ARIZONA COOPERATIVE EXTENSION
THE UNIVERSITY OF ARIZONA • COLLEGE OF AGRICULTURE AND LIFE SCIENCES

Backyards & Beyond

Spring 2010 RURAL LIVING IN ARIZONA Volume 4, Number 1

Featured Plant

Common Name: Arizona cottontop

Scientific Name: *Digitaria californica*

Steve Smith

Mitch McClaran

Steven E. Smith, Ph.D., Associate Professor, and Kandres Halbrook, Graduate Research Associate, School of Natural Resources and the Environment, University of Arizona

Arizona cottontop (sometimes known as "Arizona cottongrass") is a distinctive native perennial bunchgrass that is most common on well-drained soils at elevations between 2,500 and 4,000 feet in southeastern Arizona. It often occurs on steep, rocky slopes, rarely forms pure stands, and is frequently intermixed with shrubs and trees. This grass has dark green leaves, but it is most conspicuous and easiest to identify in late summer when the finger-like branches ("digits") of flowering shoots appear. Grains are produced from flowers on these shoots (tillers) and are covered by silver or whitish hairs that present a cotton-like appearance. In years of at least normal summer rainfall, single mature plants may produce more than 20 of these shoots and reach three feet in height. Grains typically drop by late fall leaving three to six brownish "digits" on the flowering structure. By fall, tillers will be straw-colored with grayish cured leaves.

Unlike many grasses, Arizona cottontop can produce new growth at almost any time of year and individual tillers of Arizona cottontop may live for up to three years. Older tillers are often stiff and wand-like and may be purplish during the cool season. These perennial tillers have the ability to produce new growth at many points along their length, which allows new leaves and tiller branches to develop relatively quickly following rainfall. The ability to rapidly produce growth after winter rains means that Arizona cottontop often furnishes forage much earlier than many of the other grass species associated with it. Its year-round succulent tillers and post-rainfall rapid growth has often resulted in Arizona cottontop being overgrazed. Rest from grazing during the summer has shown to be very important for maintaining or even increasing Arizona cottontop populations.

Even though the word *"californica"* appears in its scientific name, Arizona cottontop does not commonly occur in the State of California. This name was applied by the first European botanist who described the species based on a collection made in 1841 near Magdalena in what is now the Mexican State of Baja California Sur. In addition to Mexico and Central American nations, Arizona cottontop is also native to Bolivia and Argentina.

Featured Bird

Common Name: Northern Mockingbird

Scientific Name: *Mimus polyglottos*

Dan L. Fischer

Dan L. Fischer, Author of *Early Southwest Ornithologists, 1528-1900*, University of Arizona Press

Perhaps the most significant impression gained with the acquaintance of the Northern Mockingbird is its singing abilities. Their incredible ranges of variations display numerous eloquent vocalizations. Applying "mocker" to the bird is certainly appropriate as it imitates the songs of many bird species. Referring to the bird's varied mimicry; its scientific name Mimus polyglottos implies it is a "mimic" of "many tongues." Although many birds mimic, the Northern Mockingbird is the champion and best known in North America for its ability to add the songs and calls of other birds. Sometimes they even borrow man-made or synthetic noises. While few birds have this expansive learning ability, and why many others do not, remains one of the obscure unknowns of birdsong.

Although individuals vary greatly, the male Northern Mockingbird may deliver upwards of 20 songs per minute which are selected from an astonishing repertoire of over 150 different songs. Their songs are a varied, prolonged series of notes and phrases that are often repeated or abruptly diverted to another passage in rapid succession. In spring, unmated males may sing most of the day and continue late into the night and early morning. On a clear windless day their sharp, distinct, melodic creations can extend to a radius of a quarter of a mile. Singing slows during the incubation and nesting cycle and resumes if there is a second cycle. They generally perform from a high prominent perch where at times the bird may suddenly in mid-song fly upwards with a few wing flaps only to drop back with open wings and spread tail displaying contrasting wing-patches.

Clad in a nearly all gray plumage, the Northern Mockingbird is a perky, trim and very alert bird with a long tail. With head erect and tail held high, it forages mainly on the ground where it dashes for short distances, pauses, and then probes for insects. While doing this they perform a behavior which has been the subject of much discussion. It is thought that in an effort to scare insects into movement the bird often raises and lowers its wings over its back in a slow, jerking motion showing its white markings. This activity is also considered to be a territorial display.

Northern Mockingbirds are fiercely territorial when they begin nesting in a wide variety of situations during March and April. They usually have two clutches of 3-5 eggs which are greenish to bluish white with blotches of brown. The eggs are incubated by the female for 12-13 days. After hatching, the young are fed by both parents and fledge in a similar time span.

The range of the Northern Mockingbird includes much of the lower elevations in the southern regions of the United States and south into Mexico. It was first discovered in the vicinity of Charleston, South Carolina by visiting English artist/naturalist Mark Catesby (1683-1749). His depiction of the bird appeared in his book *Natural History of Carolina* (1731-1743) which, incidently, was the first published account on the flora and fauna of North America. Catesby called it the "Mock-Bird of Carolina" and it was from this and his accompanying detailed notes that Swedish naturalist Carolus Linnaeus (1707-1778) was able to accurately apply the scientific name and describe the bird in 1758.

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contents

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Venomous and Poisonous Animals in Arizona:

A Quick Reference

Randall D. Babb, Biologist, Arizona Game and Fish Department

First, a quick note about the difference between "venomous" and "poisonous". Venom is injected via a bite or sting. Poisons are ingested or absorbed. Therefore snakes, bees, scorpions, spiders, etc. are venomous, and toads, mushrooms, and household chemicals are poisonous. Remember, venom = active, poison = passive.

Arizona is the home to many species of venomous creatures. The same tropical influences that make this state one of the most biologically diverse areas in the nation has given us one of the most diverse venomous faunas to be found in North America. Arizona is, with all probability, the venomous animal capitol of the United States. Most species of venomous animals use their venom primarily for subduing and killing prey. Therefore, a bite or sting from most of these animals represents more of a physical inconvenience than a medical emergency. Some species do have powerful venoms that may be life threatening. It is important to remember that many factors play a role in how severe a bite or sting will be. An individual's personal chemistry has a great bearing on how they will react to any foreign substance introduced into their body. The amount of venom, the location of the bite or sting, the species of animal, and even the geographical origin of the animals that have given the bite all may play a role in the severity of the bite.

INVERTEBRATES

Perhaps more species of potentially dangerous invertebrates inhabit Arizona than any other state in the United States. Scorpions and spiders are probably the most familiar of these, but a variety of bizarre looking arthropods also present threats, mostly minor, of varying degrees. Many strange looking arthropods are supposed to be dangerous, but in fact are harmless.

Spiders: All spiders are venomous. Spiders bite to deliver their venom. Two criteria are generally considered when determining whether a species of spider is dangerous to humans: "Are its jaws strong enough to penetrate human skin?", and "Is the venom virulent enough to cause any serious effects on humans?" Spiders are primarily predators on other invertebrates. Larger species or those with very strong webs occasionally take small vertebrates. As a general rule spiders that use webs to capture prey have poor vision, while those that hunt actively (wolf and jumping spiders) may have much better image defining abilities. Tarantulas however, have poor vision and use mechanoreceptors (special structures on their bodies) to locate prey. Only two varieties in Arizona are generally considered dangerous to humans: Black Widow (*Latrodectus spp.*) and Brown spiders (*Loxoceles spp.*). There are about five species of brown spiders and one species of black widow known from Arizona. Severe pain, respiratory distress, cramping, etc. can be associated with the bite from a black widow. There is a very effective antivenin available. Brown spider bites may go undetected for long periods of time (in excess of 8 hours) and the perpetrator is seldom seen. Local pain and swelling may ensue and eventually result in a necrotic ulcer that is slow to heal and may require reconstructive efforts. Contrary to popular belief, many invertebrates referred to as daddy long legs or harvestmen (*Opiliones spp.*) are not spiders and they are not venomous.

Scorpions: There are approximately 56 species of scorpions in Arizona. All scorpions are venomous, though only one species in Arizona is considered a threat to human health. All scorpions sting to deliver their venom. The stinger (aculeus) is located on the terminal segment (telson) of the postabdomen (tail). The claws or pinchers are used only to hold prey. Scorpions are nocturnal and active during the warmer months of the year. They prey on other invertebrates, including other scorpions. Larger Arizona species have been documented taking small vertebrates. All scorpions are thought to have poor vision and use mechanoreceptors to locate prey. Scorpions give live birth and have variable gestation periods depending on species. Some species are very long lived - the giant hairy scorpion in Arizona has been documented as living for 25 years. Size and color have nothing to do with how toxic a scorpion is. Some species of Arizona scorpions seldom exceed ½ inch in length. The bark scorpion (*Centruroides exilicauda*), a very common species in Arizona, is considered the most toxic species in the United States. Bark scorpion stings present the greatest risk to children less than four years of age. The bark scorpion was historically responsible for many child deaths. All other species of scorpions are considered mildly venomous and present little threat to human health.

OTHER INVERTEBRATES

Centipedes, conenose bugs, blister beetles, wasps, ants, bees, and some caterpillars have nasty bites or stings. Some can be very painful and cause medical complications. The bites or stings of these animals are seldom considered life threatening. Medical problems result when a person is allergic or hypersensitive to the sting or bite. For bees and wasps this is 1 to 2 people out of a 1,000.

Bees: Many of the bee species native to Arizona are solitary and present no threat. European honeybees and Africanized bees occasionally are

responsible for attacks on humans. This occurs when bees perceive a threat to the hive. Unlike the animals discussed above, bees have defensive venom that is used to defend the hive. Bees seldom sting while foraging. Africanized bees have an exaggerated defense response and are easily irritated. 8.6 stings per pound of body weight may result in death to humans. Bees can sting only once in their lifetime. Remove the stinger from the victim as soon as possible to reduce the amount of venom received.

Wasps and Velvet Ants: Most wasps are solitary and have painful, but not life threatening stings. Female velvet ants *(Mutillids)* are wingless wasps, not ants, and have very painful stings. Colonial wasp species generally occur in numbers far less than those of colonial bee species or have less exaggerated defensive behaviors and therefore present less of a threat. Wasps can deliver multiple stings.

Ants: Ants may sting, bite, or both. They are colonial and typically live in nests in the ground, rotting logs or some similar location. Ants generally become aggressive when disturbed at their nest and they perceive a threat to the colony. Ants use their venom both defensively (protection) and offensively (subdue prey).

Centipedes: Arizona centipedes are generally small in size and present little threat to people. One Arizona species, the giant desert centipede (*Scolopendra heros*), may obtain lengths of 8 inches or more. The bite from these large invertebrates is very painful, but does not generally require medical attention. The area of the bite has been known to remain hypersensitive for weeks. Centipedes deliver venom via a modified pair of legs beneath the head called gnathopods.

Mark Kostich

Centipedes are most active when conditions are warm and moist. They are found in a wide variety of habitats. They prey on other invertebrates, but larger species can take small vertebrate prey.

Conenose Bugs: Also called kissing bugs or Hualupai tigers, conenose bugs are blood-sucking true bugs, which feed at night on a variety of animals. They have been documented feeding on reptiles and a wide variety of mammals, including man. They are common residents in woodrat nests. Adult conenose bugs typically disperse during the summer rainy season and are often attracted to porch lights. People are generally bitten while resting or asleep and do not usually awake while being fed upon. These insects feed by inserting a proboscis beneath the skin and sucking blood. Bites may become painful and swollen, but are typically not serious. Repeated bites may lead to hypersensitivity and result in an anaphylactic reaction requiring hospitalization.

Blister Beetles: Blister beetles are active during the spring, summer, and fall months, especially after wet winters or good summer rains. They feed on succulent vegetation and flowers. These beetles possess a chemical defense called cantharidin, which is excreted from the joints, typically when the animal is restrained. This chemical is absorbed through the skin and causes blistering. Symptoms are very similar to poison ivy. Cantharidin is a urinary tract irritant causing engorgement and swelling. Blister beetles are ground up for ingestion in Europe to make the aphrodisiac, Spanish fly. Ingestion by livestock of beetles trapped in feed is often a problem.

Caterpillars: Many species of larval butterflies and moths possess urticating hairs (small defensive spines that have a venom gland at the base). These are administered when the animal is handled or brushed against. Generally these hairs produce an unpleasant burning or stinging sensation much like a bee sting or worse. Some species (puss caterpillar, *Megalopyge spp.*) have powerful venom and may cause nausea, headache, respiratory distress, and may require medical attention. The sting site may remain irritated for several days.

VERTEBRATES

Venoms and poisons in vertebrates are relatively rare. Only a handful of snake species, one lizard species, and a variety of amphibians in the U.S. are venomous or poisonous enough to present a threat to humans.

SNAKES There are currently 13 recognized species of rattlesnakes in Arizona (17 in the US and about 36 species worldwide). There is one species of coral snake found in AZ and several species of rear-fanged snakes. Neither the rear-fanged snakes nor coral snake have been responsible for a human death in Arizona and

Randall D. Babb

Erik Bettini

are not considered a real threat to human health. All species of venomous snakes in Arizona possess offensive venom used for subduing prey.

Rattlesnakes: Rattlesnakes feed on small mammals, birds, reptiles, amphibians and invertebrates. Venom glands are modified salivary glands and are located in the "cheek" area of the upper jaw. Rattlesnake venom toxicity varies greatly from species to species and even geographically amongst a particular species. Rattlesnakes possess the most advanced venom delivery system in the snake world. They have folding, hollow fangs, which inject the venom deep into the victim. The western diamondback rattlesnake is responsible for most of the bites in the United States and therefore most of the deaths. It is the largest species of rattlesnake in Arizona and the most commonly encountered. The Mojave rattlesnake, another common species in Arizona, is considered to be the most toxic species of rattlesnake in the United States. Bites from rattlesnakes are not uncommon, but deaths resulting from their bites are. Rattlesnake bites are typically very painful and may cause severe swelling. Jewelry or other restrictions should be removed from the victims before the onset of swelling and they should be transported to a medical facility as soon as possible.

Coralsnake: This small, retiring snake presents no real threat to human health. They feed primarily on other smaller snakes and are most active in the evenings in the early spring and during the summer rainy season. It belongs to the family elapidae, which contains some of the deadliest snakes in the world (cobra, mamba, tipan, etc.). Like all elapids, it possesses short, fixed (non-movable) fangs. Due to this snake's small size, generally 15-18 inches, its fangs are very short and penetrate human skin with difficulty. Additionally, the gape of the snake is small and the venom yield low. However, it is a mistake to assume the mouth is too small to bite humans. No human deaths are attributed to this species.

Rear-fanged Snakes: Most of Arizona's rear-fanged snakes have mild venom and are small. Only the lyre snake and vine snake are large enough to be capable of delivering a venomous bite to humans. The mild venom and relative scarcity of these snakes presents no threat to people. No deaths have been attributed to these animals.

LIZARDS Only two species of venomous lizards are found in the new world today; the Mexican beaded lizard and Gila monster. Of these two, only the Gila monster is found in the United States.

Gila monsters: These are the largest species of lizard native to Arizona. They are very secretive, giving most people the impression they are rare. Gila monsters are predatory specialist on the nest of mammals, birds and reptiles. They have venom that is believed to be of a defensive nature, as they do not require it to subdue their prey. There is also some indication that the venom may also aide the lizard in digesting prey. Venom is delivered by a powerful bite during which venom moves up grooved teeth in the lower jaw into the wound. The venom causes severe pain and hospitalization is often required for treatment. Unlike rattlesnakes, it is nearly impossible to be accidentally bitten by a Gila monster. Arizona poison centers treat 12-16 Gila monster bites a year. In 2000, the Tucson poison center consulted on 13 Gila monster bites (7 bites involved dogs, one involved a cow, and 5 involved humans). No fatalities attributed solely to the bite of a Gila monster have been documented in the past 100 years. Gila monsters have very strong jaws and tend to hang on when biting.

TOADS True toads possess a poison gland (parotoid gland) located behind the eye on the top of the head. These glands secrete milky, neurotoxic venom called bufotenine. This poison must be ingested to create problems. It cannot be absorbed through the skin. Some species of toads become active with the spring runoff, but most of Arizona's species breed with the summer rains.

No Child Left Inside: Connecting Today's Youth with the Outdoors

Kirk A. Astroth, Ph.D., Director, Arizona 4-H Youth Development, University of Arizona

Jacom Stephens

"I like to play indoors because that's where all the electrical outlets are."
--San Diego 4th grader

Do you remember a favorite place you had as a child? A tree house, a special place, a hideaway, a creek or some other natural spot? Many of us, particularly today's parents, have such fond memories. You may remember the days of free play outside, where you and your friends romped, explored, played fantasy games, and idled away your free time gazing at clouds and identifying shapes and figures.

Unfortunately, today's young people often do not share such moments. Just in the most recent years, the ways young people experience the outdoors and nature have change substantially. Kid's physical connection with nature and the outdoors is rapidly fading. As Richard Louv has so eloquently observed:

> "For a new generation, nature is more an abstraction than reality. Increasingly, nature is something to watch, to consume, to wear—to ignore." [1]

Louv mourns that day when an entire generation becomes distanced from the natural world—when we can easily imagine "the last child in the woods."

There is an urgent need to re-connect young people with the great outdoors and with the immediate environment. In addition to Louv, other writers[2] have warned that today's young people are increasingly becoming separated from the natural world that surrounds them. As a nation, if we hope to conserve our natural resources for future generations, we must re-connect young people to their environment. If children don't care about nature today, they won't care about conserving it in the future. We must "save our children from nature-deficit disorder."

4-H originated in the early part of the 20th century as a way to connect young people with their immediate surroundings rather than learning about the world from textbooks and lectures. 4-H has a strong history of connecting youth with the outdoors—through agricultural and animal projects, through camps, through field trips and tours, and many other educational activities. The outdoors must continue to be a classroom for today's young people who are increasingly becoming separated from nature. And so 4-H continues to be a great way to get kids outside experiencing nature first hand rather than only through the Discovery channel.

The importance of connecting with the natural world cannot be overemphasized. Climate change, pollution, endangered species, disappearing open spaces, erosion—all have become timely topics for today's generation and beyond. In addition, John Gardner of Harvard University has recently identified "nature intelligence" as the most recent form of eight kinds of what he calls "multiple intelligences."[3] Nature intelligence means that a person is curious about the environment all around them—you notice what's around you in the outdoors and enjoy identifying and classifying things like plants or animals.[4] Being "nature-smart" is a critical form of learning that must be cultivated and nurtured, even in today's high-tech world.

Why We Should Be Concerned

No child can truly know or value the outdoors if the natural world remains unknown or under glass, seen only through lenses, screens or computer monitors.

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[1]Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder.* New York: Workman Publishing. p. 2.
[2]Sobel, D. (1996). *Beyond ecophobia: Reclaiming the heart of nature education.* Great Barrington, MA: The Orion *Society.*
[3]Gardner, H. (2006). *Multiple Intelligences: New Horizons.* New York: Basic Books.
[4]Armstrong, T. (2003). *You're smarter than you think: A kid's guide to multiple intelligences.* Minneapolis: Free Spirit Press. p. 157.

Kirk Astroth

The urgency and need for renewed efforts to get children outdoors is evident from the research—

- Children now spend nearly 30 hours a week watching a TV or computer screen, listening to something through headphones or, for older children, using cell phones or media players.
- More 8-year olds today can identify more than 50 Pokemon characters than can identify native plants in the community where they live. Pikachu, Metapod and JigglyPuff are names more familiar to them than mountain goat, beetle, oak tree or even poison ivy.
- Research examining the effects of outdoor challenge programs on children's self-esteem and sense of self shows a link between contact with green space and developmental outcomes for youth.
- Two of every 10 children are clinically obese, and child obesity rates are increasing at an alarming rate—almost fourfold in three decades. A leading factor in this epidemic is lack of physical activity in the outdoors.
- Research studies describe evidence that links time spent outdoors to other health benefits beyond just weight control. Spending time in nature aids in stress-reduction and in the treatment of depression and attention-deficit hyperactivity disorder (ADHD).
- From 1997 to 2003, there was a 50 percent decline in the proportion of children ages 9-12 who spent time in such outside activities as hiking, walking, fishing, beach play and gardening.
- Urban growth in the last century has eliminated green spaces and natural environments. The proliferation of air conditioning in more affluent countries has had an impact on the way children and adults experience and perceive the outdoor environment.
- Technology opens worlds never before so readily available to children; however the opening of this side of learning has contributed to shutting the door to children's access to the more natural environment that gives a lasting attachment to children's sense of place.
- Children who experience the natural world and have opportunities to play and learn within it are more likely to choose science or related fields as careers.
- Images of Lassie aside, most rural children are no more active than their urban counterparts—16.5% of rural kids are obese compared to 14.4% of urban kids. Ironically, rural kids often have fewer places to walk and play.
- School budgets have slashed physical education programs in cost-cutting moves that have resulted in plummeting participation in daily physical education—down to 25% from 42% just 17 years ago.
- Research has shown that free play in nature increases children's cognitive flexibility, emotional capacity, critical thinking, problem solving, creativity, use of imagination, self-esteem and self-discipline. It makes them smarter, more cooperative, happier and healthier.
- Research has found that green outdoor spaces foster creative play, improve children's access to positive adult interactions—and relieve symptoms of attention-deficit disorders. The greener the setting, the more the relief.

Getting Kids Outdoors

As a concerned parent, what can you do to help re-connect today's generation with nature? You don't need to plan a trip to Yellowstone or some other grand adventure. Nature is right outside your door. Here are some suggestions.

- Spend time with your children outdoors—in the yard, in neighborhood parks, or in any green space no matter how small.

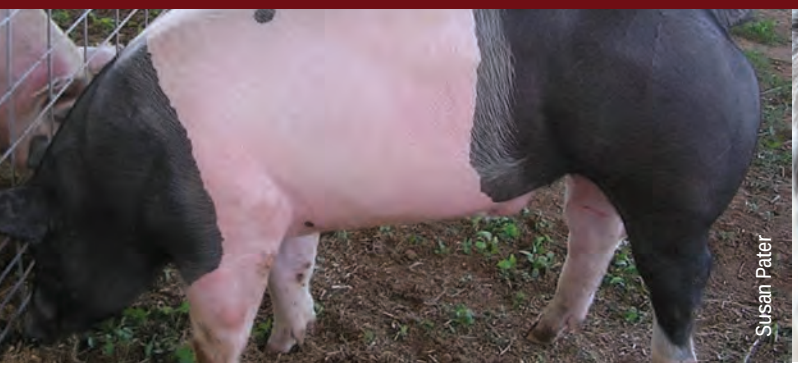
- Start a family garden.
- Take a hike.
- Go for a picnic at a local park.
- Create a nature scavenger hunt to help kids really "see" what is around them. A superb resource is Joseph Cornell's book, *Sharing Nature with Children.*
- Go bike riding in your area. Desert trails and washes are great places to explore.
- Encourage your children to play outside when the weather is nice.
- Visit your public lands—municipal, state and federal. Look for programs that introduce you to exploring these places.
- Plant a tree. Observe it during different times of year and care for it.
- Go fishing.
- Get involved in the 4-H entomology project and start collecting insects and displaying them.
- Go camping.
- Observe plants as they change throughout the year. The USA National Phenology Network is a great resource for this and has lots of tools. Visit their website at: http://www.usanpn.org/
- Visit a public preserve. Arizona has many fine places such as Aravaipa Canyon, Hassayampa River, Patagonia-Sonoita Creek Preserve, Muleshoe Ranch and Hart Prairie. Find out more at: http://www.nature.org/wherewework/northamerica/states/arizona/preserves/
- Visit a botanical garden. The University of Arizona's Boyce Thompson Arboretum is an outstanding facility. Visit the website at: http://ag.arizona.edu/bta/
- Visit a state park. Arizona has many outstanding parks open to the public.
- Volunteer to work on trails or walking paths.
- Spend time at a playground.
- Find and explore a stream or wetland area.
- Star gaze at night by identifying constellations
- Go for a walk in your neighborhood.
- Build a bird house or bird feeder and put it up in your yard. Keep it filled with seeds.
- Put out a hummingbird feeder and observe the different birds who visit.

You can probably think of other ways to get your family and friends outside exploring. The key is to simply "get outside"—off the computer, away from the television, and re-discovering the natural places and wild spaces hidden away around the area where you live. You'll be surprised about what you'll find.

People who spend time outdoors are healthier, happier, do better in school, and are emotionally stronger. In addition, they can become advocates for open spaces. The benefits are clear. If we can re-connect each generation to the natural world, then we will not have to be concerned about which child becomes "the last child" who experiences the sense of wonder and connection that we experienced as we played outdoors as children. The world still needs tree houses and secret places.

Livestock Nutrition for Small Acreages

Jim Sprinkle, Ph.D., Area Extension Agent, Animal Science, University of Arizona Cooperative Extension, Gila & Yavapai Counties



INTRODUCTION

Often, new landowners desire to place livestock on their small acreages. Indeed, this is one reason why you bought your property—so you and other family members can enjoy country living as well as teaching children responsibility. You may have asked yourself the following questions: What kind of animal should I buy? Which will be the most costly to maintain? How much will they eat? Are there things I should be aware of? Will my small acreage provide enough grass to maintain my grazing animal? Where can I go with my questions?

CLASSIFICATIONS

Farm and specialty animals can be placed in the following broad classifications shown in Table 1: monogastric (or simple stomach like a human); ruminants (4 stomach compartments); pseudo-ruminants (3 stomach compartments); and hindgut fermenters (some digestion of fiber in the cecum). Farm animals with simple stomachs are typically more efficient at converting feed into final product (meat or eggs). You can get a general idea of the amount of feed required to produce a final product in Table 1 Cost. Costs for yearly maintenance can logically be expected to be greater for larger animals with less efficient feed conversion with horses > cattle > llamas/alpaca > sheep/goats > swine > rabbits > chickens. Additional costs for horses would include shoeing, tack, and transportation costs. Housing costs will vary with the size and complexity of animal care. Chickens and swine lack the body temperature regulation of other farm animals and thus housing costs will increase with these species.

COST

Costs for yearly maintenance can logically be expected to be greater for larger animals with less efficient feed conversion with horses > cattle > llamas/alpaca > sheep/goats > swine > rabbits > chickens. Additional costs for horses would include shoeing, tack, and transportation costs. Housing costs will vary with the size and complexity of animal care. Chickens and swine lack the body temperature regulation of other farm animals and thus housing costs will increase with these species.

BASIC NUTRIENTS

The main nutrients needed for livestock are water, protein, energy, minerals, and vitamins. Specific recommendations for the classes of livestock in Table 1 can be found in Cooperative Extension publications available online. The following generalization can be made; ruminant animals and pseudo-ruminants are more efficient at supplying amino acids and B vitamins than are monogastric animals due to the contribution of microbes within the rumen. To a lesser extent, hindgut fermenters can also supply some of these essential nutrients through microbe action. Younger animals require a more nutrient dense diet, often necessitating the purchase of balanced commercial grain mixes with added minerals and vitamins.

BE AWARE

Sheep and llamas/alpacas are sensitive to copper and should not be fed trace mineral products designed for cattle. Copper toxicity for these livestock species can occur when the diet exceeds 25 ppm (parts per million). Young, developing horses are especially sensitive to the calcium to phosphorus ratio and can develop developmental orthopedic diseases in response to inverted phosphorus ratios (phosphorus content exceeding calcium). It is recommended that the calcium:phosphorus ratio be around 1.5 to 2.0:1 for horses. Horses are also especially sensitive to rapid changes in diet, erratic feeding schedules, and feeding or watering while still heated up from exercise. These improper feeding management practices can contribute to colic, a life threatening event for horses. For ruminant animals, rapidly changing their diet from a roughage based to a grain based diet without allowing rumen microbes to adjust with “step-up” rations can contribute to acidosis in the rumen and rapid death. Chicken layers need extra calcium in their diet to compensate for the calcium deposited in egg shells but these higher calcium diets should not be fed to growing chickens.

GRAZING

Will your small acreage provide enough forage to maintain your livestock while also protecting your pastures from erosion and loss of species diversity? Probably not, unless you have an intensively managed and fertilized irrigated pasture. The small pastures on your ranchette should be viewed more as turn out paddocks that can be used for a few minutes per day. See http://cals.arizona.edu/pubs/animal/az1352.pdf for more guidelines.

RESOURCES

For more information, enter the following in your web browser search engine: “equine (or whatever species of choice you desire) nutrition”

Animal	Classification	Diet Characteristics	Daily Feed Intake, % of Body Weight (except chickens) [1]	Typical Harvest Weight, lbs.[2]	Feed Conversion (lbs. feed/ lb. live wt. gain)
Swine	Monogastric	Requires balanced ration with complete nutrients, usually a complete purchased ration	4 % for young pigs 3 % for 200 lb. hogs	235 to 250 lbs. @ 170 to 200 days	3.3:1
Chicken	Monogastric	Requires balanced ration with complete nutrients, usually a complete purchased ration	7 lbs. to harvest for broilers; 1.8 to 2.4 lbs. laying mash/wk. for laying hens ≥ 20 wks	5 lbs. @ 7 wks. for broilers	Broilers: 2:1 Layers: 4.2 to 5.6 lb. feed/doz. eggs
Cattle	Ruminant	Can utilize high forage diets	2 % (greater for lactating and growing cattle)	1050 to 1350 lbs. @ 18 to 20 mos.	6 to 7:1 (higher grain diet)
Sheep/Goats	Ruminant	Can utilize high forage diets; Goats can handle more browse	3 % (greater for young growing animals)	Sheep: 110 to 135 lbs. @ 6 to 7 mos. Goats: 60 to 80 lbs. @ 6 to 11 mos.	6 to 8:1
Llama/Alpaca	Pseudo-ruminant	High forage; can handle browse	1.5 % (more for lactation and rapid growth)		
Rabbit	Hindgut Fermenter	Needs high fiber diet (25% recommended to avoid obesity)	2.6 %	4 to 5 lbs. @ 56 to 70 days	3.3 to 5:1
Horse	Hindgut Fermenter	For idle horses mostly hay diet; add grain for exercise, growth and lactation	2 % average 3 % lactating 1.5 % calorie control		

[1]For example, a 200 lb. hog would require 6 lbs. of feed per day (200 lb. * .03 = 6.00 lb.)
[2]Beef cattle harvest weights are highly dependent upon sex, frame size, and breed http://ag.arizona.edu/pubs/animal/az1054.pdf

"Cooperative Extension". This will help you enter the gateway to a large base of unbiased, peer reviewed articles written for lay people. Some resources you may want to look at as a start are indicated below.

Rabbit Nutrition, Scientific article
http://www.asas.org/jas/jas0942.pdf

Rabbit, North Dakota State University
http://www.ag.ndsu.edu/pubs/alt-ag/rabbit.htm

Agricultural Alternatives, Rabbit Production, Penn State
http://agalternatives.aers.psu.edu/Publications/rabbit.pdf

Commercial Rabbit Production, Department of Animal Production, Republic of Botswana
http://www.gov.bw/Global/MOA/Commercial%20Rabbit%20Production.pdf

Management of Small Flocks of Chickens
http://www.afn.org/~poultry/flkman2.htm

Poultry Science Technical Information, North Carolina Cooperative Extension Service
http://www.ces.ncsu.edu/depts/poulsci/tech_info.html

Small Scale Poultry Flocks Resources, North Carolina Cooperative Extension Service
http://robeson.ces.ncsu.edu/files/library/78/0206poultryindex.pdf

Llamas and Alpacas
http://www.rmla.com/camelid_nutrition.htm

Equine Nutrition, Texas A & M University
http://animalscience.tamu.edu/academics/equine/publications/index.htm

Thinking of Owning a Pleasure Horse?, University of Arizona
http://cals.arizona.edu/arec/pubs/horses/horsebookletprint.pdf

Goats, Langston University
http://www.luresext.edu/goats/index.htm

Goats, Oklahoma Meat Goat Manual, Oklahoma State University
http://meatgoat.okstate.edu/

ATTRA National Sustainable Agriculture Information Serv.; Meat Goats: Sustainable Production
http://www.attra.org/attra-pub/PDF/meatgoat.pdf

ATTRA National Sustainable Agriculture Infor. Serv.; Dairy Goats: Sustainable Production
http://www.attra.org/attra-pub/PDF/dairygoats.pdf

Sheep, Swine, and Beef Cattle
http://cals.arizona.edu/gila/animalsciences/publications.html
http://www.csubeef.com/ (access to Cattlemen's Library online from here)
http://www.ansi.okstate.edu/

Sheep Production Handbook, order form
http://www.sheepusa.org/?page=site/text&nav_id=42c985d7b36d445107825b11f21ff35b

Pork Industry Handbook, order form
http://www.ces.purdue.edu/extmedia/AS/PIH_Order_Form_2008.pdf

Small Scale Pork Production, SARE publication
http://www.sare.org/publications/hogs/profpork.pdf

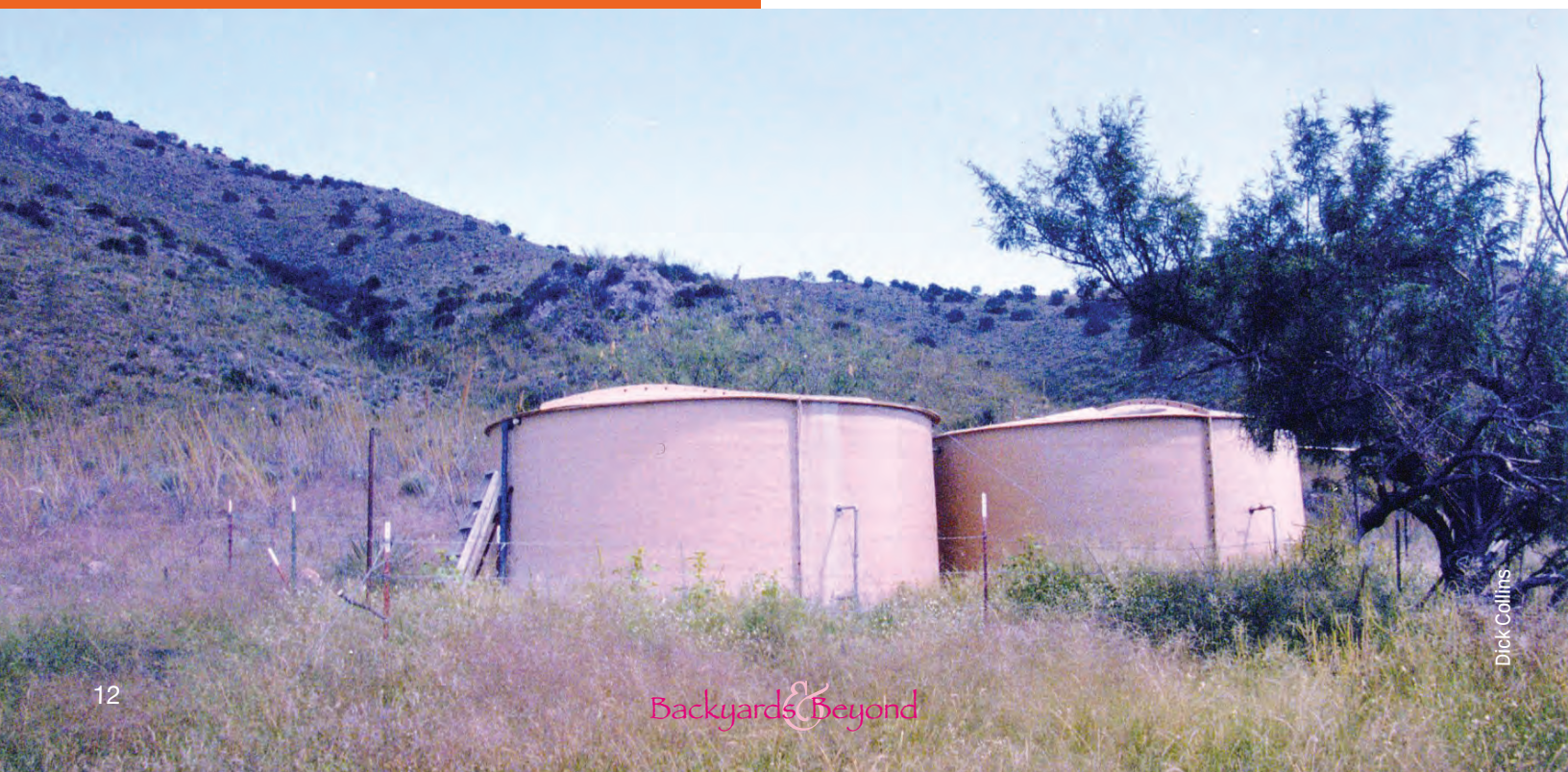
Canelo Hills Coalition:

A Watershed-based Partnership to Improve Rangeland Health and Ranch Economics in Red Rock Canyon, Santa Cruz County

Richard Collins, Ph.D., Owner of C6 Ranch; Bill Edwards, District Ranger, USDA Forest Service; Dean Fish, Area Livestock Agent, University of Arizona Cooperative Extension; Kim McReynolds, Area Natural Resource Agent, University of Arizona Cooperative Extension; and George Ruyle, Ph.D., Rangeland Management Extension Specialist, School of Natural Resources and the Environment, University of Arizona.

Red Rock Canyon is a perennial intermittent stream draining a watershed of 20,000 acres in the Canelo Hills of the Coronado National Forest (CNF) near Town of Patagonia. The CNF administers four grazing allotments in the watershed: Crittenden/C6 Ranch; Kunde/Red Rock Ranch; Papago/Open Cross Ranch; San Rafeal/Vaca Ranch. Collectively, the four ranches encompass 51,000 acres (including the Red Rock watershed). In 1990, in formal consultations with the U.S. Fish and Wildlife Service over the endangered Gila Topminnow, the CNF reduced the numbers of cattle allowed to graze the watershed by nearly 50% and fenced off the permanent waters in the Canyon. The ranchers complied, but new consultations in the mid to late 1990's placed further restrictions on grazing management and included recommendations to completely close the watershed to grazing. The evaluations of rangeland and riparian health used by the agencies on which to base these restrictions and recommendations were, however, incomplete and out of date, and did not take into consideration the changes in stocking rates and grazing management that had already occurred.

Although ranchers were the ones most impacted by the decisions, agencies, in the beginning, paid little heed to their concerns. Alarmed by this threat to their livelihoods, the ranchers formed the Canelo Hills Coalition in 2001 with four main objectives: First, they had to work on a watershed basis, rather than allotment-by-allotment. Second, both the ranchers and CNF needed comprehensive, science-based, long-term monitoring of rangeland and riparian vegetation to gain an accurate, objective assessment of rangeland health on which to base land management decisions. With the help of a Farmer/Rancher grant from the Sustainable Agriculture Program (SARE) of the USDA, ranchers contracted with University of Arizona Cooperative Extension for a five-year monitoring program. The third objective was to develop livestock waters and fencing to facilitate grazing management, keeping cattle out of the Canyon bottoms except during the winter. Finally, the ranchers had to have the Forest Service involved in the total process because, ultimately, they had management authority. Once the Coalition organized and had a plan, the CNF Sierra Vista Ranger District became an active partner, participating in the vegetation monitoring, supplying fencing and pipeline material, and drilling a well for upland water. To be sure, Gila Topminnow was the principal motivation, but the CNF also worked for the benefit of the entire watershed including the ranchers.



Dick Collins


Dick Collins

With the monitoring program in place, the Coalition was able to qualify for cost sharing grants from several agencies (Arizona Department of Environmental Quality, Arizona Department of Agriculture, Environmental Quality Incentives Program (EQIP) /USDA Natural Resource Conservation Service, and the Arizona Game and Fish Department) for new wells and solar power, water storages, pipelines, and fencing, amounting to approximately $750,000. Ranchers put up about 40% in most cases with their labor and costs of monitoring. Except for the Red Rock Ranch/Kunde Allotment, each ranch had pastures outside the Red Rock watershed. Importantly, the granting agencies understood the rancher's need to make the improvements on all their lands as distinct operating units and not just those in the Red Rock watershed.

By the end of the project in 2007, the Coalition ranchers and CNF found that all but one of the eighteen transect sites monitored could be classified as in "good" or "excellent" condition using interagency approved field methods and Ecological Site guides. In the riparian areas where cattle grazed only during the winter, the vegetation, including cottonwood and willows, had rebounded markedly, protecting stream banks from erosion caused by summer monsoons. These areas now fulfilled their ecological functions as determined by the Proper Functioning Condition methodology, while providing valuable forage to cattle during the critical winter period. The five-years of vegetation monitoring provided a baseline for rangeland health, useful for evaluating future changes that might occur, as for example, the effects of climate change. Recognizing the value of vegetation monitoring for both compliance and for management decisions, Coalition ranchers have continued the program. During the five-year study, Extension specialists trained a local nurseryman in field monitoring techniques, making available a local resource for Coalition ranchers and others in the CNF Sierra Vista Ranger District (funded by Quivira Coalition/ Forest Service small grant). Finally, the requirement of working together on the ground helped build better relations and a measure of mutual trust and respect between ranchers and participating Forest Service personnel, a major benefit of the project. Ranchers and agencies will never agree on all aspects of rangeland use and health, but through dialogue, many issues can now be resolved to the mutual benefit of the parties and the land.

The grants received by Coalition members required outreach, informing others ranchers and agencies of its results and experiences. In late 2007, the Coalition presented the results of its five years of work to an open meeting at the Fairground in Sonoita, attended by other ranchers and organizations including Arizona State Parks, Bureau of Land Management, Forest Service, Natural Resource Conservation Service, Arizona Game and Fish Department, and private conservation groups like the Nature Conservancy. The Coalition also presented its experiences at meetings of the SARE in hopes that it could be a model for other small-scaled, local groups grappling with similar problems. The most effective have been those started and led by ranchers and others living within the boundaries of the watershed.

Sustainability has become a catch phrase encapsulating the notion of using the land in such a way that maintains ecological integrity. It also implies being able to make a profit—economic sustainability. Based on the demonstrated improvement of vegetation in the Canyon, theForest Service has restored some of the cuts in cow numbers. These are year-to-year increases conditional on production of forage. On the Crittenden allotment, weaning weights of calves have increased about 50 lb by grazing riparian pastures for 1-2 months during late fall and resting the pastures every year during the monsoon. Assessments of annual production by grasses done after the monsoon and just before grazing have shown upwards of 3500 lb per acre in a year with 12+ inches of summer rain; in a year like 2009 with half the moisture, production will be corresponding less and grazing has had to be reduced.

The principal of holding off grazing during the summer monsoon to restore and invigorate grasses also helps maintain health of the uplands. On the C6 Ranch, new fencing and water development has facilitated resting each upland pasture every-other growing season.

John Wesley Powell, the one-armed Civil War veteran who first explored the Grand Canyon and formed the United States Geological Service probably knew the arid west better than anyone. He recommended establishment of political boundaries based on watersheds rather than on straight lines, arguing that the watershed has continuity of hydrology, topography, plant, and animal life. Unfortunately, the politicians preferred the simplicity of standard cadastral surveys, and we got what we got. But solving problems and conflicts of land use, including management of grazing, within the common boundaries of a local watershed offers a more rational and effective approach.

Recognizing the Healthy Horse

William A. Schurg, Ph.D., Professor and Cooperative Extension Equine Specialist, Animal Science Department, University of Arizona

Every horse owner should evaluate their horses each day. The daily examination will in fact be a cost-free analysis of your horse. Every day in the life of horse ownership, we must use our keen observation to make sure that the quality of life for our horse(s) is maintained at the highest level. It is imperative that we develop a systematic daily routine that will help keep our horses as healthy as possible. The once over examination costs us nothing and in most cases will save our horse from extreme danger if left unattended. Spotting problems early will result in prevention of potentially damaging and expensive ailments.

Every horse owner should have a routine to evaluate the relative condition, movement, appetite and posture of their horse, since each has a definitive effect on your horse's state of health. The understanding of the body condition scoring system as developed by Texas A&M University, evaluates several locations on the horses body where fat deposition exists. The scale is from 1-9 (1=emaciated and 9=obese). Most of our pleasure horses should be in the 5-7 range. If you can see the horses bones easily, especially over the ribs it is likely that the horse is energy deficient and needs more feed intake. Also, a horse that is having some health problem such as bad teeth or parasites may be influencing his external appearance. Does the horse have a shiny coat and feel smooth and silky? Even as winter approaches and hair coat gets longer the coat should maintain a certain visual shine and a smooth, silky feel to the touch. Horses with rough hair coats are often trying to tell us that they have internal parasites, bad teeth or some other health related problem.

Further, does the horse move true to form with no lameness or dragging of toes? Is your horse standing squarely on all four feet? If you see any abnormal movement or posture (i.e., like a saw-horse stance) look further for cuts, abrasions, digital pulse, swelling and/or pain.

Monitoring eating behavior, dental condition, feed and water quality will aid you in seeing things that may are abnormal. Using keen observation and knowing the normal temperature, heart rate, respiratory rate and capillary refill time are all important things for the horse owner to evaluate to establish baseline values for their horses. The normal temperature is between 99-100.5 degrees F; while heart rate and respiratory rates should be around 30-40 beats per minute and 8-16 expirations per minutes respectively, in the normal adult resting horse. Capillary refill time tells you if the blood's oxygen carrying capacity is altered. One should press their thumb against the gum above the teeth, then release and count the seconds until the white spot returns to the pink gum color. The change in color should only take one to two seconds. Pinching the skin on the neck or shoulder between your thumb and forefinger may give you an indication of hydration in your horse. A raised skin that stays up for more than two seconds may indicate dehydration. Palpation of the body and legs will aid you in detecting raised areas, bumps, scrapes or cuts. Don't be afraid to touch your horse!

You just need to "read" your horse and become confident in your ability to understand what is normal or abnormal that will allow you to reduce the frequency of injuries and other health care problems. Work with your equine veterinarian or other health care professionals to aid you in understanding all the things you should look for daily and help you establish appropriate deworming, dental and vaccination programs. Continually use keen observation each day to evaluate and determine changes from the normal for your horse.

Hedda Gjerpen

Family Financial Management — Planning for the Future

Promoting the Health and Well-Being of Families During Difficult Times

DenYelle Baete Kenyon, Doctoral Student, Lynne M. Borden, Ph. D., Extension Specialist and Associate Professor
The University of Arizona Norton School of Family and Consumer Sciences

Financial planning is important to maintaining a stable financial household. Good financial planning and achieving financial stability will also help to prevent financial crisis. First, this fact sheet will help you create a budget in order to examine which household expenses could be reduced, so that you can set goals to limit your spending. Next, you will learn how to set debt reduction and savings goals. Finally, after examining your expense reduction, debt reduction, and savings goals, you will be prepared to develop a spending plan. Creating (and sticking to) a budget and spending plan will assist in attaining financial stability.

FAMILY MONEY MANAGEMENT

You are not alone! Financial problems are a common problem in today's society. Financial troubles such as falling behind in paying the bills, accumulating credit card debt, or being forced to put a second mortgage on a house happen to people everyday. Are you faced with the financial disappointments of not being able to afford that new car or vacation, or not being able to purchase a house because of credit problems? Is there constant fighting in your household about family members' spending habits? Have you been putting off saving money for emergencies or for longterm goals such as your child's college or your retirement? If your answer to any of these questions is yes, the following information will be helpful to you.

You can prevent financial crisis by being organized and prepared with your finances. The best way to achieve financial stability is to create a budget and develop a spending plan to get rid of debt and save money. Financial stability is achieved when you are able to meet day-to-day financial obligations, which include establishing a savings plan, reducing debt to a controllable level, and establishing an emergency fund equal to 3-6 months' living expenses (CSREES, 2002). The keys to successful financial planning are good record keeping and the consistent implementation of your plans.

CREATING A BUDGET

The act of creating a budget will allow you to see your current financial status, as well as allow you to see where expenses can be cut back. The first step is to organize all of your financial information. You will need the following:

- bank statements & checkbook register
- monthly bills (e.g., credit card, electricity,phone)
- information about monthly and supplemental income

It is best to have the prior 6 months' bank statements, bills, and income information in order to get a more accurate monthly budget using average monthly income and expenses.

Step 1—Figure out average monthly net (take-home) income. Do not include unexpected income. Do include average earnings from stable supplemental income (e.g., child support, selling vegetables).

Step 2—Figure out average monthly expenses. Combine ALL monthly expenses, including basic needs (food, clothing, shelter, and transportation) and cretionary spending (entertainment, donations, and investments). Pay attention to the amount you are spending on fixed expenses (such as the mortgage payment) versus your variable expenses (e.g., eating out).

- Rent/mortgage payments
- Car payment(s)
- Insurance (car, homeowner's, renter's)
- Home and car maintenance
- Credit card payments
- Real estate and property taxes
- Utilities (water, electric, gas, phone, cable, internet)
- Day care/kids' expenses
- Clothing, personal hygiene (hair cuts, toiletries)
- Medical/dental expenses
- Entertainment (movies, restaurant eating)
- Vacations/birthdays/holidays
- Groceries including convenience food (meals, snacks, and beverages)

Step 3—Figure out monthly balance by subtracting monthly expenses from monthly income. This will tell you how much money you should have at the end of the month to put into savings. If you have a have a negative monthly balance (you are spending more than you earn), you need to reduce expenses.

Step 4—Examine expenses to see where you can reduce spending. Pay close attention to the non-necessary items (entertainment, eating out, expensive gifts, vacation expenses).

SETTING DEBT REDUCTION GOALS

Reducing the debt you carry is a critical step to financial stability. Whether it is credit card debt or a student loan, interest rates make it harder and harder to pay off your original debt the longer you wait. People can especially become quickly overwhelmed with credit card debt, because of the high interest rates and the accessibility of more credit cards. A good rule of thumb is not to carry debt that exceeds 20% of your take home pay. By accumulating debt without managing your spending habits, a family may unnecessarily enter financial crisis. You can manage and reduce your debt by setting smart, specific goals that are attainable (Examples derived from Money2020™).

Method 1—Reduce total credit card debt by ___%
Example: The Anderson family has a total of $3,050 in credit card debt. They are considering reducing that debt load by 20%, or $610 in one year. This will require an extra $12 per week set aside for debt repayment ($610 / 52 weeks = $11.73 per week or approximately $50 per month).

Method 2—Completely pay off credit card debt within ___ years.
Example: To pay off $3,050 in the next three years, the Anderson family may divide the dollar amount owed by the number of months until the deadline. Three years will equal 36 payments until the deadline. They will need to pay $85 off the principal each month in addition to the interest on the unpaid balance in order to eliminate this debt by their deadline ($3050 /39 months = $84.72 + interest per month).

SETTING SAVINGS GOALS

Saving money is another positive step on the road to financial security. Even if you have large amounts of debt to pay off, you may want to start putting away $5 a week, just to get in the habit of saving. You may want to have a portion of your paycheck directly deposited into your savings account. That way, you will never miss the money or have access to it. Whether saving for a specific purchase (such as a vacation), or setting up a savings account, it is important not to dip into the savings pool for other reasons. This becomes a bad habit and defeats the purpose of having a savings goal. Remember to set specific goals that are attainable. To attain financial security, first focus on short term goals, such as setting up an emergency fund, or saving a percentage of income per year.

Method 1—Establish an emergency fund of at least 2 months of salary to cover 3-6 months' living expenses. This is a good first step for a savings plan if you do not currently have funds available for unexpected expenses like medical emergencies, replacements, and repairs (for cars, appliances, etc.).
Example: The Lopez family will set aside $2,500 in their emergency fund within 18 months. They need to set aside $138.88 per month or approximately $33 per week to achieve this savings goal.

Method 2—Save a certain percent of income per year. Most financial planners recommend saving at least 10% of annual income for long term future goals.
Example: The Lopez family decides to save 10% of annual take home income which for them will be $2500 per year. This amounts to $207 per month or about $48 per week ($2500 / 52 weeks = $48). Developing a

SPENDING PLAN

Step 1—Follow the procedures described above to create a budget. Track your spending for three months and carefully monitor your ATM withdrawals and incidental spending. Examine the budget's monthly balance—ask yourself what unnecessary expenses you can cut out. Remember to provide for needs before wants.

Step 2—Examine your expense reduction goals, debt reduction goals, and savings goals. The objective should be to match your family's spending to your current income. Combine information about your family's income and expenses from your previous budget and make adjustments according to expense goals, debt reduction goals, and savings goals. This becomes your new plan for spending and saving.

Step 3—Develop a new spending plan from the budget and stick to it! The best way to follow your spending plan is to keep track of everything your family purchases in a notebook. If you set realistic spending and savings goals, you shouldn't have a difficult time in following the plan, but if you find the budget constrictive, don't be afraid to make small adjustments. This is better than dropping your spending plan altogether.

INTERNET RESOURCES

Arizona Saves: Affiliated with the America Saves program, Arizona Saves helps people save money, build wealth, and get out of debt.
http://www.arizonasaves.org/

Financial Calculators: Calculators that can help you figure out how to set your debt and savings goals.
http://www.ace.uiuc.edu/cfe/calculators.html

Take Charge America: Phoenix based organization that provides education, counseling, and debt management.
http://tcainstitute.org/cwc.html

National Endowment for Financial Education (NEFE): Information on ways to save money, tips on how to become a savvy saver, a savings quiz, and financial calculators to help figure out how long it would take to save money or pay off a loan. http://www.nefe.org/

Additional NEFE sites:

High School Financial Planning Program® (HSFPP)
http://hsfpp.nefe.org

CashCourse: Web-based financial education for college students.
www.CashCourse.org

SmartAboutMoney: One-stop shop for consumers
wwwSmartAboutMoney.org

Spendster: Confess what you shouldn't have bought.
www.Spendster.org

REFERENCES

Bristow, B.J. *Money 2020.* http://www.americasaves.org/

Cooperative State Research, Education, and Extension Service (2003). *Measurement of money management desired outcomes.* http://www.csrees.usda.gov/nea/economics/res/security_res_moneymtg3.html

Hallman, G.V. & Rosenbloom, J.S. (1975). *Personal financial planning: How to plan for your financial freedom.* New York: McGraw-Hill, Inc.

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Adapting to a New Economic Reality:
Changing Financial Behavior after the Global Credit Crisis

Joyce Serido, Ph.D., Research Scientist, The University of Arizona Norton School of Family & Consumer Sciences

Arizona Pathways to Life Success for University Students (APLUS)

How do people form financial behaviors? Dr. Soyeon Shim, Professor/ Director of the Norton School of Family and Consumer Sciences and her colleagues decided to study that question. In Fall 2007 they launched APLUS, a longitudinal study following a group of freshmen to understand what factors shape young adults' financial behaviors and how those behaviors promote or inhibit financial well-being both in college and as adults.

Shortly after the study began, the global financial credit crisis ushered in the worst economic downturn in the U. S. since the Great Depression. To understand the impact of the recession on young adults' financial behaviors, the research team re- surveyed a subsample of the APLUS students one year after the first survey. In that one-year period:

- 95% reported that the current economic crisis affected their family finances.
- 93% also indicated that the economic crisis directly affected their own finances, often accompanied by more responsibility for personal expenses.
- 95% reported changing their money management behaviors.
- Credit card balances increased 60% on average.

Coping with Increased Financial Strain

How are these students coping with the financial strain of the recession? Like most Americans, they are economizing: cutting back on expenses, including entertainment, food, cell phones and personal care items. These common cost-cutting strategies were overshadowed by a dramatic increase in extreme financial coping strategies: three times as many students (+169%) dropped classes, twice as many (+106%) took leaves of absence, 78% postponed health care, and there was a 26% increase in the use of one credit card to pay another. This alarming trend points to the need not only for young people, but for anyone under financial strain, to seek information and guidance before making financial decisions. Short term solutions may actually promote more severe financial problems in the future.

Adapting to the New Economic Reality

Learning to adapt to economic ups and down is a part of life. But the magnitude of the current recession prompts all of us to take a more active role in managing our finances. Here are some questions asked by our students that you may find helpful to consider:

- *Maybe I should get a job instead of going to college?* Increasing college costs may prompt many people to opt out of college. However, more than two decades of research shows that a college education opens the door to more job opportunities and greater earning power over the course of adult life. If you or someone in your family is thinking that a college education is out of reach, think again. Explore alternative methods of financing a college education or combining work and education. The following website is a good place to start: http://www.collegeanswer.com/selecting/content/sel_state_arizona.jsp
- *Should I take an advance on my credit card to pay my bills?* When current financial demands overrun an individual's ability to pay the bills, they may take unnecessary financial risks, like taking out advances on credit cards or high interest loans, without realizing the high future cost of their behavior. Given the widespread impact of the recession and the changing financial policies regarding consumer credit, it is important to learn about the changes - and how they affect you. You can find this information through the Federal Reserve Bank at: http://www.federalreserve.gov/consumerinfo/default.htm
- *Where can I get information about managing my money better?* In the aftermath of the financial crisis, you may be motivated to get your finances under control. Now is the time to take advantage of the valuable free information and services available to you – just be sure to carefully evaluate the information before you take any action involving your personal finances. Begin by choosing information from reliable and trustworthy sources, for example, the information listed on the Federal Reserve Bank website: http://www.federalreserveeducation.org/pfed/

While this recession may represent a defining moment in the lives of this generation who are just starting out on their own, it has no doubt left its mark on each of us. If nothing else, it reminds us that planning for the future means allowing room for the unexpected to occur.

Funding for the APLUS study was provided by the National Endowment for Financial Education (NEFE) in partnership with the Take Charge America Institute/University of Arizona. Additional information on the may be found at http://aplus.arizona.edu/

Arizona Game & Fish Department

Living with Desert Tortoises

Bob Brost, Desert Tortoise Specialist for the Phoenix Herpetological Society

Believe it or not, if you had stopped at a service station on the old Route 66 back in the fifties, you would have been offered more than a tank of gas. You probably would have been offered a free desert tortoise with your fill up – whether you knew how to take care of it or not. Fortunately, our conservation efforts have improved significantly since that time, and we now have a much higher regard for these unique creatures who are one of the southwest's most enduring natural species.

If you live in an area with large, unfenced lots, or in a more rural area of the state, there's a good chance you will at some point discover a Sonoran Desert Tortoise. The average adult measures 10-15" long and weighs between 8-12 lbs. They are found most commonly in gravelly desert washes and semi-arid grasslands as well as on rocky hillsides and in canyons. Since they are reptiles and must use their environment to control their body temperature, they spend up to 90% of their lives underground and only emerge from their burrows to eat or drink. In addition, during the winter months – typically October through April – they hibernate and therefore don't appear at all.

When you encounter these animals, there are two things you need to know: first it is illegal to touch, relocate or otherwise disturb them in any way.[1] Second, they are extremely territorial and usually spend their entire lives within a one to two-mile radius of where they were born. That means they will probably return to the area you found them again and again. In fact, you'll be able to enjoy their presence for a very long time, since their average life span is 80-100 years.

Desert tortoises are masters at adapting to their environment. Since water is scarce in the desert, they can store up to 60% of their body weight in water and can go up to a year without drinking. They get most of their water from their diet of herbs, grasses and wildflowers.

While these desert creatures aren't exactly built for speed, they are built for survival. You will notice their front legs are slightly flattened compared their back legs which are round and stumpy. These front legs, commonly described as elephantine-shaped, are designed for digging. Desert tortoises control their body temperature by creating underground burrows that can be barely larger than their body width or as long as several feet. These burrows protect the tortoise from the heat of the summer as well as the cold of the winter. They are usually found on a hillside or on raised plateaus so that rain water runs away and they can stay dry. A single tortoise can have multiple burrows spread out over his primary territory which are used for multiple purposes. In addition, these burrows are often used by other tortoises or other small animals as their temporary shelter. It's also not unusual for rattlesnakes to make these burrows their home.

Very often, when people come across a desert tortoise, the first thing they try to do is determine its age. However, there is no accurate way to tell the age of a desert tortoise once it reaches adulthood. Its size and number of sections on its shell (called scoots) are not good indicators. The number of scoots is the same for the animals' entire life. In addition, as with any other animal, genetic and environmental factors come into play when determining size. So it's extremely difficult to tell if that desert tortoise you just "met" is 16 or 66.

It's also not as easy as you might think to determine its sex. In fact, it's virtually impossible until the tortoise fully matures at 10-15 years. The male is characterized by a concave bottom shell (called the plastron), and the female's is completely flat.

Desert tortoises are solitary animals. They may share a burrow to hibernate, but rarely will you find multiple animals within the same area. The only time they may appear in multiples is to mate. This can occur any time, but more typically in late summer or early fall. The female will then lay her eggs in a shallow burrow. She can lay as many as three to four clutches of 4-6 eggs each in a single season. As soon as they are hatched, the babies are on their own. Unfortunately, their chance of survival to sexual maturity is less than 2%. The reason for this low survival rate is that a newborn Sonoran Desert tortoise is about the size of a quarter, so it is prey to any number of desert predators looking for a quick snack. Natural predators include coyotes, foxes, and Gila Monsters.

According to the Arizona Game and Fish Department "Primary threats to survival of the desert tortoise are related to loss and degradation of the species' habitat, through drought, wildfire, habitat destruction and fragmentation, and invasion of exotic plant and wildlife species. Other impacts to the species include removal of individuals from the wild, vandalism, mortality from vehicles, irresponsible off-highway vehicle (OHV) use, release of captive tortoises into the wild, and disease."[2] The Arizona Game and Fish Department has designated the Sonoran Desert tortoise as a protected species. Enough concern exists over their status that there is currently a U.S. Fish and Wildlife Service review to assess if there is a decline in numbers and if so, does it warrant federal protection under the Endangered Species program.

However, if you really want to have a desert tortoise for a pet, there is a system in place for you to adopt one of these animals without taking a wild animal out of its natural environment. In fact, adoption is the only legal option. Before you do this however, you must be sure you are willing commit to the tortoise's care, and that the animal will fit into your lifestyle.

One key requirement for adoption is proof, through photos, that you have created a proper enclosure that offers:

- At least a 500 sq. ft. area with both sunny and shady areas.
- Solid perimeter fencing at least 18" high. Block or wood. Fencing that the tortoise can see through is not acceptable.
- An insulated above ground burrow in Phoenix and Tucson or a below ground burrow in the Kingman and Yuma areas.
- No access to a pool or pond.

- Natural food sources such as Bermuda grass and native plants and scrubs
- A shallow water dish.
- No use of chemical treatments, including pesticides in or near the enclosure.
- Separation from dogs as well as other tortoises.

As an adoptive parent, you are also obligated to agree in writing to the following conditions:

- You cannot have more than one tortoise per family.
- You are 100% responsible for any medical bills that may arise.
- The tortoise cannot be given away, taken out of state or relocated to an inhospitable climate (i.e. Flagstaff)
- You must report the death of your animal to the agency you adopted it from
- You must return the animal to the agency you acquired it from if you can no longer care for it for any reason.

All of these requirements have been put into place for one reason only – the protection of the species. Thousands of desert tortoises were taken into captivity before restrictions went into effect in 1989. Removal of these animals from the wild became problematic when many of these animals over bred and their offspring were left homeless when their caregivers could no longer care for them.

[1]*AGF Commission Order 43:R12-4-407.1*
[2]*http://www.azgfd.gov/w_c/deserttortoisemanagement.shtml#conservation*

The reason that tortoises are available for adoption is that captive tortoises can never be released into the wild. They often transmit diseases to other tortoises which often decimate a previously healthy group of wild animals. In addition, wild tortoises spend their entire lives in a genetically predetermined area, learning where to eat, drink and hide. A captive tortoise has none of these skills, so when it is turned loose in the desert, it very often it dies a slow painful death. The desert tortoise program exists to match homeless tortoises with responsible caregivers throughout their native range here in Arizona.

In conclusion, if you are lucky enough to have a wild desert tortoise on or near your property, enjoy his company and learn all you can about his natural habitat from a distance. If you would like to adopt one of these animals to call your own, please contact the local adoption agency nearest you:
Kingman – Arizona Game and Fish department. www.azgfd.gov/tortoise, 928-692-7700
Phoenix – Phoenix Herpetological Society. www.Phoenixherp.com 602-550-1090
Tucson – Arizona-Sonora Desert Museum. www.org/programs
Yuma – Arizona Game and Fish Department. www.azgfd.gov/tortoise 928-342-0091

Adopting a desert tortoise can give you and your family an excellent opportunity to learn more about these amazing desert creatures. Enjoy.

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Sylvia Schug

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THE UNIVERSITY OF ARIZONA
College of Agriculture and Life Sciences
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Tucson, AZ 85721-0036

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