

# Award Celebration Combines Birds, Airplanes, and Sustainability

The Lindbergh Foundation presented its annual Lindbergh Awards to aviator/conservationists Terry and Mary Kohler and environmental visionary Lester Brown on May 16 at the EAA AirVenture Museum in Oshkosh, Wisc. The Lindbergh Award honors individuals who, through their work, have made significant contributions toward achieving a balance between nature and technology. “Mr. Brown and the Kohlers convey an outstanding spirit of individual initiative and incredible accomplishment,” said Lindbergh Foundation Chairman John King, co-chairman of King Schools, Inc. “This makes them perfect recipients for our Lindbergh Award.”

For the first time, the Lindbergh Foundation held their event at the EAA AirVenture Museum in Oshkosh, Wisc. Tom Poberezny welcomed the crowd and gave a brief history of the organization. Explaining that the goal of EAA is to appeal to the aviation craftsmen, pilots and enthusiasts, Poberezny added that, “Attaining a goal is one thing. Maintaining the dream is the most important thing. That’s the mission of this organization. To keep dreams alive.” He went on to point out that planes brought people to the event, but the real story of EAA is the people. “The reason we’re here is because of the people. Relationship is the most valuable thing we have.” We couldn’t agree more.

## Terry and Mary Kohler

“Terry and Mary Kohler’s use of their aircraft to re-introduce swan and crane eggs in the United States is an excellent example of the Lindbergh Foundation’s concept of balancing technology and nature,” said King. “Their commitment to this work is just what the Foundation seeks to honor with our Lindbergh Award.”

After accepting their award, Terry and Mary Kohler, of Windway Capital Corp., took the audience on a brief journey through the Alaskan and Siberian wilderness as they told the tales of working with the U.S. Fish and Wildlife Service and the Wisconsin Department of Natural Resources to reintroduce trumpeter swan, whooping crane and Siberian crane eggs into their once-native habitats in Wisconsin and Siberia.

Using their Cessna Citation 560 and egg carriers converted from school lunch transport systems by the Kohler’s Vollrath company, Terry and Mary Kohler have helped transport hundreds of eggs to new homes. Mary Kohler explained that trumpeter swans typically lay six eggs, but usually only raise two, leaving up to four eggs available for the re-introduction project. Their efforts have been very successful. In 1980 there were no trumpeter swans in Wisconsin. Now, more than 100 nesting pairs live there.

The Kohlers also received a call from the International Crane Foundation (ICF) requesting similar assistance for bringing whooping crane eggs from northern Canada to the U.S. The Kohlers happily obliged. Today, 79 whooping cranes live in the wild and migrate from Wisconsin to Florida. An additional 15-20 birds will join the flock this year. This project then led to a request that the Kohlers transport Siberian crane eggs from the ICF to Siberia, a trip that took 14 days and more than 39 hours of flight time, covering 13,000 miles.



*John King, Lindbergh Foundation Chairman of the Board, presents Terry and Mary Kohler with the Lindbergh Award.*

Award, continued on page 3

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## Letter from the Honorary Chairman



Dear Friends,

The Lindbergh Foundation enjoyed a wonderful Lindbergh Award celebration at the EAA AirVenture Museum on May 16. Although I couldn't be there, I'm told it was a great crowd with fabulous food, conversation, and speakers. Mr. Brown and Mr. and Mrs. Kohler gave inspiring talks about their work in support of the environment, which truly resonated with our mission.

One of the biggest developments for the Foundation has been the decision by members of the board to more specifically focus on aviation and aviation-environmental issues in our mission and programs. We will continue to give research grants, but we will take more deliberate action to attract and fund aviation projects that benefit the environment or make aviation less harmful to the environment. You'll be hearing more about this in upcoming newsletters as we work to develop a business plan to implement these ideas.

We are pleased to welcome three new board members: Lorie Karnath, Kate Dougherty, and Mark Ross. You may read more about them below. We are confident they will be strong additions to our already outstanding board of directors.

In addition, Knox Bridges is no longer serving as President and CEO of the Foundation, or as a member of the board. We thank Knox for his service to the Foundation.

It is with deep sadness that I announce that Board Member Edward Knapp passed away recently from pancreatic cancer. We are grateful for his service to the Foundation and the fresh perspective he gave to our grants program.

The Lindbergh Foundation also notes the passing of T. Willard Hunter, who has been a long-time friend of the Foundation and the Lindbergh family, and was well regarded for his book about Charles Lindbergh entitled, *The Spirit of Charles Lindbergh*.

Certainly, there has been significant change here at the Foundation, but we remain committed to our mission and programs, and look forward to new beginnings as we re-invent ourselves for the 21<sup>st</sup> century. I hope you'll join us.

A handwritten signature in black ink that reads "Reeve Lindbergh". The signature is written in a cursive, flowing style.

## Director News

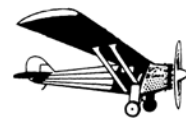
### Lindbergh Foundation Welcomes Three New Board Members



*Lorie Karnath is the second woman in The Explorers Club's 106 year history to be elected president.*

Lorie Karnath joined the Lindbergh Foundation in March when she became the 37<sup>th</sup> president of The Explorers Club. Ms. Karnath focuses much of her effort on the fields of science and education, conceiving and implementing programs that foster creativity, discovery and the sciences. She participates on numerous international scientific and educational boards. An avid explorer from a young age, she is a fellow of the Royal Geographical Society and was a founding member of the RGS Hong Kong, as well as an international fellow, board member, Western European Chapter and Science Advisory Committee chair of The Explorers Club.

Karnath has lived in the Borneo rainforest while conducting flora and fauna studies, traveled much of the Silk Road, rode on horseback across the Tibetan plateau and has participated on numerous journeys covering the far corners of the world in search of answers to some of the planet's most elusive questions. She has led several Explorers Club flag expeditions including one to the North Pole, which attempted to retrace Cooks' expedition, and headed the team that followed the migration routes of the White Stork. She and her husband, Robert, helped establish a hospital in northern China as well as schools and orphanages elsewhere in the Far East. She has authored several books and international publications. She received her MBA from INSEAD and an honorary Ph.D. from Shenandoah University.



**Award Celebration, continued from front**

**Lester Brown**

“Lester Brown is an exceptional portrayal of the Lindbergh Foundation’s ideals,” said King. “He presents a realistic view of the world, yet remains optimistic as he suggests practical solutions to many of today’s most pressing environmental issues.” In his acceptance, Mr. Brown, president and founder of the Earth Policy Institute, expressed how pleased, honored and humbled he was to receive the Lindbergh Award because it represents an intersection with history and the name Lindbergh. He said he was honored to be listed among the Foundation’s many other awardees, especially Paul MacCready, whom he met about 20 years ago, and admired so much for his capacity to design a human powered and a solar powered airplane.

During his remarks, Brown stated that for years environmentalists have talked about “saving the planet.” The planet is going to be around for a long time, he explained, but the real question is not whether the planet will survive the environmental changes we’re witnessing, (in the form of soil erosion, falling water tables, crop shrinkage due to heat waves, rising sea levels, melting mountain glaciers, collapsing fisheries, etc.) but whether civilization will survive the mount-

ing stresses we’re facing. Mr. Brown believes that stabilizing our climate, keeping population in check at no more than 8 billion people, eradicating poverty, and restoring our economy’s natural support system (the environment) are the key to sustaining life on earth.

Talking briefly about renewable energy sources, Brown said he is excited by the growth in renewable energy sources like wind energy. He maintains a “can do” attitude about implementation, too, referring specifically to the country’s determination to dramatically increase airplane and tank production goals during WWII using existing automobile factories. Within months the country vastly exceeded their goal. Brown said, “If we did it then, we can do it now. We can restructure the energy economy quickly and provide leadership in the world.”



*Lester Brown accepts the Lindbergh Award from John King, Lindbergh Foundation Chairman of the Board.*



**K**ate Dougherty joined the Lindbergh Foundation in May. She is owner of Dougherty Public Relations. Her client list is a diverse group of aviation companies and foundations including Avidyne, Forward Vision, and MT Propellers, among others. Prior to developing her private business, Ms. Dougherty was the public relations director for Cirrus Design for seven years and employed by them for ten years. She led numerous national and international product launch campaigns for Cirrus Design and directed public relations activities surrounding the first Cirrus Airframe Parachute System save.

Ms. Dougherty has a Broad Field Social Studies degree from the University of Wisconsin-Superior. She is a member of Experimental Aircraft Association, Aircraft Owners and Pilots Association, and a former member of the General Aviation Manufacturers Association, Communication Committee. She also serves on the Board of Trustees of the Duluth Aviation Institute.



**M**ark Ross became an honorary board member in February. As a young boy, Ross decided to spend his life working with wildlife in East Africa, and to be a pilot there. He finally landed in Kenya in November of 1977 to finish up his degree in wildlife biology. Ross taught high school biology, chemistry and physics for a few years, then trained science teachers, and started guiding safaris. In 1987, Ross got his pilot’s license.

Today, Ross has his own safari company based in Nairobi, Kenya, trains guides for a number of private tour companies, and for the Kenya Professional Guide’s Association, and runs his own flying safaris around East Africa. Besides guiding safaris full time, he has also worked on a number of successful film projects, including documentaries for “Dateline NBC,” “Animal Planet,” and the BBC. Beyond the African continent, Ross also guides a few trips a year in Mongolia, has guided motorcycle trips in South America, has trekked and climbed in Nepal, Pakistan, Argentina and Chile. Ross has written two books on Africa. When he is not flying his Cessna 206 on safari, he is teaching himself aerobatics in his Pitts S2B.

## New-Found Respect for Lindbergh's Feat

Eight individuals from around the country enjoyed a rare opportunity to experience what few others have known – flight and stick time in the EAA's *Spirit of St. Louis* reproduction. The rides were part of the Lindbergh Foundation's on-line auction and took place May 15-17.

"The *Spirit* is a great storyteller," said *Spirit* Pilot Sean Elliott, director of Aircraft Operations at EAA. "If you read all the books written about the *Spirit*, they still don't prepare you for the experience of what Lindbergh did when he flew that plane for 33 ½ hours."

The poor visibility in the aircraft is an eye-opener for those who ride in the plane. Not only was Charles an aviation pioneer, but he was also at the forefront of instrument flying. With no forward vision available, Lindbergh used instrumentation to navigate his way to Paris.

Jesse Easudes of Pittsburgh, PA., was one of the bidders. He is a lifelong admirer of Charles Lindbergh and a pilot with a deep affection for the Golden Age of aviation. Easudes, who never dreamed he would have



Jesse Easudes attempts a familiar pose.

"Although I would have thought it difficult to do, this airplane increased the already tremendous respect I have for Lindbergh."

– Jesse Easudes, Pittsburgh, PA.,

a chance to fly the *Spirit of St. Louis* reproduction, bid on a ride not for himself but for a dear friend, Ev Cassagneres, a worldwide expert on the *Spirit of St. Louis*, who has written two books about the famous aircraft. Easudes's bid was successful, but unfortunately Cassagneres was

unable to accept the ride. Easudes couldn't go to Wisconsin himself, so he offered the ride to his friend David Troup. Troup gratefully accepted, and was so delighted with the opportunity that he immediately arranged to return the favor and fly Easudes to Wisconsin. So it turned out that both of them were able to experience the flight of a lifetime.

"To hear about its handling characteristics is one thing but to actually experience them as a passenger and finally as pilot is quite another," said Easudes.

David Troup added, "I had tremendous respect for Lucky's flight before I flew the *Spirit*. Afterward, I'm in awe that he made it at all!"

"The Lindbergh Foundation is extremely grateful to EAA for making the *Spirit* available to us for our auction," said Foundation Chairman John King, co-chairman of King Schools. "The *Spirit* is one of the most



"It was a big thrill to fly the *Spirit* and fly it from the seat that Lindbergh sat in. It allows me to better project what he went through. I have even greater respect for his airmanship after having seen how unstable the airplane is. There is no way it could get certified today. You have to fly it every second."

– Linden Blue of Spectrum Aeronautical, San Diego, Calif.



"I found the ailerons heavy, relatively unresponsive, and they created considerable adverse yaw," said Jeff Loeffler. "It helped to have a well-developed forearm and responsive feet," he joked. "Flying over the Wisconsin fields, I couldn't help drifting into thoughts of yesteryear and trying to imagine what it was like to occupy that seat over the Atlantic in 1927."

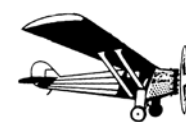
– Jeff Loeffler, Wyoming, Minn.

"I was awestruck to learn how unstable the aircraft is and how to keep it flying, you need constant input and diligence."

– Larry Williams of Ballistic Recovery Systems, Inc., St. Paul, Minn.



recognizable airplanes in the world. We are delighted to have made some dreams come true for a few very lucky people and we thank them for participating in our auction."



## 2009 Lindbergh Grant Recipient Projects

The Lindbergh Foundation selected eight projects to receive grants this year. Lindbergh Grant projects are the cornerstone of the Foundation's mission and their global reach ensures that the Lindbergh legacy of balance resonates around the world. Each grant recipient receives up to \$10,580 (the cost to build the *Spirit of St. Louis* in 1927) to support their research or education projects that use innovative ideas to foster our environment for a planet in balance.

The Foundation is deeply grateful for the financial support of the Lindbergh Grants program provided by **Knox Bridges**, North Carolina; **Cherbec Advancement Foundation**, St. Paul, Minnesota; **Clare Hallward**, Canada; and **Reeve Lindbergh**, Vermont. Lindbergh Grants are also funded by the **Lindbergh Grant Endowment** and the **James and Maureen Lloyd Grant Endowment**.



### Benjamin Castaneda

Pontificia Universidad Catolica Del Peru, Lima Peru

*"Developing Computerized Screening for Early Detection of Tuberculosis in Peru"*

The World Health Organization declared tuberculosis (TB) to be a global emergency in 1993. Today, it is estimated that one-third of the world's population is infected, nine million new cases are diagnosed and two million deaths occur from TB each year. This contagious disease spreads through the air like the common cold virus. Left untreated, those with active TB can infect between 10 to 15 people every year. The most effective method to stop the TB epidemic is to isolate and treat infected patients before they spread the disease. Diagnosis of TB in Peru, and most of the world, is currently based upon the Directly Observed Therapy Short-course strategy. Patients with clinical signs or those who have been exposed to the disease provide sputum samples that are stained and microscopically screened for acid-fast bacilli (AFB), an indicator of the infection. The number of readings done per day as well as the quality and accuracy of the reading is dependant upon a technician. In areas of highest incidence, detection is tediously slow by this method and limited resources for the training of laboratory staff, supervision and quality control procedures are challenges currently faced in Peru, and

other developing countries.

Mr. Castaneda is developing stand-alone software to automate the visual search of AFB. Samples will be recorded using a digital camera and entered into the

computer where the software will complete the screening and diagnosis. This use of computer software will promote an early and fast diagnosis of TB and improve the quality of the human environment in areas where TB is prevalent.



### Tanya Cheeke-Icoz

Portland State University

*"Evaluating the Effects of Genetically Modified Plants on Beneficial Fungi in the Soil Ecosystem"*

This grant in agriculture is sponsored by the Jim and Maureen Lloyd Grant Endowment

Genetically modified corn has been grown commercially since 1996 and now constitutes 80% of all corn grown in the United States. There are many benefits of using biotechnology in agriculture, particularly the reduced use of broad-spectrum pesticides. However, despite the widespread cultivation of these crops in the U.S. and abroad, the environmental effects of this technology have not been thoroughly evaluated.

Transgenic *Bt* corn releases an insecticidal toxin that binds to soil particles and accumulates in the environment over time. Because soil microorganisms are vital for decomposing organic matter, recycling nutrients, and forming symbiotic relationships with plants, it is important to determine the effects of transgenic crop production on beneficial organisms in the soil.

Ms. Cheeke-Icoz will evaluate the benefits and potential impacts of agricultural biotechnology on the soil environment with the goal of finding an acceptable balance between the use of genetically engineered crops and the preservation of a healthy soil ecosystem. Results from her work will provide a comprehensive assessment of the impact of *Bt* plants on beneficial soil organisms across a broad

range of environmental and ecological conditions.



Grant Recipients, continued on page 6



**Randall Fishman**

Cliffside Park, NJ

*“Using Electric Propulsion in a Two-man Aircraft to Make Extended Flight Economical and Pollution Free”*

Global warming, air and noise pollution, and liquid fuel shortages are major factors facing the world today. They are also of major concern to the aviation industry. Gasoline-powered engines used in aviation are inefficient at producing mechanical power from fuel. Only 25% of the energy is used to propel the airplane, the rest is wasted in the form of heat, vibration and noise.

To address these issues, Mr. Fishman plans to build a two-person airplane, with some baggage space, which would be propelled solely by an electric motor and electronic motor control. The on-board 220-volt battery charger will be able to recharge the battery packs in three hours or less, and can be used with a 110-volt outlet, if necessary. This proposed electric propulsion plane would allow pilots to fly quietly on approximately \$2 of electricity per two-hour flight, at current rates. The aircraft will produce no local air pollution, reduce noise to nearly zero, produce almost no carbon footprint and use no oil or gasoline.

The results from this project will demonstrate that practical electric flight is possible today and may inspire others to begin converting to electric for at least a portion of the airplanes produced. If well received, electric aircraft could offer new ways for people to travel short-to-medium distances and if widely adopted, they would contribute to a cleaner, quieter environment.



**Dr. Chad A. Kinney**

Colorado State University, Pueblo, CO

*“Using Earthworm Composting to Reduce Manmade Contaminants in Wastewater Biosolids Destined for Land Application”*

This waste management grant is sponsored by Reeve Lindbergh.

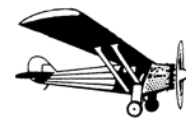
In the U.S., the EPA estimates that more than 19 million dry tons of biosolids are produced annually. The practice of applying biosolids to the land is an affordable option for disposing of solid materials produced during wastewater treatment. The high content of organic matter also makes it an attractive soil amendment and a good source of plant nutrients. Recently, however, researchers discovered that applying biosolids to the land could introduce organic compounds like pharmaceuticals, synthetic fragrances, and disinfectants into the soil. Organic wastewater contaminants (OWC) can leach from the soil into groundwater, and some may accumulate in plant tissue, including crops. Earthworms in biosolid amended soil can accumulate OWCs, and songbirds, consuming those earthworms also may be affected.

Dr. Kinney plans to investigate vermicomposting, a relatively new method for producing biosolids. The idea is that the normal metabolic activity of earthworms and the increase in bacterial activity associated with a high density of earthworms will significantly reduce the quantity of OWCs in the final biosolid product. If this proves to be effective, it will serve as a model approach to reduce the translocation of OWCs from wastewater treatment facilities into the land. The goal of this project is to provide scientific evidence for a biosolid production process that maintains the sustainable use of the organic rich nutri-



ent source as a soil amendment, while protecting the natural environment and food and water supplies. In addition, increased use of biosolids produced from energy efficient vermicomposting

will likely result in a net reduction in energy consumption compared to production of synthetic inorganic fertilizers.



**Tricia Miller**

The Pennsylvania State University, Rector, PA

*“Modeling Migratory Flight Characteristics of Golden Eagles to Avert Potential Conflicts with Wind Power Development in the Appalachian Flyway.”*

This grant in animal conservation is sponsored by Clare Hallward.

The same updrafts used by birds during migration are an essential resource of wind power, which is emerging as a promising source of clean energy for our nation. Wind power development and the potential conflict with wildlife is an important issue at the local, regional, national and international level. Ms. Miller plans to fit 10 golden eagles with the most advanced form of global positioning system (GPS) tracking technology to document their movements as they travel from their breeding grounds in Canada, through the wind power projects in the Appalachian Mountains. This research will be the first project in the world to collect high frequency location data over large spatial and temporal scales and remotely transmit those data via the cellular phone network. This GPS cellular telemetry was developed in the last year and is capable of collecting location data at 30-second or shorter intervals, giving a nearly exact track of an animal’s movements.

Ms. Miller will evaluate the altitude, position, heading and flight speed of the birds under a variety of climatic and topographical conditions to create a model that will predict the migration patterns of the birds. The high resolution data collected from this project will be used to create three dimensional probability models that will be provided to the wind industry, land managers and state agencies in the Appalachian corridor to

guide wind turbine positioning that will have the least impact on migratory eagles and other birds of prey.



**Richard Osiyo**

MOI University, Eldoret, Kenya

*“Training Kenyan Farmers to Integrate Rice and Fish Farming to Increase Productions and Reduce Harmful Run-off in the Lake Victoria Basin”*

This grant in agriculture is sponsored by Knox Bridges.

Rice is a very important food crop worldwide. Most sub-Saharan African countries, including Kenya, import rice. Small farmers in Kenya recognize the need to improve their crop yields through the use of inorganic fertilizers but they remain too expensive for the farmers. There is also a national concern about the pollution of Lake Victoria caused by farming activities and destruction of catchment areas. To address these issues, Mr. Osiyo plans to use rice straw, Azolla (a water fern), and fish to increase soil fertility, build soil nitrogen, improve rice yield and reduce pollution of Lake Victoria.

Integrating fish and rice has multiple benefits. The waste from the fish improves soil fertility and reduces the need for chemical fertilizers in rice production. In addition, fish eat insect pests from the rice while the Azolla suppresses aquatic weeds in the rice fields. Azolla and rice straw increase nutrient retention in rice fields, reducing runoff effect on Lake Victoria.

Mr. Osiyo also hopes that long-term improvement of soil fertility will be achieved, contributing to increased sustainable food production. As a result of this work, he expects rice yield to increase by 33%. This project is unique because it is the first of its kind in the Lake Victoria basin of the Kenya, Uganda, and Tanzania, where there is great potential for its success and adoption.





**Dr. Patricia Saenz Méndez**

School of Chemistry, University of the Republic (UdelaR), Montevideo, Uruguay

*“Employing Biotechnical Tools to Convert Lignin Waste into High Value Organic Chemicals for Leather Tanning in Uruguay”*

This waste management grant is sponsored by the Cherbec Advancement Foundation.

One of the most significant challenges facing the chemical industry in the 21st century is sustainable economic growth, which requires sustainable resources for industrial production. Uruguay’s economy remains dependent on agriculture and services, including leather production and apparel, which represents 23% of GDP and over two-thirds of total exports. Limited deposits of fossil fuels and environmental concerns such as greenhouse gases have prompted the scientific community to look for alternatives to fossil resources. Lignin is one such resource. A by-product of the paper and pulp industry, lignin is used as a fuel for the pulping process.

In this study, Dr. Saenz Méndez proposes to develop a biotechnological process using fungi and isolated enzymes to convert lignin into a high value-added chemical that would replace chromium sulfate, a tanning agent used in the production of leather. Chromium is a fossil-derived chemical and is a leading cause of water pollution in Uruguay.

Lignin offers a great opportunity to address the growing need for chemicals without depleting natural resources, and for reducing industrial waste disposal in an environmentally sound fashion. Transforming industrial waste, like lignin, into useful products will balance the demands of industry and the environment, making the

new chemical industry economically viable as well as socially and environmentally responsible.



**Sean Sloan**

The Smithsonian Tropical Research Institute, Panama and The University of Melbourne, Australia

*“Combining Satellite Imagery and Census Data to Show How Socio-economic Development Encourages Forest Regeneration in Panama”*

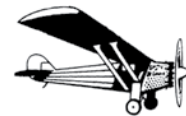
In Panama, deforested lands are left to reforest for up to 10 years before being re-cleared for agriculture. This creates uncertainty as to how much of the observed regeneration is authentic and whether it might mitigate tropical biodiversity loss. New forest regeneration has been recently observed in Panama for the period 1990-2000. This could be good news for endangered forest species and climate. However, the National Authority for the Environment (NAE) needs significant information in order to formulate new environmental-economic policy to actively promote such regeneration.

Mr. Sloan intends to use satellite and related computer technology to observe forest regeneration, map the regeneration in Panama since 1980, quantify biodiversity preservation resulting from regeneration, and quantify the influence of socio-economic development on forest regeneration. By doing this, he hopes to reveal if, how and where socio-economic development promotes tropical forest regeneration, and to what extent such regeneration might conserve tropical biodiversity.

The topic is of critical importance to Panama, as deforestation rates are falling and areas being reforested are expanding country-wide. However, regional differences are evident, and the causes of regeneration uncertain. The results of this study will be used to inform public policymakers

in Panama about how social trends might be harnessed and re-directed to protect and expand forest cover as well as alleviate poverty.





# LINDBERGH FOUNDATION

## 2009 Certificate of Merit Designees



**Dr. Steve Ross**  
University of North Carolina Center for Marine Science, Wilmington, N.C.  
*"Protecting Deep-Sea Coral Habitat by Designing Drop Camera and Lander Systems"*



**Fernanda D'Agostino**  
Portland, Ore.  
*"Using the Connection Between Art and Science to Display the Fluid Flight Dynamics of the Vaux Swift in Order to Protect the Birds and their Habitat"*



**Joseph Duff**  
Operation Migration, Port Perry, Ontario, Canada  
*"Reintroducing a Migratory Population of Whooping Cranes in Eastern North America Using Ultralight Aircraft"*



**Andrea Stierle**  
Montana Tech of the University of Montana, Butte, Mont.  
*"Using Enzyme Inhibition to Guide the Isolation of New Anticancer Agents from Microbes Found in Abandoned Montana Copper Mines"*

Sign up to receive the *Lindbergh Flyer*, our periodic e-newsletter, for updates on funded grant projects and special event announcements. Click "Add Me to Your E-Mail List" at [www.lindberghfoundation.org](http://www.lindberghfoundation.org)



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**Reeve Lindbergh**

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# Lessons from Elkhorn Slough

**D**r. Steven W. Moore, of the Division of Science and Environmental Policy of California State University, Monterey Bay, received a Lindbergh Grant in 2005 for a project entitled, *“Engaging Students in Video Technology Deployment and Experimental Design to Study Animals in the Wild.”*



Dr. Steven Moore

## The Project

Television and the Internet have dramatically increased public awareness of the wonderful diversity and interdependence of life on this planet and have played an obvious and important role in educating millions about the importance of environmental conservation. However, these same technologies may be undermining the long-term commitment of society to conservation as children are spending more time in front of the television or computer rather than developing a close relationship with nature through physical experience.

During this study, Dr. Moore plans to bring middle- and high-school students up to date on the latest in wireless video and Internet technology while getting them outdoors and giving them a fun, safe way to connect on a deeper, more meaningful level with wildlife near their homes and schools. Students will design and conduct experiments in which they will use technology by positioning solar powered web cameras, infrared lights, long-range wireless Internet access equipment, and web-linked motion sensors outside in natural settings to answer their own questions about wildlife. This experience may strengthen their involvement and commitment to environmental preservation.

A group of 5<sup>th</sup> graders from Highlands Elementary School in Seaside Calif., went to Elkhorn Slough National Estuarine Research Reserve in April 2009. These students of nature were from the first school to deploy brand new, solar-powered, wireless, network camera stations designed and built by Dr. Moore with funding from the Lindbergh Foundation.

The kids shouldered heavy batteries, solar panels, cameras, and cables and tromped out toward the woods. After examining several sites, one group of children elected to place their camera near a small freshwater spring to see what would stop by to take a drink.

Back at school, children and teachers use the Internet to view live or recorded images from the cameras. From those first images, students learned that crows are the most frequent visitors to the spring. They drink, bathe, and socialize there several times each hour. Other visitors included a Spotted Towhee, a Red-Shouldered Hawk and a Barn Owl. The highlight for the children, however, was the pair of deer that showed up 10 days later.

Each camera station is battery powered for 24-hour operation by a solar panel, which recharges the batteries during daylight hours. A small, embedded computer and a wireless router relays the video images to a remote base station and permits remote monitoring of the battery status, solar charging, and other “vital signs.”

## What’s Next?

In the coming months, Dr. Moore plans to upgrade the Internet connection, and establish a 3.5-mile, broadband, wireless connection between the Slough and Moss Landing Marine Laboratories. This would allow real-time viewing of streaming video. In addition, Dr. Moore is working on waterproofing one or two cameras to allow underwater viewing. The waterproofed cameras could be used in one of the springs or in the brackish waters of the Slough where Leopard Sharks are known to congregate.

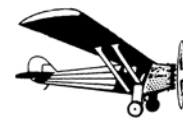
Learn more about Dr. Moore’s project by visiting our web site at [www.lindberghfoundation.org](http://www.lindberghfoundation.org).

Dear Lindbergh Foundation,

Thank you for providing an opportunity for 5<sup>th</sup> graders to observe me and my friends over the internet from their classrooms through Dr. Moore’s solar-powered network cameras!

Sincerely,  
Mr. Deer





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In memory of Leonard Griffith

## “Over Africa!” Available for Associate Contributions

*Over Africa! Low and Slow with the Kenya Wildlife Service* has been on the road in recent months, premiering at Sun 'n Fun in April, and making a big splash at EAA's AirVenture 2009 on July 28, where a standing room only crowd packed the Theater in the Woods to see this fascinating documentary.

The film documents the training of 12 Kenya Wildlife Service (KWS) pilots by the legendary aerobatic pilot Patty Wagstaff, air-show performer and vintage airplane owner Rich Sugden, and Lindbergh Board members, John and Martha King. The KWS air patrol are the single most effective deterrent to illegal poaching, which claims the lives of thousands of elephants every year. In fact, more than 25,000 elephants were illegally killed in 2007 alone, mostly to feed the insatiable appetite of ivory markets in the Far East. This film shows how aviation is rising to this challenge, and is making an important contribution to the survival of the gentle giants.

You can experience what it takes to monitor the vast regions of elephant territory in “*Over Africa! Low and Slow with the Kenya Wildlife Service.*” Contribute \$35 as an existing associate or become a new associate and receive the 30-minute documentary produced by Miles O'Brien.



One of six KWS patrol planes.



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Dr. Godakumbura first launched this project in 1992. In addition to his grant from the Lindbergh Foundation, the project has won two international awards – Rolex and Reader’s Digest Awards. His team has replaced 775,000 of the unsafe lamps in use with their ‘Sudepa’ safe lamps, by giving them out free or marketing them below cost with the funds they raise. Their website is [www.safebottle-lamp.org](http://www.safebottle-lamp.org).

Beginning September 28, the winner and the two runners up will be chosen by public on-line voting at [www.theworldchallenge.co.uk](http://www.theworldchallenge.co.uk).

Prior to that, the BBC will film the 12 projects in their respective countries while *Newsweek* features the projects. The award ceremony, to be held in Netherlands in December, will be telecast on BBC World News. The winner receives \$20,000 and the two runners up receive \$10,000 each, for their project activities.



Organizers of the World Challenge 09 competition conducted by the BBC, *Newsweek* and Shell, have selected 12 finalists out of more than 900 entries from around the world during the fifth round of the competition. Among the finalists is Lindbergh Grant recipient Dr. Wijaya Godakumbura, a General Surgeon from Sri Lanka, whose project received a Lindbergh Grant in 2003 to “Promote the Use of a New Kerosene Safe Lamp” in *Rural Villages of Sri Lanka to Reduce Accidental Burn Injuries*.

Burns caused by makeshift unsafe kerosene lamps are a common problem in Sri Lanka, where one-fifth of the population has no access to electricity. These accidents often cause severe pain, scarring and sometimes death. However, many of these injuries can be prevented. Safe Bottle Lamps is the brainchild of Dr. Godakumbura, who designed a simple safe lamp that can be easily mass-produced at low cost, using recycled glass. It is an effective, inexpensive and quick solution to a serious problem encountered in many developing countries.



*Dr. Wijaya Godakumbura*

## **Lindbergh Grant Project is Among 12 Finalists in World Challenge 09**