enchantment*). Read more about our observations in *Baby Wads* and *The Nurturing Nature of Rattlesnakes*.

Why does this matter? Learning about this behavior sparked my interest in rattlesnakes and it can also improve others' attitudes toward snakes — check out *Tales of Transformation*. Also in this issue, meet a couple *Snake Heroes*, and join ASP volunteer Alex Megerle for a nighttime encounter with a Mohave that may surprise you in *The Shocking Truth About Mohaves*. Thanks to Alex for contributing and Rulon Clark and Dylan Maag for reviewing this piece; Jeff and I look forward to the results of this study (as we do with all the awesome research out of Rulon's lab!).



A sign of amazing things to come: a juvenile Rock Rattlesnake snuggled up to an adult female near a communal den in March 2022.

You likely noticed that *The Buzz* looks a little different. The new format will be published annually with longer articles, your snake stories, and other fun content. *Let me know what you think!* Really, **I love hearing from y'all**. I hope you enjoy *The Buzz* and please keep sharing with your friends, neighbors, and family — **spreading positive messages about snakes is one of the best, and easiest, ways to help them.**

THANK YOU, for all you do for snakes, every day!

*Melissa Amarello (she/her), Executive Director*

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# The Nurturing Nature of Rattlesnakes

Arriving under cover of night in an amniotic sac, a newborn rattlesnake wriggles free of his membrane and opens his jaws to fill with a new atmosphere. Unfurling his tiny body, he mingles with his littermates, all new to this realm. As in humans, live birth in snakes is an abrupt transition from an aqueous medium to a gaseous one. But baby snakes are suddenly adept at locomotion, and with no worldly experience, one false move might catch the eye of all sorts of predators.

In this big, unforgiving world, is there anyone a newborn rattlesnake can trust? Why Mom, of course! While she no longer provides nourishment to her now-physically separate young, she will watch over and defend them when necessary, and may even corral them back to the nest if they wander too far. This attentiveness lasts a couple of weeks at most (when her babies cast off their first shed skins), but Mom has been in mom-mode for months already, often foregoing food while roasting her loins in the sun to ensure the proper and efficient development of her embryos.

Among the subtle mom-moves that we have observed (with the aid of cameras left to monitor nests) is her initial look out from the birth shelter (e.g., a rock, burrow or hollow log). On the first morning, Mom's face peers out towards an adjacent sunny spot, where the babies will soon bask and explore during their first days. She's probably looking for hazards, or maybe pointing the way, but after a couple minutes, her babies trickle out alongside her head. Though it is subtle, it appears to be communication (the transmission of information to influence another's behavior). On subsequent mornings, Mom may repeat this behavior, but anxious babies become more apt to slip out before her.

Her young are eager for warmth, as heat cranks up their metabolism and hastens the shedding process. Mom, on the other hand, is not so keen to cook, as she has spent the better part of the active season staying hot to get the kids out on time. She may be content to stay in shade or even in the shelter, attentive to any commotion that might mean trouble. Defensive behaviors work well at a broad range of body temperatures, in contrast to the more heat-hungry biochemical processes like digestion, embryonic development and shedding, so even cool Mom is an effective guardian.

When Melissa and I monitor nests, we must balance not disturbing the snakes (overtly, at least) with getting images of behavior. If we get too close and cause someone to flee, we may set off a chain reaction among the snakes and disrupt their family time. However, such accidents reveal their real responses to perceived threats. Although a variety of factors probably influences a snake's decision to escape (e.g., distance to shelter, body temperature, past experience), we have noticed a marked shift in

a new mother's tendency to react to our presence. During gestation, she tolerates us with near indifference, but once her babies are born, she often takes cover at the slightest provocation. Often (and only when babies are present) her head re-emerges. Is she making sure her young are still safe? And if not, would she confront the attacker?

The only nest attacks that we have witnessed were caught on camera while we were away. In both cases, each mother Arizona Black Rattlesnake emerged from cover to assume the rattlesnake threat posture (so often depicted in popular media). In one case, the attacker was a Rock Squirrel, a fairly large species we commonly



Rock Rattlesnake Rookery: a pregnant female babysits in the front while a new mother rests with a baby in the background in July 2022.

## The Nurturing Nature of Rattlesnakes *(continued)*

see harassing resting snakes around basking sites (the second attacker was not captured on camera, but all three babies survived). Rock Squirrels often harass adult rattlesnakes, which appears to be more of an annoyance than a danger. We do not yet know how Mom would react to a more dangerous foe. Would she sacrifice herself to save her little ones?

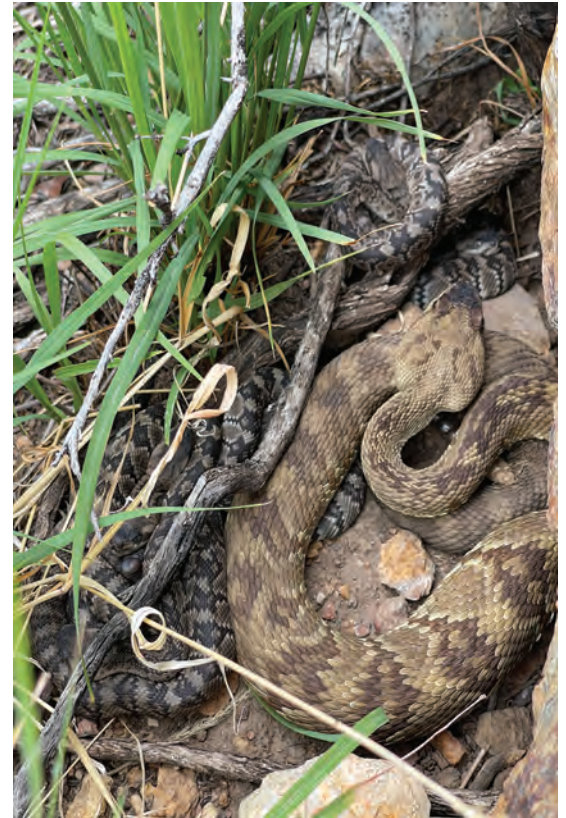
In a very few cases, a mother has slowly emerged towards us as her babies disappeared into cover – the only times we’ve been “chased” by snakes. Although there is no coiling or rattling, the determined advance of a mother rattlesnake sends an unmistakable message: back off!

The presence of other adults appears to relieve Mom of some of her protective duties, as she seems more inclined to remain in shelter while her babies bask. The mere presence of these other adults may serve as a sufficient deterrent for many would-be baby snatchers, but do they take an active role in care (i.e., alloparent)? I’ve only seen it once: beside a still-pregnant Arizona Black Rattlesnake (Priscilla), a newborn (House, whose mother remained in shelter) squirmed and fidgeted beside her as I watched through binoculars. Soon, he began to crawl out into the open and in my direction. From her relaxed coil (she was accustomed to our visits), Priscilla darted out her head to intercept House’s advance, her face directly in front of his. He immediately stopped, paused briefly, returned to the shelter of the rock and coiled into stillness. Basking would have to wait.

After a week or two, newborn rattlesnakes cast off their neonatal skin. Their colors become more vibrant, their patterns sharper. With shedding comes increased sensitivity in vision and, presumably, touch. While



Priscilla, a pregnant Arizona Black Rattlesnakes babysitting House, one of her nestmate’s babies, in September 2010.



Western Black-tailed Rattlesnake mother rests with her babies outside their nest in July 2022.

they might linger a short time at the nest, nimbly crisscrossing their comparatively drab “pre-shed” siblings, a hunger propels them into the unknown. We begin to find them in tiny, coiled postures, propped against rocks and logs in anticipation of a passing lizard. Mom, too, is hungry, having given over the better part of her year to reproduction. In colder climates, only a few short weeks remain before the weather drives them underground for the winter. Fortunately for these new babies, they are able to follow Mom’s scent back to the same rocky sanctuary that may have protected this clan of snakes for a thousand winters.

- Jeff Smith, Co-founder, Treasurer, ASP

**Want more photos, stories, and videos of snake mommies?**  
[www.snakes.ngo/nurturing-rattlesnakes](http://www.snakes.ngo/nurturing-rattlesnakes)

# Snake Heroes

## Kathy Bricker

We lost an amazing champion for snakes, wildlife, and wild places in 2022. Kathy Bricker not only worked with international conservation organizations, but started local efforts to preserve open space, recycle, connect people with nature, and raise awareness about birds and environmental issues. But it wasn't just relatively popular and well-known issues that caught Kathy's attention. In 1989, when two young Reticulated Pythons needed a home, Kathy and her husband Jim gave them one. Pivot and Mario spent the next 27 years educating thousands of children and adults through Kathy's *Snakes Alive* program. We are honored that she thought enough of ASP's work to bequest a gift to us to help continue our efforts to educate the public about snakes.

*"Kathy was a bright light, even death can't dim. Her memory and legacy lives on."*

Dawn Bodnar, *Snakes Alive* participant



Photo courtesy of Jim Bricker.



Photo courtesy of Lindsey Radabaugh.

## Allie Rose Radabaugh

This summer we awarded a Snake Hero Award to Allie Rose for her outreach on behalf of a Dekay's Brownsnake. When this tiny, defenseless snake showed up in her school yard, students and teachers panicked and the snake paid the ultimate (and unfortunately common) price. This snake lover turned her broken heart to action and took this opportunity to educate her classmates and teacher about their helpful snake neighbor. Touched by this story, we sent Allie Rose a gift pack and award in commendation for her efforts.

*"Thank you! I love all the stickers and am thinking of where to put them. I will definitely keep standing up for snakes and will make sure to do so whenever I can!"*

Allie Rose Radabaugh

## The Shocking Truth About Mohaves (*they don't want to bite you*)

On May 16th, 2021, I hopped on a flight from Newark to Tucson. A few hours later, in an unfamiliar airport in Arizona, I met a professor I'd never spoken to in person, linked up with a fellow volunteer I'd only communicated with via text, and was handed the car keys of the PhD student for whom I would spend the summer working. The PhD student in question was 160 miles away, at our final destination, a place cartographers might lovingly call *the middle of nowhere*.

That was the beginning of the wildest — and most snake-filled — summer of my life.

The small town of Rodeo, New Mexico is not actually even a town. It's so miniscule that it's merely a "census-designated place." But if you like reptiles and amphibians, you might've heard of it anyway; the spot is a mecca for herpetologists. The surrounding landscapes are chock full of enough snakes, lizards, frogs, and toads to draw herp-lovers from all around the country and world.

The region also proved to be the perfect field site for Dylan Maag, the PhD student who had hired me. Dylan was in the thick of his doctoral research in Rulon Clark's lab at San Diego State University, and had recruited me and four other volunteers to spend a summer helping him gather data for his project studying hybridization between two rattlesnake species.

Prairie (*Crotalus viridis*) and Mohave Rattlesnakes (*Crotalus scutulatus*) are both found in lowland regions of southwestern New Mexico. They overlap in a narrow area wherein the two species hybridize — that is, mate with each other and produce hybrid offspring. According to evolutionary theory, when hybrids survive and mate less effectively than their parent

species, breeding between the two species will be selected against and reproductive barriers (behavioral or biochemical) will develop; this is the mechanism thought to maintain a species' distinctiveness. Alternatively, should hybrids have some fitness advantage, adults would seek to breed with the other species, and soon the two parent species would be indistinguishable. Dylan's research sought to compare a number of ecological and morphological characteristics of Prairies, Mohaves and their hybrids, including hunting behavior, habitat choices, physical characteristics, and venom composition. With these data, he could unveil the mysteries of this particular hybrid zone.

One of the pillars of the project was information on movement patterns — figuring out exactly where the snakes were, and what they were doing, at certain points of the day. That summer, we were tracking snakes that were toting radio transmitters. Using an antenna and receiver tuned to the transmitter's signal, you could zero in on the snake's location any time you wanted, walk over there, and see exactly where they were and what they were doing. Easy!

### *At least, that's the idea.*

That's how I found myself traipsing through the desert in the middle of the night, scanning the landscape with my headlamp, veering this way and that as the beeping of my receiver got louder or quieter, all my efforts bent on finding an animal that most would have done anything to avoid. To this day, it's probably the coolest thing I've ever done.

On one particular night, a Mohave Rattlesnake named Mo was giving me trouble. The beeping of my receiver told me he was close, but I couldn't spot him. The desert was littered with mesquite bushes and tufts



Mohave Rattlesnake resting peacefully, photographed by Alex Megerle.

## The Shocking Truth About Mohaves *(continued)*

of grass — plenty of places for a snake to hide — and you couldn't just go crashing through the brush until you found your target. For one, Mohaves are venomous. There's nothing to fear if you keep a respectful distance, and the snake gaiters we all wore helped protect our lower legs, but caution was still warranted. And two, the integrity of Dylan's data depended on each snake's behavior remaining natural. Scaring them into the open would compromise the observation.

*Scan around with my receiver. I think he's in this direction...*

*Some careful movement, scrutinizing the ground where I'm walking. Scan again. Maybe not...*

The radio receivers could get you most of the way there, but they weren't exactly instruments of superb precision. If you were close to the animal, as I was, the signals could get confusing.

*Scan, scan, scan. Where IS he?*



*"Can you really not see me?" Mohave Rattlesnake.*

And then I looked down and finally — **finally** — saw Mo... curled up next to my boot, as if he had materialized out of thin air.

**I'd narrowly missed stepping on one of the most feared rattlesnakes in the world.**

I'd like to make a brief aside here to give props to snake camouflage. Yes, it was dark, and yes, there were abundant hiding spots. But I was actively searching with practiced eyes, I was shining a bright light around, and for goodness' sake, Mo was **literally beeping at me**.

And I still didn't see him until I was right on top of him.

I'd like to think I'm a pretty nice person, but Mo had no way of knowing that I wasn't out to get him. To Mo, I was a potential predator (no rattlesnake will ever look at a human and think **prey item** — we're just far too big). I was a freaky giant who had just set their freaky giant boot right in his personal space. If a giant had done that to me, and I had been toting fangs and venom, I probably would have felt justified in using them.

But Mo never struck at me. If my memory serves me correctly, he didn't even slither away!

My point is this: even when confronted with a real threat, Mohaves are disinclined to engage with humans. I'd accidentally strayed very close, close enough that Mo would have been justified in thinking I was trying to eat him, and thus attempting to inflict a defensive bite. But Mo just wanted to be left alone, and decided that staying hidden was his best chance at doing that.

Dylan and Rulon have already begun to analyze data from this and other studies. In over 8,000 hours of video footage of snakes coiled up, hunting for prey, never once did they observe a snake attacked or killed by predators. Snakes are likely hesitant to leave their coils because they're much safer in that position. Striking at me could have protected Mo, but it also would have shattered his near-perfect camouflage. Mohaves are infamous for their ability to hurt people, but attempting to do so is often their last resort.

In general, snakes — not just Mohaves — want absolutely nothing to do with you and me. I was familiar with that fact, and certainly wasn't wandering the desert under the illusion that rattlesnakes were out to get me. But the memory sticks all the same — seeing the principle up close and personal is quite different than reading about it on the Internet!

I wouldn't recommend getting close enough to a rattlesnake for him or her to bite you, but if you ever find yourself there by accident, take heart: if they're anything like Mo, you should be just fine.

**- Alex Megerle, ASP Volunteer**

# Tales of Transformation

## Learning to Love Your Neighbors

A few years back, a couple in our town called us about a Black-tailed Rattlesnake that had settled in beside their house. Les and Mary Ann wanted us to move her somewhere everyone would be comfortable with. This well-mannered snake presented a perfect opportunity for them to see what snakes really do: she was there to hunt small mammals, and would soon be heading uphill for the winter. Nora, as she was now called, took a ride in a bucket to a pile of rocks a few dozen yards away – close enough for Nora to know right where she was, but far enough that she has not been seen again.



Nora, female Black-tailed Rattlesnake, rests near the front door, photographed by Les Brandt.

This fall, another Black-tailed Rattlesnake showed up at their house – *inside* the garage! Mary Ann sprang into action and gently ushered him outside with a broom, even pausing to get a photo. She attributed her confidence to what she had learned about her snake neighbors, especially how they care for their kids and babysit. *Snakes are just like any other animal*, not nefarious monsters.

- Melissa Amarello, Executive Director, ASP

## From Debilitating Fear to Love: My Saga With Snakes

Fear of Snakes is one of the most common phobias. From mild repulsion to extreme reactions — from screaming to fainting — most people react negatively to Snakes.

Is it because they are so different from the rest of us vertebrates, gliding effortlessly despite the absence of limbs or fins? Is it bad press and superstition since time immemorial? The fact is that of some 3000 species of Snakes worldwide fewer than 15% are venomous.

Facts don't matter to people like me whose fear of Serpents ranked somewhere between screaming and turning to stone. Once I was returning to my car and the only way over the tangled sand-dune vegetation was a narrow trail I had successfully walked over a few hours earlier. But now, to my left I spotted a coiled Copperhead. She was venomous, I knew, but that didn't matter; had she been a Gartersnake I would have done the same: run back to the beach and look around for some man to carry me over that only exit.

My aversion didn't improve until one fateful Sunday morning that would nearly become my last. On the kitchen floor there was a small Snake, courtesy of one of my Cats who dragged her up from the basement. This time I screamed.

My husband responded to the unnatural howl, but he laughed when he realized my panic was due to a harmless Gartersnake. Putting her out in the backyard was too close for my comfort; pets on the loose, neighbors, and pesticides didn't augur well for her. He offered to put the Snake in a coffee jar so I could release her in a field out of town on my way to work.

# Tales of Transformation

## From Debilitating Fear to Love *(continued)*

It took courage I didn't know I had to agree to the insane plan, but my respect for life won and I allowed him to put the jar — breathing holes properly drilled in the lid — on the passenger seat. At 5 am on a weekend an unconfined glass container by the driver didn't raise any alarms in our sleepy minds.

I set off in the quiet dawn and just two blocks away from home I fearfully glanced over at the jar. The lid had come off and I saw the Snake as she was falling onto the floor. I hit the brake with force... only that in a state of absolute terror I hit the gas instead. My Toyota Corolla wrapped around a utility pole and I was severely injured. Shattered glass from the coffee jar had severed my carotid artery. Still conscious, I watched my blood spurting like a geyser from my neck.

I would have lasted but a few minutes in sleeping Tulsa, Oklahoma, had an old man sipping his first cup of coffee not heard the crash through the kitchen window. He called an ambulance which dispatched from a hospital just one block away. I received a transfusion just in time.

When the ambulance medic dropped by my hospital room two days later — those were the days of chivalry — I asked him whether he or anyone else had found “the Snake.” As if the medic knew the genesis of the crash! As if anyone could see a small Snake in the site of a wreckage! Of course, nobody had seen a Snake. And I found myself hoping that she survived and somehow made it safely away from the street.

### Was that an epiphany?

Two weeks in the hospital with multiple broken bones, vocal cords severed, and residual impairment of some of my abilities forever beg the question: *Could any Snake cause more damage than my fear of them had done?* Not a Gartersnake to be sure, but very few others and not any native to Oklahoma.

Life continued and I didn't dwell on the mistakes my husband and I made leading to the accident. Nor did I run into any Snakes until one sunny morning. I was reading in my backyard and not far from my feet, on the grass, I saw two Gartersnakes entwined with each other. I had never seen such a thing, but I knew what it was, and I was filled with wonderment and compassion that those two individuals were furthering their kind and, yes, loving each other. It was so clear to me, so beautiful, and I was free.

- Dolores Proubasta, Advocate for ALL Animals



A Black-Necked Gartersnake explores a yard.

Submit your own Tale of Transformation: [www.snakes.ngo/your-stories](http://www.snakes.ngo/your-stories)

# 2022 The Year in Snakes

1

Article in the  
*New York Times*  
on social reptiles!

2

Online classes &  
workshops

5

In-person displays  
& presentations

1,589

Signatures submitted to the Louisiana  
Department of Wildlife and Fisheries to  
**End The Lake Providence Snake Rodeo**

1<sup>st</sup>

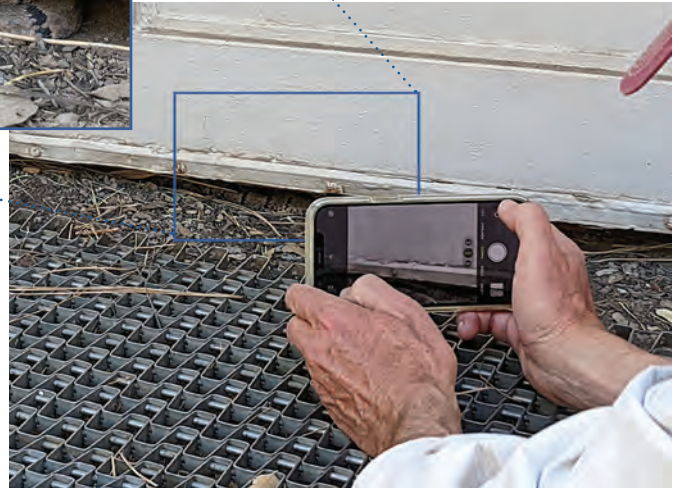
**Coexisting With Pitvipers Symposium!**

19

Hotline calls & texts

6

Snake rescues



We had our first Rock Rattlesnake rescue this year.  
Little did she know, this shy little girl was preventing the  
homeowners from getting in their front door.



Melissa introduces Pipsqueak, ASP's Gophersnake teacher,  
to some new and old friends at Continental Divide Trail  
Days X Gila Earth Day 2022.

38,064

People learned about snakes and  
threats to them by visiting our  
websites

252

Hours watched on our YouTube channel

64,616

Interactions on Facebook and  
Instagram

**YOU made this possible, by donating the most for snakes ever:**

**\$29,160**

# Advocates for Snake Preservation

Advocates for Snake Preservation is a 501(c)(3) nonprofit organization committed to changing how people view and treat snakes. We use storytelling to make snakes more familiar and less scary and recommend yard and human behavior modifications to reduce human-snake conflicts and make coexistence with venomous snakes safer.

While education and changing attitudes are the heart of our work, we also take action and advocate on pressing issues that impact snakes. Since our founding in 2014, ASP:

- Organized the first symposium on coexisting with snakes;
- Submitted 1,589 signatures demanding an end to snake rodeos in Louisiana;
- Changed the conversation on rattlesnake roundups;
- Killed the Arizona snake-shooting bill; and
- Reached tens of thousands of people online, *every year*, with our multimedia snake stories.

**Donors like YOU make this happen** — not grants, not megadonors. We really mean it when we say we couldn't do this work without you. **Thank you!**

*We envision a world where ALL are respected and appreciated instead of feared and hated*

## Who We Are

- Melissa Amarello, Executive Director
- Jeff Smith, Co-founder, Treasurer
- Steve Marlatt, Chair
- Jesús A. Rivas, PhD, Vice-Chair
- Emily Taylor, PhD, Secretary
- Gordon M. Burghardt, PhD, Director

## The Buzz

is published by ASP for our supporters. We welcome your questions and suggestions: [info@snakes.ngo](mailto:info@snakes.ngo) • 575-956-5231.

All photographs taken by Jeff Smith or Melissa Amarello, unless otherwise credited. Layout and design by Melissa Amarello.

Read more snake stories on our website:  
[www.snakes.ngo/stories](http://www.snakes.ngo/stories)

## Give Snakes a Second Chance!

Every day a snake ends up in a place they're not wanted, often the yard of someone who misunderstands and fears snakes. *For far too many snakes, this is a fatal mistake.*

You can give everyone the opportunity to learn what snakes are really like, so conflicts are resolved peacefully for people and snakes.



Donate online at: [bit.ly/give2snakes](http://bit.ly/give2snakes)

# The Buzz

Advocates *for* Snake Preservation

PO Box 2752 • Silver City, New Mexico 88062

2023 • #11



A wad of baby Western Black-tailed Rattlesnakes thermoregulating outside their nest.

**Baby Wads!** With more surface area to their volumes than adults, newborn rattlesnakes heat and cool at faster rates. Piling into a wad reduces the amount of air-exposed skin and may blunt temperature swings. At its most efficient, cooler babies from the bottom of the wad clamber to the top to get sun and heat from their hot siblings who were, until then, on top. In reality, it appears quite disorderly, as the wad's members churn to distribute heat more evenly throughout.

In arid regions especially, water loss through the skin is reduced when snakes gather into wads. *Ecdysis* (the shedding of skin) is a water-intensive process that may not happen properly if humidity is too low. Piling together with siblings, therefore, may help maintain favorable moisture *and* thermal conditions.



A wad of baby Rock Rattlesnakes.

## Please Share!

When you're done, please leave  
*The Buzz* where others can read it  
and learn to love snakes too.

Cafes • Libraries • Bookshops

Physical contact with siblings may also help ease anxiety about predators because more heads are better than one at detecting threats. Should one baby spook and head for cover, everyone in the wad gets the message that that danger may be lurking. Such information, transmitted by touch, may be especially important when eyesight is diminished in the days leading up to ecdysis.

- Jeff Smith, Co-founder, Treasurer, ASP