George Miksch Sutton AVIAN RESEARCH CENTER

The SUTTON NEWSLETTER

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

Volume 38, Summer 2012

Spring Has Sprung!

What's Inside...

Cover: Valerie VanZant plays with one of the Center's newest arrivals. *Photography by Ryan VanZant.*

Spring at the Sutton Center!

by Ryan A. VanZant

Photography by Dan Reinking, Karen Kilbourne, & Katie VanZant

With spring in the air, baby birds came to the Sutton Avian Research Center. Several species in our bird collection are housed in pairs and felt the "romantic" pressures of the season. Baby ducks, guineas, and Ring-necked Doves all hatched babies this spring and added to the avian ambiance at the Center as was recently experienced by many of the patrons of this year's picnic.

This was our 10th annual picnic and a great time was had by all! Bird houses were decorated and butterflies were created. The children even got a "bird's eye view" of spiders and snakes. We want to thank the volunteers from RiggsAbney Law Firm and Sutton friends and family who cooked, drove shuttle vans, and manned the registration table. We would also like to thank Finnegans's Awake for once again providing delightful music which accompanied lunch, American Christian School for allowing us to use their parking lot, to Steve Adams for beverages and David Delahay for the van rental.

The Center obtained a pair of Southern Ground Hornbills in 2010. They have become aclimated to their new surroundings and this year they laid eggs. The eggs were fertile, but unfortunately the embryos died at some point during the incubation process. We were saddened by this loss but encouraged that the parents felt comfortable enough to go through the ritual of mating and laying eggs. We have recently learned that this is likely one of the last pairs of Southern Ground Hornbills owned outside of zoos in the United States, and we are very excited by the prospect of hatching offspring of these interesting birds in the future.

The Sutton Avian Research Center is proud to be a sponsor of :

Save the Last Dance ...

Noppadol Paothong

A new book by photographer Noppadol Paothong and writer Joel M. Vance strives to rescue grassland grouse from the brink of extinction by showing the world what it stands to lose if these species are allowed to disappear forever.

This 204-page hardbound book, *Save the Last Dance – A Story of North American Grassland Grouse*, captures the dazzling beauty of seven grouse species whose populations are diminishing across the prairies and plains of America – and one species that has already lost its battle for survival.

Fortunately, many conservation groups have championed the cause of grassland grouse.

But will it be too little, too late?

The birds can be saved if enough people care. *Save the Last Dance, a Story of North American Grassland Grouse* fosters knowledge and understanding of these spectacular birds and their diminishing habitats so future generations, too, can marvel at their grace and beauty.

The book covers the following species: Heath Hen, Greater Prairie-Chicken, Lesser Prairie-Chicken, Attwater's Prairie-Chicken, Greater Sage-Grouse, Gunnison Sage-Grouse, and Sharp-tailed Grouse.

Preface by Noppadol Paothong:

"I hope this book will be a window for people to glimpse the life and beauty of these extraordinary species – the birds that I have come to care so much about during the past 10 years of photographing them.

Through this journey, I've grown to appreciate even a breeze on a prairie. I believe and hope. If a person like me – who grew up in a city on a continent 10,000 miles away – can fall in love with these birds, anybody can – if only they get to know them."

One of Several Book Testimonials:

Jim Brandenburg, Nature Photographer

"Indeed, it is refreshing these days to see a book that I may have attempted but then concluded I could not have done it as well. "Save the Last Dance" is a near perfect expression of a man's passion for his subject.

Having grown up on the Plains I know this topic well and have found myself many early, spring mornings shivering away in a blind waiting for those elusive photographic moments.

This book is a powerful testament to a mission of telling a story about our dwindling and precious native grassland grouse population.

From the title on the cover to the last page, I found a superbly written and remarkably photographed journal."

A portion of sales will be donated to the Sutton Center. For more information about the book please visit: www.savethelastdancebook.com.

New Mexico's Rock Stars

by Don H. Wolfe

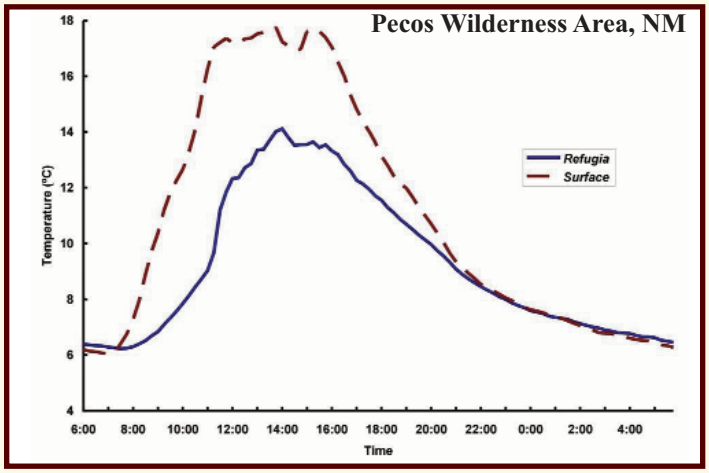
This summer will be the 6th year that we have been systematically surveying for White-tailed Ptarmigan in the alpine areas of north-central New Mexico. Not only are we identifying which mountain peaks and ridges are occupied by ptarmigan, but we are also attempting to determine why some alpine areas are occupied while other areas, that initially seem suitable, are not occupied. First and perhaps foremost, ptarmigan need high elevation. There are approximately 70 square kilometers of alpine habitat in New Mexico, but only about 25 square kilometers are above 12,300 feet (3750 meters), and 98% of all ptarmigan sightings or sign (feces or feathers) are found above 12,300 feet, with increasing frequency as altitude increases. In fact, all ptarmigan sightings and sign have been found in close proximity to peaks above 12,500 feet (3810 meters), meaning that even relatively vast expanses of alpine may not be suitable for this species, unless there is even higher country available.

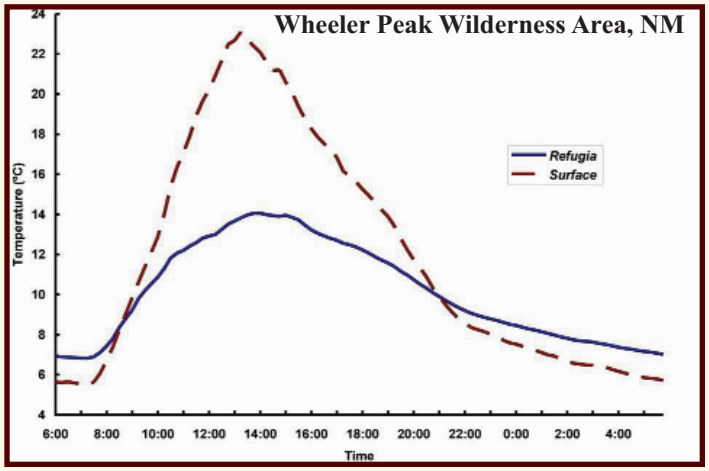
However, we have surveyed a number of alpine areas with elevations topping out at above 12,700 feet (3870 meters) that still appear to be unoccupied, which we theorize is due to A) climate being too hot or dry in summer, and B) lack or paucity of willow thickets (which also thrive in cool, moist environments, and may be lacking in warmer, drier areas). To get at some of these factors we are in the process of mapping willow thickets (using ground truthing and high-resolution aerial photography), and identification of suitable thermal refugia. For the latter, we have been deploying temperature data loggers, placed in pairs with one on the alpine surface and the second in a nearby crevice or beneath large boulders (places that ptarmigan may use to escape the 2-6 hours of intense solar radiation on summer days). In 2011, we deployed six pairs of these data loggers in the Pecos Wilderness Area, and six pairs in the Wheeler Peak Wilderness Area, all within known occupied ptarmigan habitat. As the following figures show, the afternoon surface temperatures for the month of August averaged 4°C to 10°C warmer than in the nearby refugia locations. Thus, we suspect these thermal refugia likely provide places for ptarmigan and other cold-adapted species to seek relief from the heat. This year (2012), we will be repeating this sampling, but with a twist; we will place several pairs of data loggers on peaks and ridges that our prior surveys indicated were likely unoccupied by ptarmigan, and compare the results to an equal number of data logger sets on occupied peaks and ridges. This may then provide evidence as to why ptarmigan are found in some alpine areas but not others.

Without doubt, ptarmigan seem to be dependent upon large boulder fields and/or rifts (crevices), for the cooler temperature associated with a gain in elevation and critical to their survival during periods of peak temperature.

Don Wolfe

A White-tailed Ptarmigan cock (left) and hen (right) enjoy the coolness of a remaining patch of snow near Jicarita Peak, Pecos Wilderness Area, in June 2011. Note how well the birds blend in with their rocky surroundings. In winter, their feathers will molt to white and they will blend with the snow.





Average temperatures (1 August through 31 August 2011) for surface and refugia recorded by data loggers.

How many lesser prairie-chickens are there?

by Lena C. Larsson

Noppadol Paothong

That is the question asked by many Oklahomans, including hunters, biologists, developers, politicians, and lawmakers. The lesser prairie-chicken is native to Oklahoma and, like other game birds such as bobwhite quail, has been dwindling in numbers. We want to know how many lesser prairie-chickens there are, because with more birds, the better chance there is that they will remain part of the mixed and short grass prairie ecosystems of western Oklahoma.

This 1½-2 pound grouse also exists in four other states; most birds reside in Kansas, then New Mexico, Texas/Oklahoma, and lastly with only a few hundred in Colorado. The United States Fish and Wildlife Service has been subpoenaed in a lawsuit demanding that the lesser prairie-chicken should be declared as endangered.

Lesser prairie-chicken males gather in the spring and put on a spectacular display to impress females while competing with other males on so-called gobbling grounds or 'leks." They return to these same leks year after year where their 'dancing' and vocalizations can be observed from a distance. The females visit various leks and often move considerable distances searching for nesting sites close to leks where they did not breed (presumably to move away from closest relatives). Lesser prairie-chickens thrive in large tracts of sand sage and shrubby grass rangelands with cover from predators and in which to hide nests, and where vegetation varies from shin to thigh high.

The Oklahoma Department of Wildlife Conservation (ODWC) has conducted spring surveys since 1968; specific routes are driven early in the morning when males are active at leks and can be counted. This gives an estimate of how many birds there are per acre where the habitat is optimal for prairie-chickens, but it is still a substantial stretch to calculate the total number of birds in the state. The last official estimate by ODWC was that there were less than 3,000 lesser prairie-chickens in Oklahoma in year 2000.

Sutton Avian Research Center, ODWC, and OSU are collaborating regarding state lesser prairie-chicken counts and best management practices to turn around the decline of this game bird in Oklahoma. The Sutton Center performed extensive roadside surveys during the springs of 2010 and 2011 (see Sutton Newsletter winter 2010, summer 2011). We covered the majority of the potential lesser prairie-chicken range where there is road access. We recorded all active leks and birds seen, and we estimated how many birds were at the leks; however, that estimate can be pretty rough (often we can only hear their gobbling at a distance). Based on our survey observations, we assess that the current number of birds in the state of Oklahoma is maybe half of ODWC's estimate from year 2000.

ODWC followed up Sutton Center's 2010/2011 survey effort using helicopters during the spring of 2012. They were able to cover areas where we did not have land access. The method has been tested in Texas where there are fewer roads and larger ranches. The idea is that all states that have the lesser prairie-chicken should use the same method so that the numbers can be compared more easily. The Lesser Prairie-Chicken Interstate Working Group has been granted federal funding for such surveys across the five-state range, all in an effort to answer the question –

How many lesser prairie-chickens are there?

Noppadol Paothong

Attwater's Prairie-Chicken Recovery is on the Cusp of Success

by Dr. Mike Morrow, U.S. Fish & Wildlife Service

The critically endangered Attwater's prairie-chicken, once an iconic bird of Texas and Louisiana prairies, has teetered on the brink of extinction for a long time. Although it has been an uphill battle, biologists feel that they are on the verge of a major breakthrough with this imperiled species. Survival of newly-hatched chicks in the wild has been one of the biggest impediments to this species' recovery.

Mounting evidence suggests that the key to solving the problem with chick survival involves increasing insect numbers by controlling red imported fire ants. Studies suggest that red imported fire ants have decimated insect numbers on the prairie to the point that there are not enough insects for young prairie-chicken chicks to eat when they hatch in the spring.

APCNWR file photo

Attwater's prairie-chicken chicks killed by red imported fire ants.

These studies add to the growing body of information which has documented the negative impacts of the exotic invasive fire ant on native wildlife. For example, researchers at Texas Tech University documented more than 10 years ago substantial adverse impacts of fire ants on survival of young bobwhite quail and white-tailed deer. For both species, survival of young in areas where fire ants were suppressed was at least 2 times higher than in areas where fire ants were not reduced. White-tailed deer and bobwhites are extremely important game species that contribute significantly to the state's economy. Fire ants, which were accidentally introduced to the southeastern U.S. on a ship from South America through the port of Mobile, Alabama in the 1930's, cost the Texas economy alone an estimated $1.2 billion a year according to Texas A&M University's AgriLife Extension.

worldwide web

Local insect populations have been decimated by the ants.

In 2009, personnel at the Attwater Prairie Chicken National Wildlife Refuge (APC NWR) near Eagle Lake, Texas began treating for fire ants on a 760-acre area. Results from this treatment found that there were more insects in the treated area when compared to non-treated areas. This is consistent with other studies that have shown that areas infested by fire ants contain 75% fewer insects than uninfested areas. Many bird species like prairie-chickens and quail depend on insects as food for young chicks.

Prior to 2010, prairie-chicken chick survival on the refuge was extremely poor. However, largely due to an abundance of insects on the prairie, Attwater's prairie-chicken chick survival on the refuge during the 2010 breeding season was comparable to historic estimates of brood survival and to studies of the greater prairie-chicken, a sister species to the Attwater's. As a result, the 2011 annual spring count increased to 82 birds on the refuge – the most Attwater's prairie-chickens on the refuge since 1990. The state-wide total reached 110 birds in 2011, marking a 150% increase since 2007.

"If we can solve the brood survival issue by treating for fire ants and increasing insect numbers, recovery of the Attwater's prairie-chicken can be realized," says Terry Rossignol, Refuge Manager of APC NWR and Attwater's prairie-chicken

Grouse News....

Recovery Team Leader. "Furthermore, the successful 2010 season proves that released captive-bred Attwater's prairie-chickens can successfully rear young on their own in the wild."

Natural biology of the Attwater's prairie-chicken is such that half of the population will not survive to the following year, making annual reproduction an important factor to sustain a population. However, inherent high potential for reproduction compensates for high mortality in the absence of unnatural factors like red imported fire ants. The same was true historically when up to a million Attwater's prairie-chickens graced the Texas and Louisiana coastal prairies over 125 years ago. Today, this grouse is found in only three Texas counties: APC NWR in Colorado County; Texas City Prairie Preserve in Galveston County; and, on private lands in Goliad County.

Plans are to expand red imported fire ant treatments on the refuge and other areas where Attwater's prairie-chickens are located. These treatments will not only help increase Attwater's prairie-chickens, but will also help other species like bobwhite quail and white-tailed deer.

Participants in Attwater's prairie-chicken recovery have experienced frustration and heartache through the years in watching populations of this prairie species teeter on the precipice of extinction. Without the unwavering commitment of agencies and organizations like the U. S. Fish and Wildlife Service, Texas Nature Conservancy, Texas Parks and Wildlife Department, several universities, Society of Tympanuchus Cupido Pinnatus, Ltd., Sutton Avian Research Center, several Texas zoological institutions, private landowners, and corporate supporters like Central LifeSciences, to mention only a few, the Attwater's would have become extinct long ago. "Instead", says Rossignol, "for the first time in years, we feel like Attwater's prairie-chicken recovery is on the cusp of success."

APCNWR file photo

Red imported fire ants live in large colonies. This photo compares a fire ant mound with a pencil.

Mark Your Calendars for Wild Brew 2012!

When: July 28th

Where: Central Park Hall, EXPO Square

For more info: www.wildbrew.org or

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"We have an eagle emergency!"

by Judy Bryant,a Dedicated Eagle Volunteer Observer, (DEVO)


Judy Bryant


Becky Crocker

Left: **The Jackson Bay nest prior to the thunderstorm.** ***Right:*** **The same tree with the new eagle nest platform and young below, and both parents above.**

"We have an eagle emergency!" Those are the words I heard when I picked up the phone Wednesday afternoon, April 4, 2012. The call came from a local eagle-watcher, Becky Crocker. She said the nest at Jackson Bay, with three chicks in it, was on the ground. The large branch the nest was built on had broken. She said, "You need to call your people, your Sutton people." I said, "I'm on it", and started racking my brain for which local wildlife officials to notify. First I called the landowners to get permission to enter their property. They assured us that we had their full support to do whatever we needed to do to save the eagles. Next I had to start notifying people who had the knowledge and expertise to rescue the baby eagles.

Someone needed to ascertain if the chicks were still alive, and a phone call from the landowner verified that all three chicks had survived. She said a state game warden, Marvin Stanley, had arrived and would wait by the nest for more help. At this point, I called Steve Sherrod, the director of Sutton Avian Research Center. He, Ryan Van Zant, and Luke Foster, despite major repair emergencies at the Sutton Center, left Bartlesville for Wagoner. I met them in town to guide them to Gray Oaks Ranch. Marvin greeted us, and we started laying out a plan.

The six of us (the three guys from Sutton, Becky, Marvin, and I) walked to the nest. What we saw was shocking! The nest was enormous, lying on the ground, upright but tilted. Apparently the babies had tumbled out and were laying on the ground, three big dark chicks, scared and motionless. The Sutton guys arrived expecting to build a platform in the tree as a replacement nest. (This had been successfully done in the past by the Sutton crew. After the chicks are placed in the new nest, the parents come back and finish raising them.) Becky offered any of the materials that she and her husband Jack stored in their workshop. That offer turned out beautifully! They had lots of lumber, nails, power, and hand tools. Steve, Ryan, and Luke went to work augmenting a wooden pallet, while Jack cut wood with his power saw. They had a nice sturdy platform built in 20 minutes. We loaded up extra lumber, ladders, and tools, and headed back to the nest tree. We were mindful of the fact that it was now 7:30 P.M., and we had about an hour of daylight left to accomplish our mission.

The Sutton guys picked a location in the tree where the platform would have the most reinforcement. They "flew" into action, climbing ladders, hoisting the platform, wedging it between two tree trunks, securing it in place with more lumber and nails. Marvin and Becky were busy handing up supplies and holding ladders. I took over 80 photographs, and watched the eagle parents flying in circles overhead, calling loudly. Steve got up on the platform and stomped around on it to further wedge it in place and make sure of its security while Ryan and Luke nailed in joists beneath. Steve called for us to start grabbing sticks from the fallen nest and pass them up. The four of us on the ground passed armloads of sticks to Ryan, who was on the ladder. When the depth of the sticks was about right, Steve asked us to gather grass from the old nest, which we passed up to him in a five gallon bucket. We formed a "bucket brigade" to speed up the process. Finally, as it was turning from dusk to dark, he said, "okay, bring up an eagle." We watched as Ryan carried an eagle under his arm up the ladder, handed it gently to Steve who then placed it in the new nest. Ryan brought up the second one, and then Luke carried up the third. Success! We gathered up the tools and drove away, hoping that the


Cheryl Cavert

Above and to the Right: **Watching the action below, the adult eagles circle and dive around the tree.**

parents would return, if not that night, within a day or two.

The following Monday the Sutton crew returned. They brought four satellite/solar transmitters to attach to two of the rescued chicks at Jackson Bay and two to chicks at another nest south of Wagoner. When they arrived at the platform nest, Steve extended the ladder and climbed up. He picked up one chick and announced to those of us watching, that the parents had not yet been feeding the babies adequately. The eaglets had lost weight since their rescue and there was no sign of food in the nest. We left without attaching transmitters and drove to the second nest.

Cheryl Cavert

At that nest site, Steve strapped on his climbing gear and up the tree he went. The ground crew sent up hoods and a canvas bag by rope. Steve hooded the three chicks in the nest, and sent down two chicks, one at a time, in the canvas bag. He stayed in the nest, while Ryan and Luke on the ground secured transmitters to the big chicks and banded their legs. While sitting up there, Steve came up with the idea that if his crew could arrange for eagle food to be brought to Wagoner, then some of us locals could feed the Jackson Bay chicks while they developed. We all were more than willing to do that.

The next day, a volunteer, Cheryl Cavert, drove to Bartlesville and brought back a huge bag of frozen Japanese quail. Steve had shown her how to de-feather and break open these non-native quail, for easier feeding if the chicks had not yet learned to tear their own food. With a quick phone call to the local ODWC office, I was able to procure a big bucket of fresh fish. Becky and I had a session of cutting up some of the bigger fish into more manageable pieces. She stored all of this eagle food in her refrigerator since we had learned that one should never feed previously-frozen fish to eagles. (Doing so will lead to their death.) Becky became the "team leader" of the feeding crew, which consisted of a handful of loyal neighbors. Even local fishermen got in on the effort, providing fresh fish for the baby eagles.

The following Sunday, April 15, I received a phone call from another eagle-watcher, Marilyn Stout. She said the nest she watches, located south of Porter, OK, was also on the ground with two chicks in it, again following a big storm. She said it looked like one of the chicks was injured. With specific instructions from Steve, she protected the chicks overnight, and he and crew arrived the next day, hauling a pre-built platform and materials to rebuild the nest. They discovered that the tree was not only dead, but it had been hit by lightning and partially burned! There was no suitable tree nearby in which to place the platform. Since the injured chick needed to be seen by a veterinarian, they decided to place the healthy chick in the platform nest at Jackson Bay to be "fostered" along with the other three rescued chicks. Upon arrival at Jackson Bay, Steve determined that the chicks had gained back their weight since last checked— they were wild and "hissy." While there the crew placed satellite transmitters on two of the Jackson Bay chicks.

The feeding crew continued supplementing the diet of the, now four, chicks. The parents were always nearby, apparently feeding to some extent, and the chicks continued to grow and mature, becoming fat and sassy. On May 2nd, we discovered that the first chick had fledged. It was a male wearing a radio, which was no surprise since the smaller males grow and develop faster than the larger females. Two more left the nest in the following days with the fourth chick fledging on May 15.

I called Dr. Paul Welch, a Tulsa veterinarian who had examined the injured chick when it was brought to him. He took it to the Iowa Indian Tribe's Eagle House (near Perkins, Oklahoma), a rehabilitation center for eagles that cannot be released. The initial thought was that the eaglet had suffered either a broken pelvis or a splayed leg condition. Dr. Welch immobilized the eagle's legs for a few days which apparently remedied the problem. However, the bird was also discovered to have a disarticulated elbow in its wing. They plan to pin the bones to alleviate this problem. Whether or not the eagle will be able to be released is unknown at this time.

Cheryl Cavert

One of the hooded Bald Eagle chicks patiently waits his turn to be introduced to his new home on the nest platform.

Those of us who participated in the two nest rescues feel very gratified that we helped prevent the certain deaths of five chicks. Had this same scenario happened in more remote areas with virtually no human interaction, these five chicks would have more than likely been coyote food. At least their future survival now will potentially have a greater chance for a positive outcome.

Cheryl Cavert

Judy Bryant, DEVO, poses with a rescued eaglet, and Ryan VanZant.

2012 Sutton/NatureWorks Awards

Story and Photography by Hillary A. Parkhurst

This year marked the sixth year for the Sutton Award scholarship program and the largest turnout for applicants thus far with 104 entries from fifteen schools statewide!

The Sutton Award is for conservation artists in the 10th, 11th and 12th grades in Oklahoma. In addition to the artwork that is submitted, each student is also required to submit an essay that explains how his or her work communicates information about a current conservation issue. Seven judges spent countless hours studying each piece and reading the essays, and we are truly grateful for their help in this endeavor. This year's judges included, David Nunnely with NatureWorks, Kris Koepsel and Lisa Riggs with Riggs, Abney, Neal, Turpen, Orbison and Lewis Attorneys at Law (Kris also serves on the Sutton Board of Directors), Deborah Burke with Gilcrease Museum, Tom Sears, who serves on the Sutton Board of Directors, Ted Theban who is a retired principal and art teacher, and Steve Sherrod, Executive Director of the Sutton Center. Twenty-two students were selected to receive scholarships; the top ten winners, in addition to a few honorable mentions, had their pieces displayed in the NatureWorks Art Show in Tulsa in March.

Mackenzie McCoy, a Tulsa native, received first place for her beautiful and creative piece titled "Life Cycle". She spent many hours painting and gluing small pieces of tissue paper to create a vibrant picture of salmon in a stream which caught the eyes of many visitors at the NatureWorks Show. Her essay (see page 11) and theme, inspired from a recent trip to Alaska, were well thought out and written. We congratulate her on her achievement and look forward to seeing her succeed in the future!

Continued on page 11

Life Cycle

Over the summer of 2011, I explored the vast wilderness in Alaska by attending a National Outdoor Leadership School (NOLS) course consisting of a month of backpacking and sea kayaking through Alaska. During a class, our instructor, Jen, told us about a place called Bristol Bay, which holds the only self-sustaining salmon fishery in the world. We were informed about how mines have destroyed almost all of the other salmon fisheries. Now, the government is considering letting companies from two other countries place a mine near Pebble Bay to search for low-grade copper and gold. The mine is supposed to be one of the biggest in the world and hold massive amounts of both copper and gold. The only concern of the company is purifying the ore to a usable state. In addition, the companies are trying to persuade the public by convincing them of the profits Alaska could make, and how the extra income could improve their standard of living. The companies think this mine will have positive effects for Alaska, such as tourism, highways, mining, and construction jobs. However, Native Alaskans cherish the fishery and the surrounding land more than the hypothesized economical benefits. Pebble Bay Mine is the "last nail in the coffin for [the people of Alaska]"("Rebels to the Pebble"). I believe that the negative environmental impact outweighs any positive economic impact.

Jen continued to tell us how the mine would impact the environment. Acid Rock Drainage (ARD) and metal leaching are things that could seriously damage the fishery. There are three ways this could happen: "First, rain [or] snowfall on crushed or broken rock can turn the water acidic (low pH) or alkaline (high pH). Second, rain or snow on rock may leach metal salts (readily dissolved compounds) into water. Third, processing chemicals can leak or spill." ("Save Bristol Bay"). Alaska receives a vast amount of rain and snow, which almost guarantees the possibility of ARD and metal leaching occurring. The third possibility is as likely to happen due to the human labor to come, and the definition of being human is that mistakes are made.

Even more disheartening are the effects ARD and metal leaching have on the environment, more specifically the water surrounding the mine. If ARD contains copper, zinc, cadmium and other minerals which salmon are very sensitive to, the salmon may be harmed. "As little as a 2-8 parts per billion increase in copper above natural stream levels damages the ability of salmon to smell, and it becomes harder to avoid predators, find mates, and return to spawning grounds." ("Save Bristol Bay"). In addition, if the mine has any trace of aluminum that could get into the water, it could create a sort of mucus streamer that will clog the fishs' gills, suffocating the fish. The effects of metal leaching are a little different, but equally as harmful. "Metals and metal-like elements don't need acid to dissolve – they can dissolve at neutral or alkaline pH. Alkaline pH can come about in two ways: if the rock contains a lot of carbonate, or when ore processing requires the pH of process water to be very high." ("Save Bristol Bay"). The alkaline water caused by metal leaching can cause other minerals to dissolve, and those minerals can cause deformities in fish and even lead to death.

ARD and metal leaching have been found in 76% of the US's mines ("Save Bristol Bay"). To prevent Pebble Bay Mine from contaminating the nearby watersheds they will need to post a bond for water treatment, which is very expensive.

With all of the risks shown, what could possibly stop the mine from being excavated? The Environmental Protection Agency (EPA) is one of the main powers that could stop the construction of the mine and the disposal of wastes in Bristol Bay's waters. Many people have petitioned the EPA to use the authority of the Clean Water Act, a "science reviewed process to protect rivers and wetlands that are important for fish spawning and wildlife habitat" ("Save Bristol Bay").

The number of mines that do not destroy surrounding areas, mainly water, is close to zero. In my opinion, the benefits of building the mine do not outweigh the negative outcomes, but it is not up to me. Therefore, I have created this piece to show the positive aspects the fishery brings. My two salmon are bright red because they are presented during the spawning season when they recreate and die for the next generation to grow. The reason I chose this was to demonstrate how the fishery has helped save many salmon from being over-fished and this allowed them to grow naturally. By capturing the awe-inspiring moments during the salmon life cycle, my piece sheds a positive light on this aspect of fisheries in Alaska. I hand painted each tissue paper and individually cut out each shape to also emphasize the details on the salmon itself. The fishery saved millions of salmon, and each piece of paper represents the massive amounts of salmon saved. Each day I worked on it, the more I fell in love with the piece and it made me become more passionate about this conservation issue in Alaska. I hope to do everything I can to help convince Alaska to not place the mine and therefore save the fishery, and this project made me become keener to achieve that goal.

Continued from page 10

The Sutton Center is especially grateful to it's sponsors, including NatureWorks, Riggs Abney Neal Turpen Orbison & Lewis, Bama Pie Corp. and The Mayo Hotel for allowing us to showcase the artwork for the first time to the general public for over two weeks! If you would like to make a contribution to the Sutton Award for 2013, please contact Hillary Parkhurst at hparkhurst@riggsabney.com. Make sure to visit the NatureWorks Art Show next year and see the amazing talents of Oklahoma's youth!

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