Wild Tracks

southwest wildlife rehabilitation & educational foundation, inc.

Winter 2006

Hibernation

Say the word "hibernation", and most people think about bears sleeping through the cold winter months. However, for years there was disagreement within the scientific community as to whether or not bears really do hibernate.

Warm-blooded Animals in Winter

It is vital that warm-blooded animals, such as mammals and birds, maintain a certain minimum body temperature in order to survive. In winter months, this basal temperature is usually much higher than the surrounding, ambient temperature. To maintain a minimum basal temperature, especially when they are losing body heat to the surrounding air, their metabolisms must operate at a high rate. To maintain a high metabolic rate requires energy. Energy comes from the foods these animals eat. Smaller animals lose body heat more quickly, so they require much more food energy to maintain their basal metabolic rates and temperatures than larger animals.

Although it may be difficult at times, many animals (deer, wolves, foxes, mountain lions, and some birds) are able to find adequate food during the winter months to maintain a minimum basal temperature. In the case of birds, many migrate to warmer climates with better food sources during the winter. For some animals, food is scarce or entirely unavailable and migration is

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Inside this issue:

Wild About Wildlife IX

Southwest Wildlife will host its ninth annual dinner and fund raising auction at 6:30 p.m. at The Four Seasons Resort Scottsdale at Troon North on Saturday, March 18. In addition to door prizes and our "Go for the Gold" lottery, there will be auction items to appeal to everyone's tastes, including original art & photography, jewelry, sports packages, and vacation packages. Music will be provided by The Blue Stone Project (formerly Burning Sky).

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A Recent Rescue: Javelina Spa Day

It was late afternoon when a call came into Southwest Wildlife about a javelina that had been found stuck between two walls at a residence in Fountain Hills. Linda loaded her gear and headed out to help the poor creature get out of this predicament, hoping that all that would be needed was a little encouragement to get the javelina to exit by the same path used to enter.

Upon arriving, she found things to be much worse than expected. The space between the two walls at one end was about 8 inches. This tight space actually narrowed to about 6 inches at the other end. The wall was about 30 feet long and 6 feet high. Apparently, the javelina had entered at the wide end and was now stuck at the narrow end.

Linda realized that there was no way she could get this javelina out by herself, as the only way to get this critter out was to lift it up. She headed back to Southwest to get more gear and some reinforcements.

Once back at Southwest, she loaded up more equipment: 3 telescoping noose poles, extra long snake tongs, and a lot of soap and cream rinse (baby powder fresh!) for lubrication. After recruiting Don and Geri to help, they headed out for what would be a very challenging rescue.

After the sedative took effect, Don climbed up on the wall and poured the soap and cream rinse down onto both sides of the javelina. This was followed with the application of water so that the javelina was thoroughly lubed up. A greased pig, so to speak.

Unfortunately that frightened javelina had wedged its head in so tightly between the two walls that they had a very difficult time getting a noose pole around the head. After much maneuvering of the noose poles, and with the assistance of the snake tongs, they were finally able to get one noose pole around the head, one around the nose, and one around a leg.

The rescuers hoped that this javelina had been lubricated enough to get unstuck. However, the lubrication also caused the concern that the nooses would slip off as they were lifting the javelina up and out from those imprisoning walls. They could only hope that they would get the animal close enough to the top of the wall to grab its front feet before it slipped out of the nooses and fell back down.

All three rescuers were on the top of the wall, and they all pulled at once. Sure enough, they unstuck that javelina and began pulling upwards. To their dismay, their worst fear materialized. Just as they got the javelina near the top of the wall, the nooses started to slip loose. However, this was one lucky javelina. They were able to grab both front hooves just before the animal fell back down.

After pulling the javelina to safety, they discovered that the now-baby powder-fresh javelina was not only a female, but pregnant! They loaded up their sleeping beauty and drove back to Southwest Wildlife. There, she received a bath to remove all the soap and cream rinse. Then, she was treated to a blow dry!

As she appeared unharmed by her “day at the spa”, she will soon be released. The volunteers noted that this was the very first time—and probably the last!—that they had returned from a javelina rescue smelling better than when they had set out!

Hibernation

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not an option. Their solution for surviving the cold winter months: hibernation.

Warm-blooded Hibernators

Hibernation is a state of torpor, commonly compared to a deep sleep or dormancy, during which time an animal's body temperature and basal metabolic rate decrease in order to conserve the body's energy reserves. Torpor patterns vary greatly between species. In general, however, basal metabolism slows to 2-4% of normal; heart rate is slowed to 3-5 beats per minute; respiration is reduced to 4-6 breaths per minute, sometimes stopping entirely for brief periods; renal function may be greatly reduced or discontinued completely; and basal temperature varies between 2-10°C (35.6-50.0°F).

Non-hibernating warm-blooded animals are not capable of surviving such levels of hypometabolism and hypothermia. However, the artic ground squirrel is able to survive hibernation with basal temperatures below freezing—0°C (32.0°F)!

Some animals remain in a state of torpor during the entire hibernation season. For many animals, however, torpor is interrupted by periods of normal metabolic activity and temperature that typically last 12-24 hours. During these periods of arousal animals must excrete waste products, which are generated despite low metabolic rates, and may eat if food is available.

Animals that experience periods of torpor that last several days to several weeks (some species of bats, hedgehogs, and the poorwill) or for the entire season (groundhogs, chipmunks, woodchucks, some species of mice, and some species of ground squirrels) are often referred to as "true" or "deep" hibernators. Because it can be difficult to wake true hibernators from torpor, they can be quite defenseless during these times. If temperatures become too low, past the point from which they could generate enough warmth to revive themselves, most true hibernators will awaken, shivering, in an effort to raise their body temperatures.

Some animals (hummingbirds, skunks, raccoons, badgers, opossums, and shrews) enter a state of torpor for only 8-12 hours each day, often during the coldest nighttime hours, or during episodes of severe weather. Their basal temperatures during torpor are higher than that of true hibernators, typically above 15° C (59°F), and they are usually easy to wake. They are considered "torpor" hibernators. In areas with mild winter climates, animals that would be true hibernators in traditionally colder winter areas may behave more like torpor hibernators or not hibernate at all.

All warm-blooded hibernators must prepare for winter. Some store fat by eating as much food as possible during the plentiful times of summer and fall. During hibernation they metabolize the stored fat instead of carbohydrates. To survive the winter, these fat-storing hibernators must nearly double their weight from the time they emerge in the spring until they begin hibernating again in the fall. Other animals cache food for winter use. They ingest and metabolize this food during their periodic arousals from torpor.

Bears

Once they enter their dens for the winter, bears will not eat or drink until exiting them in the spring—sometimes up to 6 months later. While in its winter den, a bear will not excrete any waste products at all, despite the fact that its metabolic rate is about 50% of normal. Its heart rate is reduced to 8-12 beats per minute. However, its body temperature is maintained at 31.1°C (88°F), which is not much lower than its active summer temperature of 37.8°C (100°F). Although bears' metabolic rates are significantly reduced during the winter, they have been considered by many to not be true hibernators because their basal temperatures drop only slightly.

As knowledge about how bears spend the winter has increased, however, bears have come to be recognized as highly efficient hibernators or "super" hibernators. A bear's body heat is lost slowly because of its highly insulated pelt and low surface-to-mass ratio. Not only do they metabolize fat to supply themselves with water and up to 4,000 calories each day, but they break down muscle and organ tissues to supply themselves with protein. Bears are uniquely able to do this because, unlike other mammals, their bodies can restore muscle and organ tissue.

Cold-blooded Animals & Insects

Reptiles, amphibians, and fish are cold-blooded animals, which depend entirely upon warmth from the environment for their body heat. This means that

they have no way to keep their bodies warm in the winter and must become dormant as day lengths decrease and temperatures drop. Reptiles usually spend the winter in underground burrows. Many amphibians, as well as many fish, spend the winter in a dormant state at the bottom of bodies of water, where the colder water contains higher levels of oxygen, which they can absorb through their skin.

Some frogs actually freeze solid—their hearts stop and they don't breathe—only to revive when warmed up. Ice crystals form in their body cavities and between cells; up to 65% of the water in the frogs' bodies may be frozen. However, they secrete massive amounts of glucose (more than enough to kill a human!), which enters the cells and serves as a sort of "anti-freeze". Because the water within cells does not freeze, the cells remain intact, and the frog survives this frozen state of suspended animation.

Insects are also cold-blooded. They spend the winter in a dormant state known as diapause. Because insects' life cycles vary by species, they may spend diapause as eggs, larvae, pupae, or adults, depending upon the species.

Both the diapause of insects and the dormancy experienced by fish, reptiles, and amphibians are considered a form of hibernation.

Triggering Hibernation

Biologists have long searched for the trigger(s) for hibernation. They have considered shorter days, dropping ambient temperatures, and scarcity of food as potential triggers. Recently, a substance called Hibernation Induction (or Inducement) Trigger (HIT) was found in the blood of hibernating animals. HIT is a type of opiate, chemically related to morphine. Research suggests that it is HIT that triggers hibernation: if blood is drawn from a hibernating squirrel during the winter and injected into a normally active squirrel the following spring, the second squirrel will begin hibernating. It is still not understood how HIT works.

In the past, hibernation was narrowly defined as a sleeplike state with low metabolic rates and basal temperatures near freezing. Recent research has led to a broader definition of hibernation: *specialized adaptations accompanied by reduced metabolism in response to food unavailability and low environmental temperatures*. However, research has been unable to explain how or why HIT works when it does; how animals rouse themselves from torpor when temperatures drop too low or periodically to excrete wastes and, in some cases, eat stored foods; or how and why hibernating warm-blooded animals don't die from hypothermia and/or permanent cellular damage.

Recent Donations

Three bobcats vie for position on poles.

SRP Donates Poles

John Andrews, Inbound Logistics at SRP, recently arranged for SRP to make a very generous donation of old wooden utility poles to Southwest Wildlife. These poles may have reached the end of their usefulness at SRP, but they will be used for countless projects at Southwest.

Some of our bobcat residents were the first to benefit from the poles, which provided wonderful climbing and perching opportunities. The poles will also be used to make jungle gyms for the bears to climb on, elevated platforms for the wolves, and lofty cat walks for the lions. Volunteer Don Caum is busy designing and building all sorts of projects utilizing these poles, which will enrich the lives of all Southwest residents.

Linda Blew Educational Ramada

Preschoolers from a Phoenix Head Start program enjoy their picnic lunches in the ramada after a recent tour.

Linda Bleu was a beloved Southwest Wildlife volunteer who lost her battle with cancer in 2002. She first met Linda Searles, director of Southwest, when she and her husband came to meet an Australian Shepherd that Linda S. had rescued (Linda S. does Australian Shepherd and border collie rescue in her "spare" time). Linda B. and her husband adopted the dog.

However, that first meeting was only the beginning. Linda B. was intrigued with the work that Southwest did and, being both an animal lover and having a passion for the Sonoran Desert, she decided to volunteer. She never cared what job she did. She recognized that every job at Southwest was vital: from washing bowls to cleaning up poop, to assisting in surgery—it was all important. During the time that she was a Southwest Wildlife volunteer, she and her husband Gary adopted 2 more Aussies.

After her death, her family and friends started a memorial fund at Southwest. Once the fund grew large enough, it was time to begin construction on an educational ramada. It was to have multiple uses: it was to be used for educational presentations, as a place where school kids could eat their lunches at picnic tables after tours, and where Southwest volunteers could take their lunch breaks.

With the expert coordination of local contractor Bob Williams, it finally happened. The block pillars and their concrete footers were donated and built by Brian Coyle, owner of Sun Master Masonry. The stucco work on the pillars was donated by Pacific Stucco, for whom Johnny Bailey did the application. The roof beams, framing, & trim were donated by Timberline Framing & Trim. The memorial funds were utilized to purchase the tin for the roof and the roof trusses. The trusses were provided at cost by Brian Reed, owner of Sun State Truss. The labor for installing the entire roofing system was donated by Bob Williams and Timberline Framing & Trim.

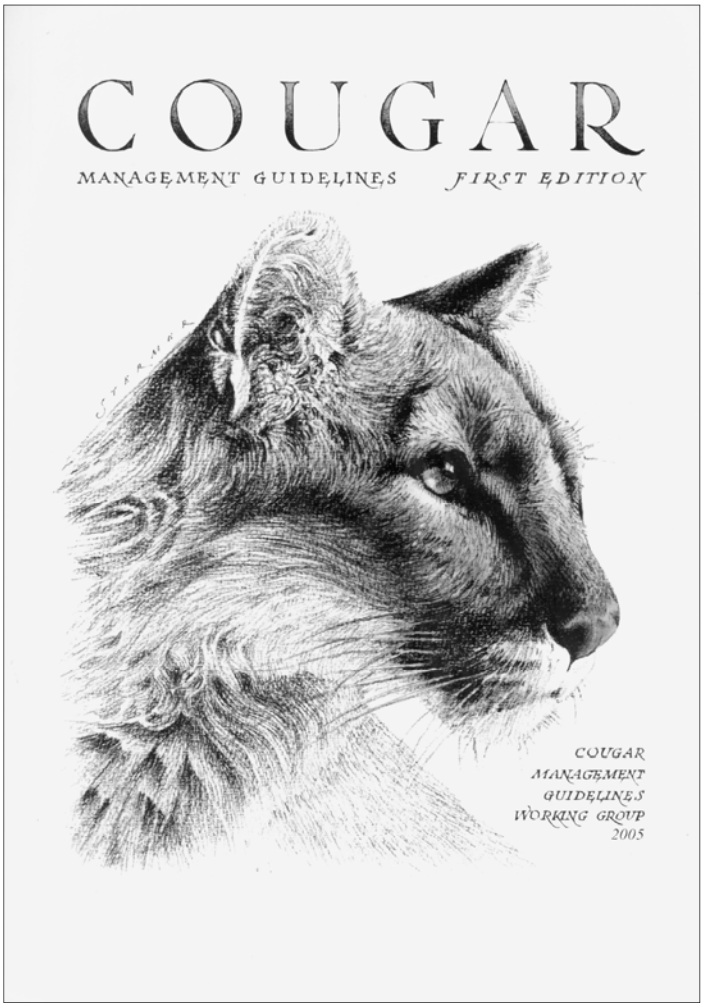
Southwest Wildlife would like to thank everyone who contributed to this project, from the memorial fund donors to those companies in the construction industry who participated to those who provided the actual labor. Together, you made Linda Blew's dream a reality.

The "new" Toro Workman brings smiles to Daryl Abbot, Linda Searles, and co-pilot "Scrappy".

Toro Workman Donated

Southwest Wildlife is now the proud owner of a TORO WORKMAN, a 4 wheel drive utility vehicle previously owned by Desert Forest Golf Club of Carefree, Arizona. This badly needed piece of equipment was recently "rescued" from an up-coming auction by a group of individuals working with the very generous cooperation of Desert Forest Golf Club. All of the individuals involved made their contributions on behalf of their friend Daryl Abbott, a very active volunteer for many years at Southwest. The Workman will be used in many facets of the operation including hauling heavy bags of feed, cleaning up piles of debris, and moving tons of sand into the many animal cages at the sanctuary.

BOOK REVIEW



Cougar Management Guidelines

Cougar Management Guidelines is a rather prosaic title for the most important book on cougar natural history and management to come along since Logan and Sweanor's *Desert Puma* (2001). The book's 13 authors—called the Cougar Management Guidelines Working Group—are a veritable who's who of large carnivore researchers. Their collective effort proves that something good can indeed be done—and done well—by committee.

The text is organized, succinct, incisive, and accessible to professional and layperson alike. Each chapter covers a pertinent subject area: cougar-prey relationships, habitat, assessing populations, depredation, sport hunting, strategies to manage cougar-human conflicts, and cougar research and management needs. At only 137 pages, *Cougar Management Guidelines* is a compact, up-to-date, and easy-to-use reference. Points of emphasis are highlighted in bold throughout.

The critical importance of habitat to both conservation and management is consistently emphasized. These big cats wander enormous and diverse landscapes, and effective management begins with understanding the habitat in which they dwell. How and why critical habitat can be identified is discussed, but there is little mention about how state wildlife agencies can affect land management policy to benefit cougars.

Depredation is covered, as is sport hunting. These two areas of cougar management were the primary elements of cougar management in the past. However, the authors point out how changing human attitudes are changing management approaches, such as the banning of cougar hunting in California in 1990. The authors point out that hunters and ranchers are not the only stakeholders to be considered in cougar management. They also emphasize the importance of educating stakeholders, especially when addressing cougar-human conflicts, the most controversial facet of cougar management.

The authors consistently advocate an adaptive management approach. They define this as continual monitoring of indicators that measure progress toward management goals, and changing management practices as new information indicates better alternatives. While this sounds good in theory, I doubt state wildlife agency ability to embrace a concept requiring such flexibility in approach.

Cougar Management Guidelines does an excellent job of showing what needs to be done to bridge the difficult gap between cougar research and cougar management. We live in an age where politics and economics drive wildlife management much more than science. Even the best science is of little value if it is ignored in management decisions. *Cougar Management Guidelines* provides a clear roadmap to cougar conservation. It remains to be seen whether wildlife managers will follow it.

Reviewed by
Kevin Hansen, Educational Director
Southwest Wildlife
Author of *Cougar: The American Lion*

Southwest Wildlife Donation Form

You may also make donations online at: www.southwestwildlife.org

Please help Southwest Wildlife by making a tax-deductible donation.

Our 501(c)3 number is 86-0765249.

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To arrange an educational tour of Southwest Wildlife, please contact Kevin Hansen, our educational director, at: 480-471-3621 or swkevin@extremezone.com.

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For reservation information, please visit www.southwestwildlife.org. Tickets are $135 per person or $1300 for a table for 10. Patron's Tables for ten guests are also available for $1500. Patron's Tables receive an honorable mention in the evening's program.

If you will be unable to attend, please consider going for the gold! Lottery tickets are $20 each, and the winner will split the pot with Southwest Wildlife. Southwest Wildlife's portion of the lottery will go towards the much-needed expansion of the clinic. Go for the Gold tickets may also be purchased online at www.southwestwildlife.org.

If you would like to make a donation to this event, please contact Stephania at 480-951-3082. Because Southwest Wildlife is a non-profit, 501(c)3 organization, all donations and a portion of each guest's admission are tax deductible.

Auction items include:

- stained glass vase by Dawn Farina
- *"Intense Balance"*, acrylic of a mountain lion by Pamela Creamer
- *"Bobkitty"*, photo of bobcat kitten by Carrie Singer
- southwestern glass/gilded bowl by Terry Armstrong Hamra
- African Safari, donated by ecoAfrica Tours, www.ecoafrica.com
- painting of a bobcat, by Jen Raynes.

As a special feature, artist Jen Raynes, who has consistently donated to this event for the past several years, will complete the piece she is donating during the silent auction.

Southwest Wildlife Needs…

...donations to our *Wild About Wildlife IX* dinner and fundraising auction. For more information, please call Stephania at 480-951-3082.

...volunteers to work at *Wild About Wildlife IX*. We will need help with set-up on the day of the event and that evening at the event. If you would like to contribute to the success of this important, fun event, please call LoriAnn at 480-471-0125.

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Southwest Wildlife wishes to thank all individuals and organizations that have given so generously to enable us to help the many animals that come through our doors—we couldn't do this without your help!

- Dr. Steve Gilson & Dr. Mark Soderstrom of Sonora Veterinary Specialists
- Dr. Lilian Rizzo, Dr. O'Brien, Dr. Carol Samson, Dr. Leo Egar, Dr. Gorman and the veterinary interns and staff at Sonora Veterinary Specialists
- Dr. Yael Bar-Shalom
- Dr. Chris Henrich
- Dr. Arch Robertson of Vet Med Consultants
- Dr. Ronald Sigler, Dr. Jennifer Urbanz, and Staff of Eye Care for Animals
- Dr. Visser, Dr. Kaufman, and Staff of Aid Animal Dental Clinic
- Dr. Barnes and staff of Del Lago Veterinary Hospital
- Mark Finke, Nutritionist
- BZ Rodents, Inc.
- AJ's Fine Foods for produce and meat
- Bashas' in Carefree for produce
- Whole Foods
- Sprouts
- Arch Wireless for pagers
- Extreme Internet for the web site
- Safeway eScrip Program
- Bill Hood, Scottsdale Accounting Service
- Shalako Nut Farm
- Sunstate Equipment
- Nestle Purina
- Wes Patrick of Critter Control
- SRP
- California Pools for continuing to maintain the pump and filter for the bear pool
- Chris Hock of North Valley Pump for his help in continuing to keep our well in good order
- Bob Williams for construction work on the ramada
- Johnny Bailey & Pacific Stucco for donations to & work on the ramada
- Brian Coyle of Sun Master Masonry for donations to & work on the ramada
- Timberline Framing & Trim for donations to & work on the ramada
- Brian Reed of Sun State Truss for materials at cost for the ramada

"Thank you" to all of the hardworking volunteers at Southwest Wildlife for your continued dedication to "saving our wildlife, one life at a time".