

Herping Arizona—2002 in Review

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“This herper realizes that the herping can’t keep getting better every year. The art of herping is like the stock market—it can’t keep going up and up—it has to crash at some point. It appears that this is the year of the crash.” (THS Meeting Announcement by author, 8/17/02).

An 02 Heartbreaker:

A brief note from a datasheet: “5/25/02, 8:43 PM (Quick hit W/ Moorbeck): CA3 not visible, site 38, joined by CA8. Cool!”

Yes, this was indeed cool. CA3, or *Crotalus atrox* number 3, was a prime-of-life female who we had been radio tracking for over a year. She was the most consistent snake in our study health-wise. She was hefty when we captured her in March of 2001, and she adapted well to the addition of electronic junk in her innards. She remained ever-constant in girth throughout all of 2001. She was not snagging huge meals, but she was regular in her feeding habits. She was more than surviving—she was thriving.

On September 13 of 2001, I found and photographed her linked in full coitus with a young male *atrox*. This was the first time that I had seen one of our subjects mating, and I was understandably ecstatic with this development. A September mating meant that we had a shot at a birthing event the following August. We caught the mating, would we catch the birthing? Of course we would!

In late October of 2001, she began shifting toward her capture site, which is in reality a hibernaculum for several *atrox*. It was noted with great joy that on November 4, she closed the loop of her yearly cycle by entering the same den that she was captured from. She entered it fat.

Her transmitter ticked on through the fall, and into the dry, cold winter of 2002. She remained out of sight the entire time she occupied the den. Sometime between April 2 and April 7, she cleared out of the den—for the last time ever.

On April 7, she was observed in a deep pocket between two boulders. She had moved about 20 meters due westward—her usual egress pattern. She had company. A large male *atrox* was in the hole with her. They were coiled loosely together, he being slightly more toward the entrance than she. No courtship was observed, and none may have happened, but it is possible-to-likely that something was missed during the thick of the CRHSD2 conference time period.

My first good look at her occurred on April 9: “Looks in average health.” April 13: “looks great.” April 17: “looks healthy.” April 20: “Food bulge—looks great.” May 7: “Great health.” Care is shown with these datasheets not to make notations that aren’t a sure thing. I’m convinced that given the opportunity, by late June we would have written this on a data sheet: “We are 100% certain that CA3 is pregnant.” We then would have each signed it “Gordon W. Schuett and Roger A. Repp.” (Followed by exact date the prediction would have happened).

Sometime between May 7 and 11, CA3 entered a pack rat midden. My site description written at the point of contact on May 11 is adequate to describe where CA3 spent the last days of her life: “5/11/02, 9:08 AM. CA3 not visible, site number 38, signal coming from beneath old, flat stick and bark *Neotoma* midden that is in a 1 meter wide x 1 meter long depression beneath a two meter tall/squat mesquite. The area surrounding this site is peppered w/small rodent holes. Mormon tea, hackberry, desert

broom and bursage in canopy of mesquite. 27.5 C hole, 28.5 C ambient, 0% clouds, 6% humidity, 3-12 MPH breeze.”

At that point in time, there was no CA8, or *Crotalus atrox* #8 in our study. She came along a week later, and volunteered to be one of our subjects with the same willingness that they all demonstrate: hissing, rattling, musk-slinging, tong-biting, bag-biting, kicking and screaming all the way. With her, there was no guesswork about her pregnancy. Unlike CA3, we had the opportunity to do some felonious fondling with CA8. She was deemed to have eight pups developing inside her. She was released on May 24, and it was a great and pleasant surprise to note that she moved in the midden to be with CA3 a day later.

Female *atrox* hanging together in dens during the winter is a known phenomenon. Female *atrox* together in late spring is quite another matter. I had never heard of such a thing! Inquiries went out in many directions—only Dale DeNardo and Emily Taylor had anything to say about it. Apparently, their female *atrox* occasionally gathered together in July and August. The common thread between their observation and ours was that their gathering females were pregnant! Rookeries? Cool!

I set out to check our potential rookery with high hopes of how this might all develop. We had two pregnant women hanging together in a midden! Life was good! Thoughts of having all our eggs in one basket were the furthest thing from my mind.

On June 3, the signal for CA8 was leading me away from CA3’s site. They were no longer together? The signal grew loudest as the antenna hovered over a little orange cylinder that lay on open ground. Where was the snake? And what was this little orange cylinder doing on the ground? It looked like a big firecracker. It even had a silver-colored fuse coming out one tapered end. Such were the thought patterns of someone who had never actually seen a transmitter. My first visual of a Holohil temperature sensitive transmitter was transpiring, and it took me several minutes to understand that.

Once the identification of what I was viewing finally sunk in, I wrestled with the ramifications of this. Eventually, it was ascertained that my orange firecracker lying on the ground was probably a bad sign. I immediately thought of CA3, and left the scene to check on her. Her site was 14 meters away. A short while later, I returned to the transmitter on the ground, and started a datasheet:

“6/3/02, 6:32 PM: CA8, Site number: N/A. Radio tag SN 69979 found on open patch of bajada, bursage and 1) 3.5 meter tall palo verde encircle said patch of ground. CA3 site 38 and CA8 site 3 has been majorly excavated, it appears to be the work of a badger. Will now check on CA3.”

I went over and over the now destroyed site with my receiver’s antenna, hoping that somehow CA3 had survived the onslaught. Once I knew this wasn’t so, I went back to the datasheet, and had this to say: “Whelp, we just lost one half of our radioed female *atrox*! CA3’s transmitter and her rattle found. Will proceed with site description: A west-facing hole was dug into the midden, it is roughly 300mm (millimeters) in diameter, and angles downward at

about a 20 degree angle, appears to be maybe 600mm deep. Loose dirt has been tossed over top of midden. CA3's rattle and transmitter found inside hole."

Some photos followed, along with some personal comments about my inner feelings. The last comments on the sheet closed the book on CA3 and CA8. "Have flagged both sites RIP. This was a major setback to this study."

Hours later the phone call ensued, and Schuett demonstrated that he was thinking thoughts similar to mine. "Well, we're done then!"

We had two females left. One of them was CA2, and she had pups the year before. The other, CA1, was an old lady who was constantly having a rough time finding food. We had lost the very reason we were following these animals: reproduction.

The loss rocked us. For the first time, and hopefully the last, we actually discussed quitting the project. But when the going gets tough, the tough get going. A week later, we were back at it.

In looking back at the year 2002, we will deal with the positive things that occurred as well as the negative. But when all is said and done, whenever I think of 2002, the first thought that will always enter into my mind is that first look at CA3's midden torn asunder. The visual memory of the devastation wrought by a marauding badger is a fitting analogy to the year of a drought without pity.

Weather Matters (does it ever!):

Much of the following information comes from the National Weather Service Forecast Office, Tucson, Arizona, URL: <http://www.wrh.noaa.gov/tucson/climate/2002/2002.html>

All that follows are from records kept at Tucson International Airport (TIN). The writer of this report is John Glueck, who keeps an excellent finger on the pulse of weather matters in our area.

Before discussing weather issues of 2002, we should first look at a few "highlights" of 2001. The drought of 2002 was worsened by what preceded it. Bearing in mind that weather records have been kept in our area since 1895, 2001 was:

- The 13th warmest and 12th driest on record.
- 4th warmest and 9th driest monsoon on record.
- 3rd driest July 1st to December 31st period on record.

The last bulleted point about 2001 provides the setup for 2002. Out of over 100 years of record keeping, 2002 started with the 3rd driest six-month period in weather keeping history! We now pick off some "highlights" of 2002:

- 10th warmest and 14th driest year on record.
- 100 consecutive days of no rain sets all-time record streak (3/30 to 7/7). The previous record was 90 days—set in 1909!
- Annual monsoon season begins July 9, 8th latest start.
- Both 2001 and 2002 end with less than eight inches of rain (7.81 and 7.84 respectively). This is only the second time in our weather history that we have had consecutive years of less than eight inches of rain!
- Winter 2001-2002: below normal temperatures and rainfall.
- Spring 2002: 12th warmest and 4th driest on record.
- Summer 2002: 12th warmest on record with below normal rainfall.
- Fall 2002: Above normal temperatures and below normal rainfall.

- On a month-by-month comparison, only two months exceeded the *average* amount of rainfall that we can expect. They were July (+.4") and September (+.24").
- Conversely, the remaining ten months of rainfall in 2002 show negative marks.

My personal observations are packed full of nothing but lament, lament, and more lament. During the wetter winter of 2001, I took many photos of hibernacula that were overgrown with lupine, poppies, penstemon, fiddlenecks, lush grasses and ferns. The photos from the exact same angles in winter 2002 reveal nothing but dry dust and holes. The crying started early, as I would repeatedly remind anyone who would listen that I had seen cold, wet winters and warm, dry winters—but never a cold, dry winter. My other favorite phrase for the first 6 months of 2002 was "how can *anything* survive this?"

The full impact of weather matters in 2002 will be felt for many years hence. The Mount Lemmon Bullock Fire left us a mountain that will be scarred for the rest of our lives. The Rodeo fire wiped out close to one half million acres of prime forest land. State parks and recreation areas were closed by the score, with stiff fines threatened for anybody who dared to enter. Even those with research permits were denied access. The fear of fire was downright fanatical anyplace with forest nearby.

And then—finally, some rain fell. The drought-breaking rain of 7/7/02 didn't actually touch any of my favored haunts, but my records show that one tenth of an inch fell on July 9. The first real rain in my areas occurred on July 14, when over an inch fell. The herps, both radio-telemetered and incidental, responded quickly to this development.

How strange it seemed to see puddles again, and to see a few toads hoping about. Shortly after that, I was able to locate a couple pools of water that contained some Spadefoot tadpoles. That didn't last long! These pools quickly dried, leaving the crusty residue of dead tadpoles in their withering retreat. While the rainfall in July was slightly above average, it did not come at regular enough intervals for a successful reproductive season.

August was a sizzle, and a fizzle. The below average and spotty rainfall couldn't even begin to compensate the requirements of a drought-stricken land. The first few days of September didn't look promising, but an awesome front moved across all of Southern Arizona on September 5, dropping consistent and steady daily rain for over a week.

Two noteworthy things happened after this week of rain. The first was not a good thing. While many known Spadefoot Toad breeding puddles were full—the toads gave it up! They didn't even *try* to breed again! The second noteworthy event was positive: explosive breeding behaviors on the part of *Crotalus atrox*. Two of our tagged females were found mating, and both of these were also found with more than one boyfriend. I received reports from Emily Taylor—their females were at it hot and heavy, and no less than four other mating reports from others crossed the wires. Even with *atrox*, mating is seldom encountered, and the volume of reports that I received after these September rains would serve to indicate that something special happened here.

While rainfall from October through December was less than average, it did occur with enough regularity to allow the annuals to start blanketing the desert floor. With September's above average precipitation, the setup for 2003 was a much better scenario than what we saw for 2002.

The Numbers:

All totaled, this author made 174 trips into the field, and spent 935.5 hours doing so. No attempt was made to total the hours of others who were with me in presenting the numbers that follow below, but we could roughly estimate that at around 900 hours. As always, whether a companion or I made a find, said find was always faithfully recorded. No effort whatsoever was made to get the common names correct with the data that follows. It is my sincere hope that my bastardized versions, followed by genus and species, are close enough to give the reader understanding of what we're talking about. Without further adieu:

Venomous Snakes

Diamondback Rattlesnake (<i>Crotalus atrox</i>) (14 were DOR)	109
Sonoran Sidewinder (<i>Crotalus cerastes</i>) (9 were DOR)	26
Mojave Rattlesnake (<i>Crotalus scutulatus</i>) (3 were DOR)	10
Tiger Rattlesnake (<i>Crotalus tigris</i>) (1 found dead)	9
Blacktailed Rattlesnake (<i>Crotalus molossus</i>)	6
Hopi Rattlesnake (<i>Crotalus viridis</i>)	1
Total Venomous Snakes (27 were DOR)	163

Non-Venomous or Rear Fanged Snakes

Western Coachwhip (<i>Masticophis flagellum</i>) (7 were DOR)	27
Sonoran Gophersnake (<i>Pituophis melanoleucus</i>) (11 were DOR)	16
Longnose Snake (<i>Rhinocelchus lecontei</i>) (7 were DOR)	11
Common Kingsnake (<i>Lampropeltis getula</i>) (9 were DOR)	11
Glossysnake (<i>Arizona elegans</i>)	7
Desert Patchnose Snake (<i>Salvadora hexalipis</i>) (2 were DOR)	4
Sonoran lyresnake (<i>Trimorphodon biscutatus</i>) (1 found dead)	4
Spotted Nightsnake (<i>Hypsiglena torquata</i>)	4
Utah Milksnake (<i>Lampropeltis taylori</i>)	2
Wandering Gartersnake (<i>Thamnophis elegans</i>)	2
Checkered Gartersnake (<i>Thamnophis marcianus</i>) (1 was DOR)	1
*Total (37 were DOR)	89

Turtles

Desert Tortoise (<i>Gopherus agassizii</i>) (6 were dead)	42
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Lizards

Zebra-tailed (<i>Callisaurus draconoides</i>) (2 were DOR)	415
Sideblotched (<i>Uta stansburiana</i>)	361
Whiptail (<i>Cnemidophorus</i> spp.) (1 was DOR)	212
Desert Spiny (<i>Sceloporus magister</i>) (3 were DOR)	45
Tree (<i>Urosaurus ornatus</i>)	21
Eastern Fence (<i>Sceloporus undulatus</i>)	15
Regal Horned (<i>Phrynosoma solare</i>) (3 were DOR)	9
Banded Gecko (<i>Coleonyx variegates</i>)	7
Clark's Spiny (<i>Sceloporus clarki</i>)	6
Collared (<i>Crotaphytus collaris</i>) (1 was DOR)	6
Gila Monster (<i>Heloderma suspectum</i>)	5
Leopard (<i>Gambelia wislizenii</i>)	5
Desert Iguana (<i>Dipsosaurus dorsalis</i>)	4
Sagebrush Lizard (<i>Sceloporus graciosus</i>)	3
Lesser Earless (<i>Hoolbrookia maculata</i>)	2
Mountain Spiny (<i>Sceloporus jarrovi</i>)	1
Texas Horned (<i>Phrynosoma cornutum</i>)	1
Roundtail Horned (<i>Phrynosoma modestum</i>)	1
Total Lizards	1,119

Some Comments About These Numbers:

This author is busily assembling numbers and weather statistics over a five-year period for an upcoming *Sonoran Herpetologist* article. This article will deal with comparing numbers on a yearly basis. To compare 2002 with years past in this article would only provide

redundancy—but we have enough preliminary information to lay out a few facts about 2002. The following comments are based on separate yearly totals, from 1998 through 2002:

- Lowest number of *Crotalus atrox*, 109 (high was 185 in 2001.)
- Lowest number of *Crotalus molossus*, 6 (high was 25 in 2000.)
- Of five species of commonly encountered *Crotalus* (*atrox*, *cerastes*, *scutulatus*, *molossus*, *tigris*), the total number of 160 is the lowest (high was 252 in 2001.)
- Lowest total of all venomous snake encounters, 163 (high was 287 in 2000.)
- Of five species of Colubrids, (C'whip, Gopher, P'nose, L'nose and King), the total of 69 is lowest (high was 126 in 2001.)
- Along these lines, lowest numbers for Gopher, 16 (high of 43, 2000), P'nose, 4 (high of 18, 1998), and L'nose, 11 (high of 25, 2001.)
- Lowest total number of Colubrid encounters, 89 (high was 177 in 2000.)
- Lowest total number of all snakes, 252 (high was 464 in 2000.)
- Lowest number of Desert Tortoises, 42 (high of 126 in 2000.)
- Lowest number of Gila Monsters, 5 (high of 21 in 2000.)
- Lowest number of Desert Iguanas, 4 (high of 13 in 2001.)
- And finally, the most damning statistic of all: Over a three-year period, total lizard numbers plummet to 1,119, (high was 2,289 in 2001.)

There is, of course, more of less contained within my dataset. But it is felt that we have proved our point!

My opinion: the drought of 2002 brought about the worst herping conditions in over a decade.

Discussion:

The discerning reader/scientist would be well within their rights to challenge the author's opinions and comparisons contained above. This author would welcome any feedback, positive or negative.

From the years 1988 through Spring of 2001, I was free to go where I pleased. Eventually, that freedom directed me to the still reasonably pristine desert areas to the north and west of Tucson. My patterns have not changed much since 1998—when I started to settle in to the places that I love best. Our study site is in the thick of that area. This is why I am gathering the dataset for a five-year period for an upcoming article, rather than going further back in time.

While my radio-tracking study site admittedly does not contain an abundance of tortoises, Gila Monsters, or rattlesnakes other than *atrox*, it *does* have healthy populations of other species of herps. And the roads leading to and from the site are the same roads that I have been cruising since 1988!

In order to cover my argument, a few comments are in order regarding the bulleted points. Taking them in order, *atrox* comes first. Were 2002 a year that reflected bad numbers for them alone, we would remain silent. An interesting comparison with *atrox* found on our study plot is in order. In 2001, 53 different *atrox* were encountered on an incidental basis within an area roughly one square mile. In 2002, only 30 turned up in the same area. If we create a ratio from these figures, we get 53/30, or 1.77. If we take my best *atrox* year, 185 in 2001, and compare that with the total number of 109 found in 2002, we get the fraction 185/109, or 1.70. The 1.77 and 1.70

numbers are quite close, and allow more of an “apples to apples” comparison. Whether looking at the big picture, or the smaller picture, the numbers shake out evenly.

We almost skip the bulleted point on *molossus*, mentioning only that they are more visible in wetter years. We also almost skip the next two bulleted points dealing with total *Crotalus* and venomous snake encounters by mentioning that this was also my second worst year on record for sidewinders. The roads that I travel are a stronghold for these. We are on more solid ground with the two bullets about the Colubrid shortage. The big five common species mentioned are all common on the roads I travel, or at least, they were in years past. Two comments on Gophersnakes: Didn't

see my first one until late June, and only one hatchling encountered this year! Longnose: Didn't see my first one until July! Patchnose: **Only four?**

The lowest number of total snakes is significant, if for no other reason than the number falls in within the pattern of so many other negatives. Tortoises and Gila Monsters: Definitely animals encountered or visible in wetter conditions. Desert Iguanas: The roads I travel have a good indicator population.

Even though I have only kept records on common lizards for three years, the total number of 1,119 is downright abysmal. In 2001, I saw 1,208 Zebretails! To see more of one species of lizard one year than the total number of 18 species of lizard the next year is pointing to something quite obvious. And the common desert toads giving up a shot at breed-



A rare find? Even the normally often encountered coachwhip (Masticophis flagellum) was rarely seen by the author in 2002

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Desert Tortoise Disease Study

ing after good September rains has to play into the big picture of all this somehow.

The most positive way to close the book on 2002 is to look at how it ended. By December 31, enough moisture had accumulated to cause the annuals to gain a toehold on the desert floor. The rains in January and February of 2003 have served to assure that at least the first half of 2003 will be an improvement over we saw last year. This author is already seeing those things that are harbingers for a good winter/spring herping season.

The Lyresnakes are visible again, and the Gila Monsters are basking. Tortoises were observed moving about and feeding in February. We herpetologists often place all our emphasis on the summer rainy season, while ignoring what may be our most important wet cycle.

In any event, things are looking up for 2003. This author remains cautiously optimistic that this year will end the downward weather spiral that we have seen over the past two years. In any case, the worst year of herping is better than the best year of anything else!



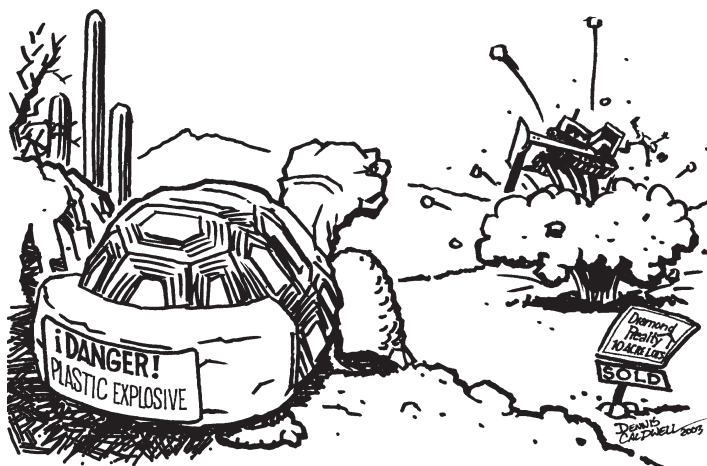
Urban development adversely affects the desert tortoise, *Gopherus agassizii*, through habitat loss, illegal collection, uncontrolled domestic dogs, and roads. Diseases spreading into free ranging populations from escaped or released captive tortoises are less visible, but may also be a significant urban problem. One such disease is Upper Respiratory Tract Disease (URTD), caused by the pathogen *Mycoplasma agassizii*. Though extensive studies have been conducted on the Mojave population of the desert tortoise following a catastrophic decline attributed to URTD, very little is known about the prevalence of URTD in the Sonoran population.

In July 2002, researchers at the University of Arizona began a study to examine URTD in desert tortoises in the vicinity of Tucson, Arizona. The purpose of the study is to use two analyses, one that detects specific antibody in plasma present after exposure to *M. agassizii* (ELISA) and another that detects *M. agassizii* RNA gene sequences in nasal secretions (PCR), to determine the prevalence of URTD in captive and free-ranging Sonoran populations of the desert tortoise in and around the Greater Tucson area.

This study is made possible by a grant from the Arizona Game and Fish Heritage Fund Program. Cristina A. Jones, a graduate student at the University of Arizona and member of the THS Board of Directors, is the primary field researcher. The principal investigators are William W. Shaw, the Program Chair for Wildlife and Fisheries Science, urban wildlife biologist, and faculty member in the School of Renewable Natural Resources at UA, and Cecil R. Schwalbe, a research ecologist with the U.S. Geological Survey Sonoran Desert Field Station and faculty member in the School of Renewable Natural Resources at UA. Don E. Swann, a wildlife biologist at Saguaro National Park and current THS vice-president, helped co-author the grant proposal and is assisting with studies in both Saguaro National Park East and West.

The Arizona-Sonora Desert Museum Tortoise Adoption Program and members of the Tucson Herpetological Society will facilitate access to captive Sonoran Desert tortoises from metropolitan Tucson. Free-ranging desert tortoises will be sampled along an urban gradient from the Santa Catalina, Rincon, Tortolita, Tucson, and Silverbell Mountains. This study also includes collecting data on behavior and thermal ecology of tortoises with varying expression of URTD using two established radio-telemetry study sites in Saguaro National Park East (SNPE).

For more information on the study, please contact Cristina A. Jones at cajones@u.arizona.edu.



TORTOISE SUICIDE BOMBERS



Comic Art by D.J. Caldwell