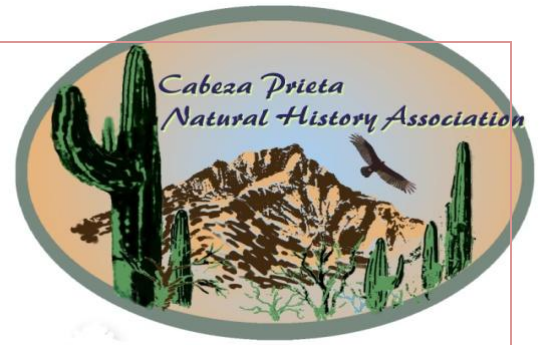


Cabeza Calling!

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Letter from the President

Connecting to the World Beyond Ajo

Our organization is well known in Ajo as the group that leads Tours up Childs Mountain, arranges the Lecture Series and leads Hikes to further our mission to promote knowledge and conservation of the Sonoran Desert. All these are very successful in terms of participants and are generally growing more popular. A recent lecture had over ninety attendees and last spring one of the Childs Mountain tours had 100. When you factor in how many of these we offer it becomes an impressive number of people who learn a little and enjoy the Natural History of our area. We co-sponsor the Sonoran Shindig in March and have a presence along with the Refuge at the fall street fair, too.

It may come as a surprise to learn that these things do not constitute our most public presence. In fact those numbers are dwarfed by the participation by people from around the world who use the Internet to seek information about the flora and fauna of the Sonoran Desert. Their browser returns our website, cabezaprieta.org. They click on our site and see our offerings of factual information about Plants, Animals, Climate and the Ajo area. These "hits" come in at more than one per minute averaged around the clock, a total of almost 650,000 last year. Our site is hosted as a contribution to us by Hurricane Electric (<http://he.net/>), a web hosting company in Fremont, CA.

[Cabezaprieta.org](http://cabezaprieta.org) is the work of Tom Powell, our webmaster, and Hank Jorgensen, who contributed to it for years and who has until recently been the naturalist for the Association. They were helped by others including Gayle Weyers. It is a phenomenal credit to their efforts and the response to it has validated its importance. I see the website as our most important tool. It should be a living thing, adapting to our needs and the needs of people worldwide who wish to learn from an authoritative source. Making that happen is a tough assignment and one for which our efforts should be ongoing.

This year we have added a Climate page and a link to Tom's weather data so you can check the heat even when you are in the cool summer of the northern US. Several of the Hikes and Tours have been added so you can preview them, or find an interesting place to hike and get some background on the Natural History. For members there are meeting minutes and the most recent issue of our newsletter to read or download. If there is an issue that interests you we now have a links page to get to the internet sites of our congressmen, national organizations who represent refuges and monuments, or their supporters. Birder sites and other natural history sources are included as well. We have also added a link to the outfitters REI. If you click through to their site and buy over the Internet, within a month we get a small percentage to use for our programs. We believe this is a good way to support programs without raising dues or seeking more in donations. I hope it is well received and that it works for you and us.

Some of you have contributed to the website and I thank you for that, others have given suggestions which have been completed or are in the works. I see the spring and summer months as a great time to reflect on Ajo, the CPNHA and our site. We can build on the work of Hank, Tom and all the others who have contributed pictures, text, links and ideas. Please be a part of this by sending your work or your pictures (try to identify the subject first) to ralph@cabezaprieta.org.

The foundation of this is so good and so well received that we are well on our way. However, it is not like a hike, as there is no destination, only other steps to take and new vistas to reach.

– *Yr fthfl srvnt Ralph Hudson, President*

The Cabeza Prieta Natural History Association is a private, non-governmental, non-profit entity dedicated to the promotion of the educational and interpretive activities of the U.S. Fish & Wildlife Service, in concert with the preservation of natural resources at the Cabeza Prieta National Wildlife Refuge, as well as promoting interest in and knowledge of the Sonoran Desert in southwestern Arizona. The Association was started in Ajo, Arizona in 1995 when it sponsored the first of the tours to the top of Childs Mountain during National Wildlife Week. In addition to Childs Mountain tours, the Association also sponsors the winter Natural History Lecture Series, public field trips, runs the visitor center bookstore, participates in the Audubon Society Christmas Bird Counts, the Great Backyard Bird Count, the Sonoran Shindig and the Ajo Street Fair, and collaborates with other local organizations and institutions in various fields. In addition, volunteer opportunities with the Refuge are offered to members.

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Letter from the Editors

An Evolving Organization and Refuge

As the CPNHA continues to grow and develop along with the refuge, there are exciting possibilities for improvement on almost every front, and they are being acted upon. The newsletter is a tool for informing members and visitors about current events and developments in the Association and on the refuge, and keeping people connected to issues concerning the Sonoran Desert and conservation in general. In this issue of Cabeza Calling, we present in more detail several activities which have occurred or are ongoing within the Association and on the refuge, such as the Christmas Bird Count, the Pronghorn Recovery Program and the Sonoran Desert Education Program. We also feature articles by local biologists on biological soil crusts and the Desert Tortoise (currently under consideration for inclusion on the Endangered Species List), which touch on sensitive issues regarding border-related damage, natural resource management and policymaking.

Our next issue will be the last one of our first season. We welcome all contributions; the deadline is April 1. Finally, as the temperatures start to increase, the Association's last couple of field trips and desert walks in March offer a great opportunity to get out and enjoy the desert!

News from the Refuge



Photo: K. Altshul

Christmas Bird Count '07, Cameron Tank

A Letter from the Refuge Manager

During the last part of December, we conducted the annual Christmas Bird Count near Ajo and also on the western portion of the refuge. The count near Ajo has been conducted annually for over ten years now and the count on the west side of the refuge is one of the oldest counts in Arizona. The counts conducted in the last few years have been quite low (last year had the fewest species of birds and also the lowest overall abundance of birds counted). This is likely attributed to poor winter precipitation. Two of the last three winters were very poor, with little rainfall until March or April. Since most of the resident birds breed early in the season, populations have

declined significantly. We had also observed marked declines in wintering birds as well. This was quite disconcerting. One of the purposes of conducting the annual Christmas Bird Counts is to assess the condition of bird populations throughout North America. After the last two counts, I had become quite concerned about both wintering and breeding birds in the lower portions of the Sonoran Desert.

Fortunately, we were able to find many more birds than we had in the last two years. The numbers were still well below our average counts, but we did find birds. Gambel's Quail continue to be rare out in the desert washes, but are abundant in town. Many of the wintering sparrows have returned, and it was great to see Sage Sparrows and Chipping Sparrows once again. Eurasian Collared Doves continue to increase within the greater Ajo metropolis, but still are rare out in the desert.

One other noteworthy occurrence is the addition of several new participants in the Christmas Bird Counts. When I first arrived here, we had a large group of folks who would participate in the counts. However, over time the numbers have dwindled significantly. I believe there is a need to develop some birding programs on the refuge to generate an interest in birding. This is a goal that can be accomplished through a partnership between the Cabeza Prieta Natural History Association and the refuge. Projects such as the one we are currently developing to create photography blinds and improve bird habitat in and around the pupfish pond behind the refuge visitor center should improve the area as bird habitat. Hopefully, we will be able to hold birding workshops around the area and introduce school groups and visitors interested in learning more about birds and hopefully sparking a lifelong interest in birds and the environment.

As many of you know, the refuge is currently working with many of our neighboring land management agencies and partners in developing a second Sonoran pronghorn population in southern Arizona. This is one of the projects I am the most proud of; I can remember conducting the Sonoran pronghorn survey in the winter of 2002. We estimated the entire U.S. population of pronghorn to be between 19 and 21 animals. We were in dire times and most of the refuge staff's energy was directed toward ensuring pronghorn continued to exist on the refuge. Over the last eight years we have had some demonstrable successes (and some failures). Five years after the construction of the captive rearing pen, we have more than twice as many pronghorn in the pen than we had in the entire U.S. population. Furthermore, we have been releasing males into the wild population for three years, and this year marks the first time we have released females into the population. The release of females is a major step forward. It is our hope that the reintroduction of breeding females into the existing wild population will allow for an increase in the overall pronghorn population in the U.S.

Given the success of the captive rearing pen, it is now time to begin examining the suitability of other historically occupied pronghorn habitats for reintroduction efforts. We are currently in the planning stages to identify suitable locations and develop a document available for public comment later in the fall of this year. This is truly an exciting time for the conservation and recovery of Sonoran pronghorn. Given the extremely low population size just 6 years ago, I continue to be amazed that we are starting to take the first giant step towards recovering Sonoran pronghorn in the United States.

The ongoing successes of this program are largely attributed to our partners who have been so willing to work with us both on ensuring Sonoran pronghorn continued to exist in the U.S. and identifying and implementing the next steps necessary to recover the population. Our staff have worked tirelessly with personnel from the Arizona Game and Fish Department, the U.S. Air Force, the U.S. Marine Corps, the National Park Service, the Bureau of Land Management, state and federal agencies in Mexico, and the Phoenix and Los Angeles Zoos in a highly performing communicative partnership and I am proud of their accomplishments. Over the next few years, the refuge will be highlighting this successful partnership.

In late January and early February, I hiked across the length of the refuge from west to east with Bruce Davis and Dennis Lettenmaier. I had had every opportunity to cancel the trip; I had not been feeling well and I had several time-sensitive products I needed to deliver. However, this was the only week I could get out on the refuge and I have vowed to stay connected with the refuge. I have always found this cross-refuge hike to be informative and provide insight on how weather (or lack thereof) and border issues are affecting the plants and wildlife of Cabeza Prieta National Wildlife Refuge.

Watching my two hiking partners grow steadily smaller as they traveled east, I seemed to lose even more speed and became concerned about what the next few days would hold. However, even though I had a terrible fever and my feet were blistered, I was glad to be out and quite appreciative of working in a magnificent place and remembering that I still have the best job in the world. As an added benefit, we were observing significantly less resource damage inflicted from smuggling and interdiction activities. This was the second year of observing reductions in resource damage and I was quite pleased with the observation. Furthermore, the west side of the refuge was a vibrant green and has benefited from ample amounts of rainfall.

One of the best things about walking across the refuge is that I am able to assess the condition of the vegetation, note wildlife observations, and observe the general condition of the refuge. Making observations about vegetative condition is quite informative, providing clues on the potential of the upcoming Sonoran pronghorn fawning season, success of breeding desert birds, and whether I will see a lot of Ajo lilies, desert primrose, and rock daisies over the next few months. The west side is already in bloom, I walked through a large sea of globe mallow in the valley between the Sierra Pinta and Mohawk mountain ranges. As we traveled to the east, the refuge became progressively drier. Hopefully the rains will continue and we will have a great wildflower season throughout the refuge.

As I continued the trip further east, I had lost my traveling companions. After several attempts to release them from waiting for me every few hours, I was able to convince them to continue and I would meet up with them in Ajo. I don't think they liked the idea, but after they quickly vanished into the distance I was no longer left to feel like I was impeding progress and my trip became more gratifying. Walking through the Growler Valley, I was able to witness a flurry of activity. Border patrol agents were traveling in vehicles, ATVs and helicopters, chasing several groups to the east of my location. In all of my trips through the refuge, this was the first time I was able to see the interdiction efforts first hand. This was quite informative and I will endeavor to work with the

U.S. Border Patrol on ways to ensure they can complete their mission but also ensure the resources of the refuge are protected.

Two days after I had finished the hike across the refuge, I was scheduled to meet with the construction company building the last segment of the vehicle barrier down at the project site. The project site is located in the Tule Mountains and I had to drive along the international border from Organ Pipe Cactus National Monument east to the Tule Mountains. I was quite amazed I could travel the 50 plus miles in less than 3 hours. This was substantially quicker than my walk and I marveled at how fast we could travel through broad desert valleys. I also didn't seem to take in the same flavor as the hike, you just can't get the same experience driving through the desert.

– Curt McCasland



Photo: K. Altshul

OAC – Hiking in the Cardigans

Sonoran Desert Environmental Education

Last year, the CPNHA proposed establishing a scholarship for Ajo students interested in wildlife biology. In the ensuing discussion, however, we realized the unfortunate truth: we have no students to whom we could give the scholarship. We have an abundance of incredible desert wilderness surrounding us, but our children never have the opportunity to experience it. To fulfill our mission of promoting interest in and knowledge of the Sonoran Desert *among local students*, we partnered with the International Sonoran Desert Alliance, Organ Pipe Cactus National Monument, Pima County Parks and Recreation, and the Bureau of Land Management to create an Outdoor Adventure Camp (OAC) for grades 3 - 5 in Fall 2007. This year, we expanded the program to reach older students with the Student Conservation Corps (SCC) for grades 6 – 8.

These programs are constructed around Leave No Trace (LNT) principles for outdoor ethics. Through LNT, we teach students how to prepare for outdoor recreation, travel and camp responsibly, and respect our natural and cultural resources. Last year, the program consisted of monthly activities emphasizing LNT techniques, culminating in an overnight campout at Organ Pipe Cactus National Monument. We took children on day hikes, pointing out local flora and

fauna, and taught them the basics of camping. After each event, we helped the students compile journals of their photographs as souvenirs. Additional activities included the Organ Pipe Cactus fruit harvest and the Quitobaquito pupfish survey. The 2006-2007 OAC was a success, gaining enthusiasm from both students and volunteers. The unanimous response from the students about their concluding overnight camp out was the wish to stay another night!

We were thus very excited to further develop OAC and SCC for 2008-2009. Our monthly events are similar, but we have expanded our curriculum to include Global Positioning System (GPS) equipment training and Wilderness First Aid. To raise awareness of our cultural history, we hope to develop an archeology unit. We would like to incorporate a few backpacking trips and field trips to wildlife museums and camping retailers as well.

Volunteers are essential to the continued improvement of OAC and SCC for our local students. We are looking for authors to write a Curriculum Guide that meets scholastic standards to add legitimacy to the program. As many of our students lack proper equipment, volunteers experienced in grant writing or applying for corporate sponsorships are needed. Finally, we welcome volunteers as event chaperones and as program facilitators who work with leaders to play a more consistent role in event planning and effecting. If you are interested in this great opportunity to serve the local community, please contact Margot Bissell at (520) 387-6483 or margot_bissell@fws.gov.

Let's get some nature into our kids!

– *Stephanie Doerries*

Flora and Fauna



Photo: K. Altshul

Soil crust in the Tule Desert

The Hidden World of Biological Soil Crusts

You are about to enter the world of small living things. A living world so small that rulers are useless. These tiny organisms form a thin crust on the surface of soils throughout the world. Although they are often overlooked and underfoot, biological soil crusts deliver essential goods and services to many ecosystems, including the Sonoran Desert.

In this thin world lives cyanobacteria, one of the oldest forms of life. Cyanobacteria are microscopic threads or single cells of life that can photosynthesize. They can take nitrogen out of the air and "fix" it for other living things to use. In other words, cyanobacteria make fertilizer out of air. When moistened, each thread of cyanobacteria produces a sheath of carbon-laden mucus and starts to move through the upper ¼ inch of soil where sunlight is available. The sticky sheath binds together soil particles. The old and new sheaths form an intricate web of fibers in the soil, forming a crust that is surprisingly resistant to wind and water erosion. Layers of abandoned sheaths built up over long periods can be found clinging tenaciously to soil particles deeper than 7 inches in sandy soils.

Green algae, bacteria, fungi, lichens, liverworts and mosses live with cyanobacteria in the soil crust. "Old growth" crusts are diverse and stable communities formed over many decades or perhaps centuries. You can see soil crusts by getting down on your stomach and looking closely. Pick up the topmost few millimeters of soil and look for minute filaments: these are the sheaths of cyanobacteria. Also look for the telltale black dots or pads of lichens and the emerald green (when wet) mosses. Soil crusts can look scabby (the common type in the Sonoran Desert) or they can get really elaborate with small spires, like on the sandy soils of the Colorado Plateau. When the soil surface is covered with small stones, look for soil crusts between the stones.

Cabeza Prieta National Wildlife Refuge has some astonishing soil crusts. The scabby-black crusts form a striking contrast to the white, granite-derived soils found on many of the open basins in Cabeza Prieta. Sometimes, the crust forms hexagonal or octagonal plates. Look for mosses on shaded drainage banks or under trees. Crusts are lacking on the semi-stabilized dunes of the Pinta Sands and other places where the surface moves frequently and buries the crust.

Organisms living in the soil crust not only fertilize the soil, but stabilize the soil surface as well, retarding the effects of erosion. The sheaths of cyanobacteria can absorb up to ten times their volume in water. The roughened surface of the crust slows the runoff of rainfall, increasing the amount of water that soaks into the soil. In some areas, soil covered by a biological soil crust dries less quickly than soil without a crust. Plants growing in crusted areas have higher concentrations of many essential minerals and nutrients (like potassium, iron, nitrogen, and phosphorus) than plants growing in areas without crusts. By stabilizing the soil and increasing soil moisture, aeration, and nutrients, the tiny world of soil crusts

might be affecting the abundance, diversity, and health of plant species.

Many human activities negatively affect biological soil crusts. The microscopic cyanobacterial sheaths are no match against footprints (cows or people) or vehicles, especially when the crust is dry and brittle. Squashed crusts contribute less nitrogen and carbon to the ecosystem. Impacted soils are susceptible to wind and water erosion. Wind not only blows pieces of pulverized crust away, the loose, underlying soil particles blow away, too. These errant particles can land on nearby crusts, which can be killed if covered. The dust raised by vehicles on dirt roads can kill crusts as well.

Large areas that are impacted may never recover in our lifetime. Under the best circumstances, a simple veneer of a crust may return in five to seven years. Even a single footprint has a long-lasting effect: nitrogen fixation stops and the sheath material underlying the surface cannot be repaired because soil crust organisms live only near the surface.

Like the restoration of any degraded system, restoring soil crusts is time-consuming, expensive, and usually requires more knowledge than we have at present. The best way to manage the biological soil crust is to protect it from degradation and destruction. You can help by driving only on designated public roads and by staying on hiking trails. If you are hiking off a trail, try to minimize your impact by walking on rock or in washes. When camping, minimize your zone of impact.

– Sue Rutman, botanist, Organ Pipe Cactus National Monument, and Jayne Behnap, research ecologist, U.S. Geological Service, Moab, Utah



Photo: B. Wirt

Desert Tortoise - *Gopherus agassizii*

Sonoran Desert Tortoise

The Sonoran Desert Tortoise is an important animal for biological, cultural, and political reasons. Biologically, turtles are a very old group, emerging long before the dinosaur era. Their early experimental body plan enabled the head and all the legs to fit inside a fused rib cage in a tank-like concept. It was so successful that the basic body plan is virtually unchanged millions of years later, and turtles have adapted into the full spectrum of environments including salt water, fresh water and semi-dry to arid habitats. Tortoises are the masters of the arid environments. They honestly cannot swim a stroke. The Sonoran Desert Tortoise uses many tricks and skills to survive in a very challenging environment, and many of these adaptations are described in this article. Culturally, the desert tortoise is revered by the local native peoples because they are grateful that tortoises provided a non-threatening, steady food supply that helped their ancestors survive. Politically, desert tortoises are important because the Mohave Desert Tortoise (same species, different environment) has had a drastic reduction to its population densities and is on the Endangered Species List. The Sonoran Desert Tortoise is not on this list, however recently environmental groups have called on the Fish and Wildlife Service to consider listing the Sonoran population too. However, I will not discuss the cultural and political significance of desert tortoises in this article. What I will discuss is some basic life history of the annual cycle of the desert tortoise. Many of the details I learned first-hand from approximately 18 years of fieldwork projects, mostly in Southern Arizona, principally in Organ Pipe National Monument, the Sand Tank Mountains in the Barry Goldwater Air Force Range, the Maricopa Mountains (now the Sonoran Desert National Monument), and Saguaro National Park. I also learned a great deal from other people's research while preparing my own Master's thesis.

Life in the Slow Lane

Here, the slow lane means literally not moving for five to eight months of the year. Right now those mud-sucking rock imitators have shoved themselves into a crack or a cranny out

CPNHA 2009 Lecture Series

(Co-sponsored by Pima Co. Parks & Rec)
7 PM, Ajo Community Center

- Mar. 10 "Stewardship and Sustainability on the Barry M. Goldwater Range"
Aaron Alvidrez, Biologist, Luke AFB/BMGR
- Mar. 24 "Colibri: Hummingbird Marvels and Warrior Hearts"
Andy Fisher, Chief of Interpretation, OPCNM

Childs Mountain Tours (Co-sponsored with the refuge)

Exit Hwy 85 between mileposts 36 & 37. No facilities; dress warmly, bring binoculars, camera & food

- Mar. 14 5:00 pm to sunset
Mar. 28 5:00 pm to sunset

Field Trips and Desert Walks

- Mar. 5 Alamo Canyon 8 am
Mar. 19 TBA

CPNHA General Member Meetings

- Mar. 3 Sid Slone (new Refuge Asst. Mgr.)
Apr. 7 Jim Atkinson

of the way, to be left alone while they chill. Desert Tortoises estivate during winter from early November until “spring”. Light, infrequent freezes are not really a problem for Sonoran Desert Tortoise (their body chemistry is like antifreeze in your car radiator anyway) and their overwintering sites may be considered casual. They are plant-eating reptiles with a lot of mass, and they like it pretty warm. Since that is not now, we wait and muse. Growth slows down and they get another notch in their shell scutes while the wind drafts around their legs, or a pack rat chews their toenails, or they sit next to a rattlesnake for 6 months or so. Tortoises may get a drink from a winter rain storm, or position themselves to bask in a sunny spot if they have a little virus (we call it a cold) they need to cure. It might take our bodies 3-7 days; it might take their bodies 3-7 months to fight off. Otherwise they are as still as a stone.

OAC/SCC CALENDAR OF EVENTS AND VOLUNTEER PROJECTS SCHEDULE

Mar. 3-4: Volunteer project at pronghorn pen – working on the bomas

Mar. 10: OAC staff meeting at ISDA, 1-3 pm. Volunteers needed

Mar. 11: OAC, 1:30 – 3 pm, GPS instructors needed

Mar. 14: Sonoran Shindig, Bud Walker Park, 8 am – 3 pm
Volunteers needed for CPNWR and OAC booths

Mar. 18: OAC/SCC CPR training. Volunteers/helpers needed

Mar. 23-27: OAC/SCC campout. Details TBA

Mar. 25: Cabeza Prieta Volunteer Appreciation Night. Place and time TBA

Apr. 8: Junior Duck Stamp Contest Judging. All Quack Quack Crew helpers call Margot

Pupfish pond cleaning: Date TBA

Contact Margot Bissell at 387-6483 for information and registration

Females lay their eggs in the late spring, which uses huge amounts of fat reserves, body water, and calcium. In the warm periods of mid-spring, some females may start feeding right around their hibernation sites, presumably to fatten up before the big event. They have to be careful because without enough heating to digest the food, it can rot in their stomach – Eww! Ouch! Girls move around a little in April and more in May. Egg laying is in June – early July. Breeding was last summer, or was it two years ago...? The sperm lays in little impressions on the sides of the ovarian tubes and fertilizes the ovules as they move through the tubes. Tortoise sperm is viable for 2-3 years, a pretty handy feature when you have low population

densities. Female tortoises dig egg chambers with their hind feet, lay 1-12 eggs, and backfill over the eggs with their hind legs. The bigger the female, the more eggs she can produce. In the Mohave Desert (west of the Colorado River), some desert tortoises lay eggs twice in the spring. We don't know if that is because they can (more resources, especially in spring) or they have to (more eggs have to be put out to ensure enough survive). There are some other interesting differences between the Mohave and the Sonoran Desert Tortoise, but we will leave that for another article. The eggs are buried at the back of a burrow, or in the mound at the front of a burrow, or in soft dirt under a tree. Some females will guard the nest and will rush and hiss at intruders. They do not leave the burrow or feed during that time, probably due to hormones. A biologist observed and wrote up a description of a battle between a tortoise and a Gila monster (presumably she was guarding a clutch of eggs) and more than once I have been greeted aggressively when I have put my head into a burrow. Normally desert tortoises are considered shy, but my husband Peter was bitten on the finger once. Eggs take about 72 days to hatch and the sex of the tortoises depends on the temperature of the soil. Slightly warmer soil produces females, slightly cooler, males. The population is generally half girls and half boys. Eggs typically hatch during the summer rainy season. Hatchling tortoise shells are soft and folded in half to fit into the shell. The babies break out of the oblong ping pong ball-sized egg using a temporary egg tooth. Then the babies must dig out of the soil to reach the surface. The hatchlings emerge out of the soil, eat a little adult tortoise poop to inoculate their brand new gut flora, and immediately leave the nest site. The female's job is done and the hatchlings are on their own. Their shells gradually harden over that first summer although they are relatively leathery the first 3 years. Surviving the first few years is the most difficult part of a tortoise's life history. Most are lost to predation or dehydration. Young tortoises have to be very sneaky and very lucky.

The big boys generally come out in July. They get big swollen chin glands (the size of peas) and they charge around their home range like football players on spring break. They eat, tip over a few smaller guys, and try to meet lots of girls. Home range size varies a lot, but adult males can have home ranges about ¾ of a mile in length and width. Female home range is usually a bit smaller. Tortoises optimally have a few really solid, deep burrows under a caliche ledge in a wash or under a boulder that don't change too much from year to year, and then an assortment of burrows that are more shallow and more ephemeral in construction. They seem to really like digging in soft moist dirt. Summer is an interesting problem for the desert tortoise. On one hand they need the heat and humidity of the summer for fresh forage, and good digestion, but on the other hand they have a critical internal body temperature of 104° F and we all know it gets a whole lot hotter than that out there in July and August, especially on the ground! So they spend a lot of time “thermoregulating,” a very reptilian thing to do, which

means they move around their environment to adjust their body temperature to their liking. In the case of a tortoise, that means spending most of their summer days deep underground in a cool dark burrow, preferably with a snug fit and dirt on the sides and bottom. So that just leaves the mornings and early evenings for running around eating and doing the wild thing. Summer rainfall is critical to the Sonoran Desert Tortoise. Their physiology allows them to tolerate very high body toxins for long periods of time, but they must flush their system at least once a year. I have been in a September rainstorm when it was their first chance to drink all summer. I had several radio transmitting tortoises at that site. I found all of them out in the rain hurrying to a spot they knew accumulated water so they could drink their fill. Often as the tortoises are drinking fresh water, they simultaneously excrete whiteish-pinkish paste (urates; just like bird droppings). You may have heard not to pick up a tortoise because it could pee on you. This is true, they will void when alarmed. The color of the urine is indicative of their state of hydration; clear=recently had a drink, brown tea=it's been a while, no urine=they can't afford to lose any body water because it has been a long time since the last drink and they must recycle what they have. All this goes on until late September, and then things start to cool off and the tortoises spend more time basking inside a bush than they do running around. By early November all the tortoises are tucked away until next year.

In conclusion, the Sonoran Desert Tortoise manages to survive in a very challenging environment by limiting its activity to very narrow windows of time in the mornings and evenings primarily during the summer. Underground burrows are critical to avoiding lethal temperatures, and the quality and quantity of burrows limits the growth of Sonoran Desert tortoise populations. I hope you have enjoyed my little ditty on the local desert tortoise and I hope that sparks a sense of love and respect for desert reptiles and all wildlife. Please respect and do not molest these wild animals. I too am grateful to the desert tortoise that they have taught me so much about desert life. I use much of that knowledge and wisdom everyday as I live in the Sonoran Desert year after year.

PS: If you see a turtle walking across the road and it is in danger of being hit by a car, safely pull over to the side of the road, pick it up and take it off the road in the direction it was walking and put it under a bush on the other side of the road. Do not take it home! Do not hold it over your head!

There are State laws protecting the desert tortoise in Arizona.

PPS: Don't buy large landscaping rocks for your yard, they might have once been shelter for a wild desert tortoise.

If you would like to know more visit the Arizona Game and Fish Department's website. – *Betsy Wirt*

“Would you be pleased to go where everything is strange and weird and different?”

– *William T. Hornaday, on the Sonoran Desert*

Pronghorn Update

Our Sonoran pronghorn capture attempts within the CPNWR pen this winter have been completed, resulting in a total of twelve animals (3 does and 9 bucks) released into the wild. The release of three does is a first since all other pronghorn released from the pen since the initial release in 2007 until now have been bucks. We are finally contributing in a more substantial and meaningful way to the recovery of the wild population within the existing range with the release of does that will likely be fawning later this spring.

In January we had hoped to release five pronghorn directly into the Growler Valley (GV) where they could have more readily joined up with wild pronghorn. A helicopter was unavailable for the necessary air transport to the GV and the road leading through Charlie Bell Pass (CBP) was determined to be too rough for wheeled transport. Our compromise was the placement of a release pen at the top of CBP with the exit door facing west in hopes that released pronghorn would orient on and proceed to the GV below. The release attempts involving three does and one buck resulted in all four pronghorn doubling back through the capture team line and re-entering the Childs Valley. On the next day, we reinforced our lines with shade-cloth panels forming an exit to the west, and the lone buck that we released using this technique initially dropped down into the pass heading west. After several minutes, he re-emerged on the rim several hundred yards north of our location and re-entered Childs Valley.

Another four bucks were released into the Growler Valley in February. One of these was a breeder buck which had been captured in Mexico and had been in the north part of the pen since January 2006. A buck was transferred from the south pen to replace him, and another buck was captured in the wild on the Barry Goldwater Range and introduced into the south pen to serve as a breeder buck. Rotating the breeder bucks in this way maintains the diversity of the genetic mix, which is crucial to the long-term viability of the population.

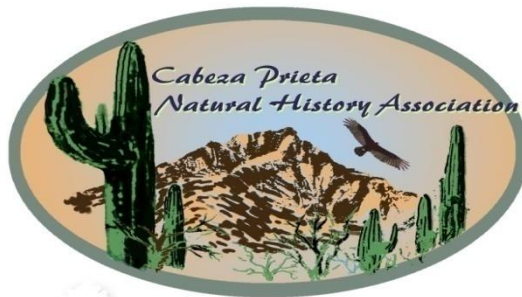
The first 48 hours following capture is a critical period during which capture-related mortality typically manifests itself. If these pronghorn or a subset of them join up over the following several days, they may be much more capable of surviving predation attempts than they would as solos. Of the twelve pronghorn released this winter, four have been lost, three to coyotes and one during a subsequent relocation attempt. According to a recent (March 1) helicopter survey and telemetry reports from the Arizona Game and Fish Department, all but one of the surviving pronghorns have formed pairs with other pronghorn, one of which is a male/female pair.

The capture operations worked extremely well as planned. Communications and the resulting coordination between the different elements of the capture team were excellent. Everyone involved did a fabulous job of spotting, darting, responding to, relocating and releasing the pronghorn with particular kudos to the pen monitors and the medical team.

– *Jim Atkinson*

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