

The Search for the Desert Tortoise

Is the Sonoran desert tortoise threatened, endangered or doing just fine? To answer that question, scientists must know where the wily desert reptiles are and how they live their everyday lives.

University of Arizona graduate student Scott Bailey and research scientist Cecil Schwalbe, in the School of Renewable Natural Resources, have spent the last two years following eight Sonoran desert tortoises near the San Pedro River in southeastern Arizona.

These tortoises primarily live on hill slopes overgrown with plants, which is different from the preferred flat, open desert habitat of their northern and western cousins, the threatened Mojave tortoise, Schwalbe said.

Both tortoises are herbivorous, can weigh as much as 16 pounds, can reach a length of 15 inches and live 80 to 100 years.

Living on steeper slopes offers several advantages to the Sonoran tortoise, Schwalbe said. Fewer commercial developments are built on hillsides, fewer off-road vehicles destroy tortoises and their burrows and fewer cattle graze there.

Ravens, Gila monsters, coyotes, ringtail cats and even whipsnakes are natural predators of the Sonoran tortoise.

In their study, Bailey and Schwalbe used radio-telemetry to keep track of their tortoises. They found that sex makes a large difference in the animals' choice of habitat, especially in the winter.

"Adult male tortoises conform to most people's conception of what any self-respecting reptile would do during the cold season," Bailey said. "They find a deep burrow (four feet or deeper) and remain safely out of sight, away from the elements, between late October and May."



Xerobates agassizii

Not so the females. "They let it all hang out, so to speak," Bailey said. They select extremely shallow shelters (about 8.5 inches deep). In fact, the females almost always stick out of the shelter and get direct sunlight. The reason is probably tied to reproduction; Schwalbe and Bailey plan additional research so they can be definite.

Sunshine on the backside is fine during the winter day, but the night brings exposure to the cold. If the temperature drops below freezing, adult female desert tortoises risk frostbite — or they can even freeze to death, Schwalbe said.

Bailey's data show the minimum temperature in female burrows is 9-degrees lower than in male burrows, and the range of temperatures was more than 20-degrees wider in the female burrows.

"An exceptionally hard freeze could potentially have catastrophic impacts on local female tortoise populations," Bailey said.

He followed his tortoises during warm weather when they ranged away from burrows. During their active period, sexes showed no difference in the size of their home ranges.

However, the range varied between localities. Tortoises at the

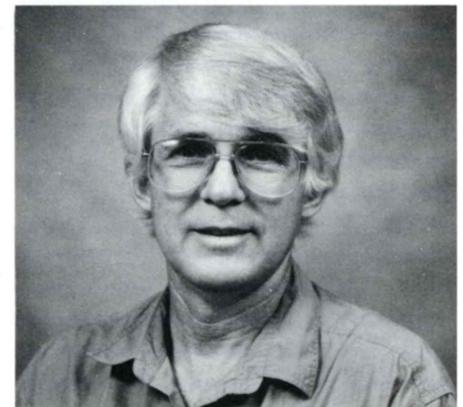


Gopherus agassizii

San Pedro study site had a significantly smaller home range than tortoises in the Picacho Mountains, about 50 air miles to the west. The reasons for the differences are not known, yet.

Part of the problem faced by Bailey and Schwalbe — and other tortoise researchers — is that monitoring methods were developed for the Mojave Desert tortoise. They don't work as well for its southern cousin.

Tortoises living south and east of the Colorado River — the Sonoran population — differ greatly from those living north and west of the Colorado — the Mojave population.



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They're not the same genetically — they don't behave the same — and they don't choose the same kinds of habitats.

Because the Mojave tortoise is listed as threatened, scientists have

studied it more intensely, at least until recently. Now Schwalbe and other investigators want to know such details as when and where the Sonoran tortoise lays eggs and how many — how the female guards her

eggs — and how to tell if populations are doing poorly or well.

Knowing more about the biology of the tortoise can help scientists protect and preserve this fascinating desert reptile. ❖

Raising a Teenager

Parents of brand new babies get a great deal of advice. But, when the "baby" becomes a teenager, the advice often turns into dire predictions of trouble ahead.

Parents worry about the best way to handle their maturing children. Susan Silverberg, assistant professor of family and consumer resources at the University of Arizona, is working on a long-term project to help determine what influences parenting techniques, and to find out what will help promote young teens' social, emotional, and academic development.

Through the Amphitheater School District in Tucson, Silverberg enlisted 94 mothers whose oldest child was in 8th grade. The group was evenly split between two-parent families and single parent families, and accurately represented the financial and racial make-up of families in the District.

Among preliminary findings, Silverberg believes it's important to note that in many ways, single mothers raised their children the same as married mothers. But, single mothers were more apt to allow depressed feelings to spill over into their confidence about their abilities as parents.

Single mothers must meet the demands of parenting and managing a household alone — without

the kind of support that many married mothers have.

Silverberg also explored how mothers affected the emotional and academic well-being of young teens. The youngsters talked about their dreams for the future, and what they really expected to achieve. She correlated these conversations with the mothers' parenting practices and found a strong relationship between parenting techniques and young teens' realistic expectation of their future. On the other hand, there was no real relationship between parenting practices and teenagers' dreams.

Silverberg wants to find the relationship between specific parenting practices and young teens whose expectations are much lower than their dreams. A specific example is a girl who wanted to be a doctor but expected to work at McDonald's.

"Our next step is to pinpoint the reasons behind this kind of thinking," she said.

Silverberg believes that many basic ingredients of effective parenting practices are similar for younger and older children.

"Give a child an appropriate amount of freedom in decision-making but still maintain behavioral control. Combine the controlled freedom with lots of warmth and affection. The combination

leads to positive development for young children and young adolescents."

A more concrete idea of what influences parenting, including personal characteristics of parents, sources of stress and support, and beliefs about children's development, can lead to educational programs on parenting will better serve the public. Silverberg said it's time for parenting education courses to go beyond teaching basic techniques and discuss what influences those techniques.

"With a better idea of the support needed to back up parenting skills, the transition into adolescence can be easier for everybody involved," Silverberg said. ❖



Robert Walker

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