George Miksch Sutton AVIAN RESEARCH CENTER

The SUTTON NEWSLETTER

" finding cooperative conservation solutions for birds and the natural world through science and education"

Volume 34, Summer 2010

Next step... Tracking the eagles

Cover: **Three young eagles back in their nest. The two on the left are wearing new transmitters, as can be seen by the visible antennas. We hope to follow their movements for several years.** ***Photography by Steve Sherrod. Inset:*** **This photo shows the comparative height and inaccessability of the nest to biologists (bottom left).** ***Photography by Alan Jenkins.***

What's Inside...

"GROUND CONTROL TO MAJOR MOM"
OR
LEARNING MORE ABOUT OKLAHOMA EAGLES THROUGH SATELLITE GPS TRACKING

by Steve K. Sherrod

We were concerned that the parent Bald Eagles in Sand Springs might not be able to find their three fledgling offspring once the youngsters left the nest, so we decided to put solar powered, satellite-tracked transmitters on two of the young birds. That way, the young eagles would always be "checking in" automatically so that the adults would know where their offspring had wandered, even if they had left the state. OK, we are pulling your leg about our reasons, but such a tracking device would certainly be the dream of many human parents. From studies with other raptors such as Peregrine Falcons, we know that the parent birds of prey (like other birds) have the ability to quickly locate their offspring after the latter have flown from the nest. The adult female's job is to guard the young birds once they are out of the nest, and to take food from the returning adult male for transfers to the young, that is, if the male does not carry it directly to the young on return from his hunting trip. Some of this searching is aided by begging for food by the fledglings, sometimes perched in inconspicuous, foliage-covered areas, when they see their parents flying in the area.

Alan Jenkins

Steve Sherrod approaches the nest containing the three eaglets. Note the size of the nest relative to the climber.

Our efforts are to learn more about where young Bald Eagles go and what they do after the eaglets fledge and disperse from some of the more than 80 active nests in the Sooner State. We have expanded our eagle nest cam project with support in part from **NatureWorks**. This study involves placing backpack-mounted, radio transmitters on young eagles in the nest prior to first flight. These solar powered transmitters provide GPS (global positioning system) coordinates to five ARGOS satellites several times daily for the next 3 years or more, or as long as the eagles survive. (More than half of first year birds of prey do not survive to be one year old.) Weighing some 60 grams, or a little over two ounces each, compared to about seven to 12 pounds for the eaglets depending on gender (females are larger in most birds of prey), the transmitters are light enough to be easily carried by the birds during flight. They are attached to the eaglets by Teflon ribbons that crisscross over the chest. The biggest problem is keeping each transmitter high enough off the back so that overlapping feathers do not cover the small, integrated solar panels that collect energy from the sun.

Ryan VanZant

Lena Larsson grabs a nearly full grown eagle after it left the nest and prior to installation of its transmitter.

After checking several nests for young eagles of the appropriate age, and evaluating nest trees that we thought might be climbable, we finally came to a nest in Sand Springs with two visible young that we thought would work. It was in a cottonwood tree, which tend to be brittle, and the nest was about 70 feet high. As we continued to evaluate the nest, we discovered that there were actually three young in it. We had only seen two initially since the third had been lying down in the middle. It is impossible to see into an eight foot diameter nest from 70 feet below it, so it is easy for the contents of eagle nests to be undercounted during ground surveys.

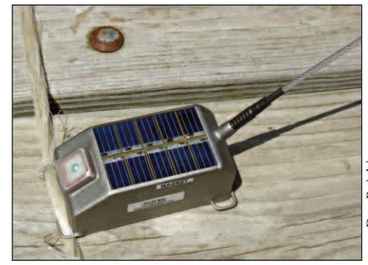
Prior to this, we had obtained the necessary federal permits to work with the eagles, and we had ordered and registered two backpack mounted, solar transmitters with the ARGOS satellite people months before. We arose early on a Wednesday morning to head down to the nest. It was going to be a hot day, and we wanted to make the climb before the winds came up and before it got too warm for the eaglets. After loading our little bass boat and trolling motor, and Alan and Sally Jenkins' two kayaks, along with a 30 ft extension ladder on our 16 ft trailer, we headed out with a crew of six people. We first applied plenty of chigger, mosquito, and tick spray, but we failed to dose up with poison ivy prevention balm, something some of us would later regret.

Once there, Dr. Lena Larsson, our post-doc, along with Alan Jenkins and Ryan VanZant placed a kayak off the 6 ft drop at the river's edge into the water so that Lena would be ready to paddle if the eaglets ended up in the water (eaglets can swim by rowing with their wings as they float on top of the water, but would need to be retrieved if they fell into the river). Then, our spotters, Jennifer Reeder and Elizabeth Maupin stationed themselves along the dike so they could see any eaglets if they tried to fly.

Continued on page 3

Continued from page 2

Next, an arrow and fishing line were used to pull a safety rope over a high branch. Steve Sherrod, an aging (his word!) but experienced lifelong climber, attached to it while climbing the trunk with tree spikes. Upon approach to the nest, as Sherrod tied in to a branch for safety, the second oldest eagle chick, a male, jumped out of the nest and headed downward in a 45 degree angle into the underbrush. This is not an unusual occurrence with eagles of this age during wildlife studies, and Alan Jenkins was in quick pursuit when the eaglet hit the ground running.



Dan Reinking

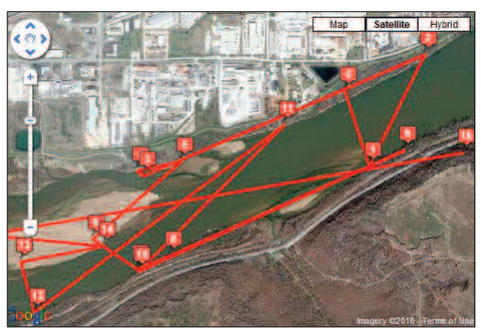
This solar powered transmitter will allow us to track the movements of a young eagle for up to several years before it falls off.

Alan returned with the chick so that the transmitter could be attached to the bird. Ryan Van Zant is experienced at applying backpack transmitters on falcons since he has helped with perhaps fifty such units mounted with Teflon ribbons. Alan Jenkins has also mounted backpack transmitters on many of the ninety Bald Eagle chicks that were released in Oklahoma through the Sutton Center's reintroduction program some 20 years ago. It was this program that helped establish the parents and grandparents of the birds we were equipping with transmitters on this day. Mounting the backpack transmitters is critical because the tension on the Teflon ribbons has to be just right so that the birds can fly comfortably but still retain the unit. And, it is important that the chicks do not become overheated during the process, so they were sprayed down regularly with a mister bottle of water to provide evaporative cooling. The birds were hooded during the process to keep them calm and to reduce stress.

Gaining access around a huge nest is always a very difficult part of the climb. As Steve began to enter the nest, the oldest nestling, another male, launched off and began flying. The good part was that the bird was headed away from the river. It was his maiden voyage, and he struggled, but he did well. He swerved with rowing wings out over the spacious front lawn of a nearby business before he disappeared in a downward glide behind some trees. Jennifer Reeder and Elizabeth Maupin were in hot pursuit. With help from some of the nearby business employees, the eaglet was located about 20 ft up in a pine tree. These employees of Fullerton Finish Systems, Inc. also generously furnished a ladder, and then a "cherry picker" lift to help Alan, Jen, and Elizabeth retrieve the bird from the pine tree. Shortly thereafter, the last and youngest chick, a female, bailed out and headed to the ground at a 45 degree angle. Lena quickly retrieved it, and Ryan helped her hood the bird. This female was then equipped with the other backpack unit and prepared to be returned to the nest. Mounting each transmitter takes about 30 minutes for proper fitting and application, but a slightly roomy, yet secure fit is one of the most important parts of the entire operation.

Each bird was gently placed back where it came from, and they all stayed in the nest without trying to flee. Of course, the adults returned to continue taking care of the fledglings after our team exited the area. Having banded several hundred young Bald Eagles, both in our release program and during graduate studies in the Aleutian Islands, we knew what to expect from birds of this age in the nest. Having been in the tree for some four hours, Steve collected prey remains from the nest that included turtles, fish, and mammals for later ID and study, and rappelled from the nest to the ground. We loaded up our gear and headed back, tired, sweaty, and sporting some poison ivy, the presence of which would become more apparent within a few days.

In the meantime, Dan Reinking had arranged with our website developer to prepare an application that would allow us to display the location data we receive from the satellite transmitters as the eaglets fledged and began to move around the nest area. Location data are collected and stored by the satellites several times per day, but because of the cost involved in retrieving the data, we only download it once per week in a large packet. The location data shown on our website maps will therefore be one week behind real time. We anticipate that the young eagles will move similarly to those tracked through VHF transmitters by ground truck some 23 years ago by Alan Jenkins. Those two birds left our hack (release) sites during the heat of an Oklahoma summer, headed north toward Canada by July 4 and reached our northern border within about 11 days. We think they probably go there to seek out cooler weather and to utilize available food sources, but the adults appear to stay back here and defend their territories throughout the year. We will see if this proves to be true, as we hope we will be able to continue tracking these eaglets for several years.

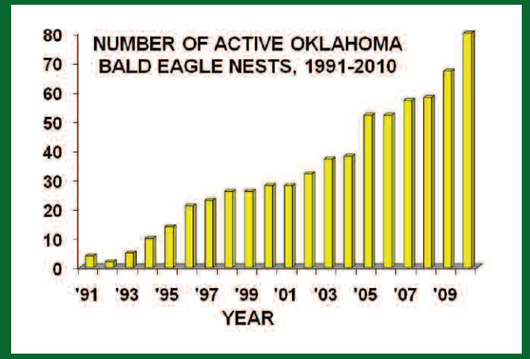


While early movements of the young eagles were very short as they learned to fly and began hunting in June, we expect the eagles to begin making much longer flights in August and September. You can follow their progress at www.suttoncenter.org.

We ask the patience of our viewers with this first attempt using satellite transmitter technology to share dispersal and migration information with you. As with the nest cam and loss of this year's chicks, not everything goes the way one might wish, but this is the way things happen in the natural world. Most young birds die in their first year, and technology can fail. Please keep your fingers crossed and send good karma, and we hope to learn more about how we can help manage Oklahoma Bald Eagle populations both in the Sooner state as well as during their travels elsewhere.

20 YEARS OF BALD EAGLE NEST SURVEYS IN OKLAHOMA

by M. Alan Jenkins



It's not news that the nesting Bald Eagles in Oklahoma broke all previous records, and that the population continues to increase (I know you thought I was going to say "soar," but I don't like puns) beyond my most outrageous expectations. It's not news because those have been the results for almost every year since we began surveying them in 1991--- 20 YEARS!

Even though I realized for a couple of years that this momentous occasion, the 20-year anniversary of our nesting Bald Eagle surveys, was approaching, it took me a while to realize just what this means---lots and lots of chiggers bites! However, my memory is usually kind to me and tends to "accentuate the positive" in my life. The important data we have gathered over this period fits in a table of a few megabytes, but it represents many years, many miles, and not a few dollars of research effort. The significance of 20 years is arbitrary, but humans have a need to create and observe milestones, and so this is ours: we celebrate another incredible eagle nesting year.

As background, for those of you who are not longtime readers of The Sutton Newsletter, the Sutton Avian Research Center (SARC) was instrumental in re-establishing the Bald Eagle nesting population in Oklahoma. Prior to our restoration efforts only a few Bald Eagle nesting attempts in the state were sporadically documented in the scientific literature. In addition, the species was listed as Endangered when observers noticed that the species was failing to reproduce at a level high enough to maintain a stable population, and the species' total population was sinking, rapidly. This nationwide decline of our national bird was caused by the pernicious effects of DDT. The short story is that this insecticide builds up in the eagles' (and other birds') tissues and interferes with the female's calcium metabolism to the point where the eggs she lays have shells that are too thin---they break when she tries to incubate her clutch.

Our Executive Director, Dr. Steve Sherrod, 'hatched' a plan (that's the way ornithologists do things) to re-introduce the Bald Eagle into Oklahoma and nearby southeastern states to a level where the birds' numbers could grow to a self-sustaining level. Many of our previous newsletters detail the processes, errors, triumphs contretemps, and downright flubs involved in taking Bald Eagle eggs from Florida nests, placing them under broody hens, laboriously and lovingly (anxiously) rearing them to an age when they could be released into one of five southeastern states, including Oklahoma, where we judged adequate habitat for them existed. Our restoration efforts resulted in successfully releasing 275 juvenile Bald Eagles in the five states over an 8-year period. Oklahoma received 90 eagles which were released from 1985-1990, forming the basis of the population we have surveyed over the 20 years.

In 1991 we received a phone call that there was an active nest of Bald Eagles near the small Oklahoma town of Tamaha on the south shore of Kerr Reservoir and 3 miles south of our first hack (release) site on the Sequoyah National Wildlife Refuge. Later, after the 1991 nesting season was complete, we were informed about another successful Oklahoma eagle nest, making two for the state that year. Even before these two Oklahoma nests were reported, one was found on Horn Island, Mississippi, near Biloxi and part of the Gulf Islands National Seashore. The adults there came from our release program and were hacked by the National Park Service. We were on our way to success, and relieved to know that all our work and funding had borne positive results.

As part of the national Bald Eagle recovery goal, set by a team of eagle and government experts (including the author), the Oklahoma nesting population was to increase to and sustain ten reproducing pairs of Bald Eagles; then they could be considered for removal from endangered status, if the other states in the plan also reached their plan goals. Oklahoma eagles reached their goal in 1995, but then slipped back below in 1996, to exceed it in 1997 and every year subsequently. Our Oklahoma hacking program, totaling 90 eagles successfully released (free-flying and independent of our feeding them), ended in 1990. The status of the nation's symbol was changed, "downlisted," from the endangered species category to the threatened species category in 1995 and taken off the list altogether, "delisted," in 2007. Part of the post-delisting recovery plan is to

Continued on page 5

The Depletion of Genetic Diversity

by Lena C. Larsson

Maybe you have heard? 2010 is the International Year of Biodiversity as declared by the United Nations. For birds and plants and the earth that sustains us, we need to increase awareness of the value of biodiversity in our lives. In 2002, a goal was set to reduce the current rates of biodiversity loss by 2010. Sadly, this goal is far from being achieved so the celebration is not as happy as we would like. Due to human activities, diversity is lost at an accelerated rate that threatens to impoverish our environment.

Natural diversity provides us with food, fuel, medicine and other essentials of our lives in addition to the physical and psychological enjoyment we find in nature. It is in our self-interest to protect biodiversity – it provides us with goods and services. Just think of pollination and pest-control provided by birds, bats, and insects. Loss of biodiversity will usually reduce productivity.

Here, I would like to bring up a topic about which we lack knowledge: genetic biodiversity. How much is there, how fast does it change, and in what ways does it become altered? For example, how much does breeding wildlife in confinement to supplement natural populations change the gene pool of the recipients? What can the effects be? The surface has been scratched but these questions are not easily answered.

The foundation for all biological diversity is genetic diversity. Therefore, gene-level biodiversity needs to be conserved and sustainably used as importantly as species and ecosystems. This is recognized in the Endangered Species Act here in the United States and internationally through the Convention on Biological Diversity (CBD: all nations except Andorra, the Vatican, and the United States are parties to the CBD). When genetic diversity is depleted, let's liken it to removing nuts and bolts out of machinery. The machine may run fine for a while but then there is a point when too few pieces are left and it will break down. Or you happen to pull out an essential piece that stops a function.

Risks associated with depletion of genetic diversity include susceptibility to diseases, decreased ability to adapt to changes in the environment, and loss of potential to evolve. The risks apply to domesticated breeds as well. Animals that are genetically diverse have higher fitness – for example, researchers recently reported that more genetically diverse ocellated antbird males are able to sing at higher frequencies – thereby advertising their better physical condition to stave off potential territory conflicts and increase attraction for potential mates.

Molecular genetic techniques and statistical tools used in conservation genetics can detect loss of genetic variation if populations are being monitored. But genetic monitoring is rare. Few studies have been able to compare the current genetic diversity in populations with their condition before they declined or were exploited. This is when archives and "baselines" can become useful – to assess whether species have favorable conservation status or should be targets for conservation. A current challenge is to develop better systems to monitor changes of diversity and to make such information accessible. We as individuals can also help by thinking of how our actions may impact biodiversity and do our best to make the impact positive.

Continued from page 4

survey the nesting population every five years beginning in 2009 to monitor the effectiveness of the delisting. Our 2009 nesting data in Oklahoma were part of the first nationwide survey.

The population has become so very large that it's impossible to check even the less than 100% that I'm doing and still get my other duties accomplished; so, we will most likely amend the survey in the future to repeat it only periodically or cut back to a core number of nests. The Oklahoma Bald Eagle nesting data for 2010 are as follows: Of 122 known eagle nesting territories, I was able to check the status of 113 (93% checked). 90 of the 113 (80% occupied) were occupied by adults. I was able to check 110 nests to find that 80 (73% active) of these had eggs laid in them, that 56 of 107 nests (53% productive) produced at least one young, and that a minimum total of 86 young eagles were reared to an age when they were extremely likely to fledge (successfully fly) from the nest. This last datum is most rewarding to me, it almost equals the 90 eagles we released in all of Oklahoma over a 5-year period!

For the statistically insatiable reader, you can digest these 20-year (1991-2010) means--- Occupied Nests: 37.3, Active Nests: 33.0, Productive Nests: 21.9, Fledged Young: 34.7, Active/Occupied: 0.8, Productive/Occupied: 0.5, Fledged/Occupied: 0.9, Productive/Active: 0.7, Fledged/Active: 1.1, and Fledged/Productive: 1.6. However, keep in mind that the means are not very meaningful (no pun intended) because population growth will probably continue for a while (he says hopefully).


Laurie Marshall


Dan Reinking

Field Trips Return to Sutton Center

by Jennifer N. Reeder

Each year our education program, ***It's All About Birds!*** expands further across the state to reach more Oklahoma students. This year we were able to reach new students in Owasso and Tulsa as well as schools across the central part of the state, and even reaching out towards the panhandle to Woodward. The 2009-2010 school year was a huge success. However, as we were scheduling shows for the year, we ran into a problem we have faced year after year: Testing.

Our original education program was set up to meet the PASS objectives for middle school students in Oklahoma. The 6th, 7th, and 8th graders in our state were chosen as the recipients because it has been shown that they are traditionally underserved when it comes to educational programs such as ours. The problem that arises each year, however, is that in April, like clockwork, middle schools conduct mandatory standardized testing. These tests don't just encompass April as teachers begin heavy prepping towards the end of March, and testing often extends into the beginning of May. Because such importance is placed upon these tests for both students and schools, administrators are reluctant to take away "classroom" time for any additional programs.

This year, instead of having a whole month or more with no shows, Ryan and I decided to come up with something a little different to help educate students. When we discovered that the younger elementary students around the state do not test, our plan was hatched. The Sutton Center has not had regular school field trips up here in about 15 years, but with new bleachers to go with our program, this was the year to bypass middle school testing and reinstate the elementary school field trip.


Laurie Marshall

Ryan and I tweaked our original program to bring it down to a first and second grade level, developed a few educational games/activities, and began contacting the local elementary and private schools. We never could have imagined the response we received. Many of the schools brought both their 1st and 2nd graders. We reached students not only from six Bartlesville elementary schools, but also from Hominy, Dewey, Osage Hills, and the American Christian School.

The elementary field trip itinerary consisted of a nature walk up our hill, watching the ***It's All About Birds!*** program, a picnic lunch out on the Sutton lawn, two educational games outside and a walk back down to the buses. The games were often the students' favorite part of the day. One of our owls was brought out to teach students about the many unique adaptations that owls have, from their asymmetrical ears to their flexible neck that has 14 vertebrae. The game itself was similar to the kids' game Marco Polo, but we focused on an owl's extraordinary hearing ability to make it educational.

Our second game was called "Eagles and Rabbits." We brought out Midas, the Golden Eagle, and taught about his natural habitat and prey. We also used him to teach about characteristics of raptors: great eyesight, specialized wings, talons and strong grasping feet, and a hooked beak. This game was similar to Sharks and Minnows, but we adapted it to include a boundary, or "habitat," and very strict rules in order to stay alive in the "game of life!" This game allowed the kids to run around while they were learning, so it was a big hit with them! When the game was over, the habitat area had decreased, and there were usually a few eagles left with no rabbits to catch. This outcome helped us to teach about predator/prey relationships and population numbers, as well as the impact of habitat destruction.

Both Ryan and I enjoyed the change of pace from being on the road all the time, and the excitement that the younger kids and their teachers exhibited was above and beyond what we've ever experienced with the older kids. We received many thank you letters and pictures from students explaining what their favorite part of the day had been. We also received equally gracious notes from teachers letting us know we had surpassed their expectations, and they all have already expressed their interest and excitement in coming up again next spring! I mentioned to some of the kids that when I was in 2nd grade, a long time ago, I too had come up to the Sutton Center on a field trip. Several of them told me, "Now you work here? Maybe I can do that someday too!"

For the first time, Dr. Douglas W. Tallamy visited Oklahoma, where he spoke at the Tulsa Garden Center on August 19, 2010. Dr. Tallamy is the award winning author of "Bringing Nature Home; How You Can Sustain Wildlife with Native Plants." His book is available for sale from Clear Creek Farm & Gardens and Pine Ridge Nursery. Complete information is available on the Tulsa Audubon Society's website: www.tulsaaudubon.org


Jennifer Reeder

Expanding Education Program!

by Ryan A. VanZant

Our newest education endeavor allows classrooms to videoconference with our education staff via the internet program, Skype (www.skype.com). This free program allows anyone with internet access and a web cam to communicate in a visual means.

Richard Day, the Science Curriculum Specialist for Union Public Schools in Tulsa, set up our first interview between the 5th grade students at Moore Elementary and myself. This particular class had been watching a pair of Red-tailed Hawks go through the process of building a nest, courtship, and laying of eggs in a line of trees just behind their school. After careful observation over several weeks, the students prepared the questions which they asked during our Skype interview.

After 45 minutes of Q&A with the class I took them for a virtual tour around the Center allowing the students in Tulsa to get a first hand look at the Red-tailed Hawk display, study skins, and original art that are displayed in our main building.

This initial test interview went off without a hitch and is laying the ground work for more education opportunities that the Sutton Center can provide via the internet. This gives us the opportunity to reach Oklahoma students and beyond, literally to classrooms around the world.


Richard Day

8th Annual Sutton Picnic

by Karen A. Kilbourne

It is our way of saying ***Thank You!*** to all Sutton supporters. This year the annual picnic was held a little earlier than usual, May 8. The overcast day was cool, and we had erected extra tarps to protect the food and the band in case of rain. In the end we were lucky and got by w ith only a few minutes of light rain up on our hill.

Many in the crowd were visiting the Center for the first time and were delighted by such an up close look at the birds captured during staff biologist Dan Reinking's mist-netting demonstration. The earlier date of our picnic this year provided an opportunity to catch a migrating Swainson's Thrush on its way to a nesting area farther north. In addition, a typical assortment of resident and summer resident species was captured, including Carolina Chickadee, Tufted Titmouse,White-breasted Nuthatch, Indigo Bunting, and American Goldfinch.

Newly hung posters informed visitors about the Sutton Natural History Forums as they filed into the showroom in our Eagle Barn. Ryan VanZant and Jennifer Reeder with help from Liz Kissack put on an abbreviated, yet excellent preformance of ***It's All About Birds!*** for an overflowing audience.

The hungry crowd was treated to a wonderful lunch cooked by Kris Koepsel and his band of volunteers. Lunch was accompanied by fun music from Finnegan's Awake.

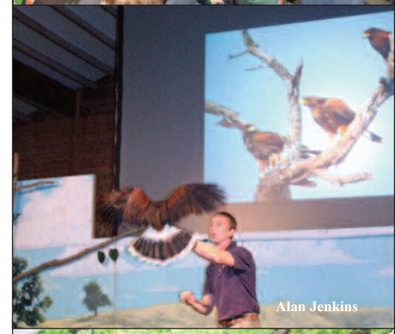
After lunch Alexander England brought out the snakes! He talked about the natural history of both venomous and nonvenomous native snakes and a few exotics. The crowd was spellbound.

We want to thank the volunteers from the RiggsAbney Law Firm, ConocoPhillips, and Sutton friends and family who drove shuttle vans, cooked, helped sell various items at the gift table, and assisted in so many ways. We could not do this without you! Additional thanks to American Christian school for allowing us to use their parking lot, to Steve Adams for beverages, and to David Delahay for the vans.

We very much appreciate the continued support of our members and volunteers. Their efforts help make the Center's work possible.


Alan Jenkins


Dan Reinking


Alan Jenkins


Alan Jenkins


Dan Reinking

G. M. Sutton Avian Research Center
P.O. Box 2007
Bartlesville, OK 74005
(918) 336-7778
(918) 336-BIRD
e-mail: GMSARC@aol.com
web site: www.suttoncenter.org

Non-Profit Organization
U.S. Postage Paid
Bartlesville, OK 74003
Permit #13

A 501(c)3, non-profit, constituent organization of the University of Oklahoma's College of Arts and Sciences and the Oklahoma Biological Survey