Cover Photos:

National youth delegates from across the country at the Washington Youth Summit on the Environment, hosted by GMU, participate in camera trapping and entomology field research workshops at the Smithsonian Conservation Biology Institute

Photos courtesy of WYSE
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How to Give a Bad Academic Presentation

By Dr. Chris Parsons, GREENovation Editor

Recently, I was at a government-organized meeting of researchers and realized I have been spoiled by the excellent presentation skills of my graduate students. I had forgotten how quite dreadful and excruciatingly dull academic presentations can be. All around me, scientists were playing on iPhones, nodding off to sleep, or in one case, blankly staring at a patch of nearby wall in preference to the presenter. So in order to keep sane/awake, I started writing a list of what an academic should do in order to ensure their presentations areas dull, dense and obtuse as possible.

(1) Speak quietly, in a monotone voice.

(2) Read the text off your slides... slowly.

(3) Spend the first five minutes groveling and sucking up to your funders.

(4) Always crack "in jokes" that only two people in the audience get (and one of them is you) - it will surely make you appear like a popular and amusing person who has friends, and who doesn't still live in their parent's basement.

(5) Equations - your audience loves reading complex equations, ideally in as small and as quirky a font as possible.

(6) Fill your slides with text -- the smaller the font the better. Leaving any slide background visible is an affront to science.

(7) Linear graphs and scatterplots are great - always put at least six on a slide. Your audience consists of scientists; they don't need labels or explanations, so don't waste valuable time on them. The science speaks for itself. A graph is worth a thousand words, so it just stands to reason that a thousand graphs are worth a million words, right?!

(8) Make your presentation as complicated as possible; the more tangled and complicated your presentation, the more impressive it appears.

(9) Also it will help the audience to remember your presentation if you use animations on every slide, use cutesy fonts and a slide color scheme that literally burns the text into the viewers' retinas.

(10) Talking of burning retinas, when using a laser pointer, make sure that you wave it around. The patterns it makes are entertaining, and the possibility of blinding one of the audience members just makes the presentation that much more exciting.

(11) Practice is for novices - always hit your presentation cold, it will make the presentation fresher.

(12) Make sure you always have a few typos on slides. Make sure that you always act surprised when you see them. Your audience will think you’re cute and ‘folksy’.
(13) Remember also that technology always works first time, and no matter what computer you use. Don't waste time checking that your images or animations work on the conference computer -- that's important time that you can spend adding more graphs to your presentation.

(14) Always spend the concluding part of your presentation talking about the additional funding you need for more research rather than what you found out and its implications.

(15) Always finish with, “This will be a useful tool for practitioners,” assuming they simultaneously have PhDs in statistics, computer programming and advanced physics. (OK, this is not really related to presentation skills, but it is one of my personal bugbears).

(16) Always increase the importance of everything. "Possibly slightly useful" should become "essential" or "critical" or "vital." When referring to statistics or a technique, use the term "powerful" as many times as possible - it makes you sound like a superhero.

(17) Your presentation is really important, you must give all of it, unabridged and unedited. Moreover, conference time slots are just guidelines the organizers assume you will go over.

(18) Always remember: more is more.

(19) Never make eye contact with the audience - if you do, they will steal your soul, and more importantly, your funding. Always stare at the podium, preferably remaining immobile. Don’t move…don’t even blink.

(20) Give the same presentation at every meeting you go to. One of the key criteria of science is repeatability. If they liked the presentation the first time, they will love it the seventh time.

(21) Use the Oscar speeches as a model - you must thank every person in your lab, department, who has ever given you a grant, you have ever met or spoken to, by name. Do this ideally at the beginning of the presentation so that you run out of time when it comes to the conclusion part of your talk - that part isn't important anyway.

(22) Never adjust your talk for your audience. Experts don't mind being patronized or told things that they already know. (For example, explaining to your audience of PhDs that organic chemistry is the chemistry of carbon compounds and whale are in fact mammals that live in the sea.) Additionally, non-experts are impressed and awed by jargon and frequent use of technical terms.

Student readers, try taking this list into your next conference and grade presenters on how many they do. Go on, get your own back….

“If you can't explain it in simple words, you don't understand it well enough.”

Albert Einstein

Thanks to Dagmar Fertl, Beth Miler and Michael Lück who added ideas to this article when it was just a list on FaceBook.

- Dr. Chris Parsons is an associate professor and the undergraduate coordinator for Environmental Science and Policy, Conservation Biology and Marine Biology. He is the marine section president and a governor for the Society for Conservation Biology, a senior research associate for the University Marine Biological Station Millport and a research associate for the Smithsonian Conservation Biology Institute.
Events in Photos:

Earth Week Community Fair @ GMU Arlington

Potomac Overlook Regional Park

The Arlington Regional Master Naturalist Program

Locally decorated rain barrels up for auction

The Smithsonian-Mason School of Conservation

Local organization Live Green DC

mason sustainability institute
While chopsticks are an authentic part of dining in an Asian-style restaurant, few consider the origin of their disposable utensils. Most disposable chopsticks in America originate in Chinese factories. A New York Times (2011) blog about energy and the environment pointed out that China produces roughly 57 billion pairs of disposable chopsticks a year, two percent of which go directly to American restaurants. This blog calls disposable chopsticks the “plague of regional deforestation.” According to an article in the Los Angeles Times (2010), wooden disposable chopsticks are made largely from hardwoods, such as birch and poplar, and their production is deeply menacing.

THE ISSUE

China uses 130 million pairs of disposable chopsticks each day, which equates to approximately 100 acres of trees felled every 24 hours. With a population of 1.3 billion people and growing, the demand for disposable chopsticks has never been higher. Most disposable chopstick manufacturing is happening in Asia, but the deforestation to provide timber for this industry is international. An article in Deutsche Presse-Agentur (2002) discussed deforestation in Russia to supply wood to the Japanese, and several other Asian countries have been supplying wood to China for the chopstick industry.

Deforestation for chopsticks is not confined to Asia; it has historically, and is currently, encroaching on the United States and Canada. Mark Strassman, a CBS news correspondent, reported on a company in Americus, Georgia, that exports 10 million disposable chopsticks to China every week. This small town in Georgia was not the first to capitalize on the global chopstick business. According to a Business American article in 1985, a company in New Mexico manufactured and exported disposable chopsticks to Japan, and an article in USA Today published in 1987 reported on a small town in Minnesota that was doing the same. In 1996 and 1997, a TED case study, Logging and Sawmill Journal and Awareness Magazine all mentioned cities in Canada that have hosted similar businesses.

Many of these initial chopstick factories failed due to inefficient machinery, but with new machinery from South Korea and a 2007 tax hike on Chinese chopsticks, the United States was put in a position to increase its disposable chopstick manufacturing. CNN reported that the company in Georgia is doing so well exploiting its sweet gum and poplar trees that it was already considering expanding to other states, including Florida, Alabama, Mississippi, Virginia, West Virginia, Michigan and Oregon. Chopstick production in the USA and Canada became more profitable for local and foreign businessmen after a 2006 Chinese export tax
Dr. R. Christian Jones and GMU’s Potomac Environmental Research and Education Center was featured by the Washington Post (June 12) for the wastewater monitoring project. Since 1984, Jones has been leading efforts to monitor wastewater discharge from the Noman M. Coleman, Jr. Pollution Control Plant. The full story can be seen on the Washington Posts’s website.

The first Patriot Green Fund awards were implemented in Spring 2012. Grants were given for new on-campus projects like recycling centers, an educational rain garden, more equipment for the wetland mesocosm, beehives and a victory garden. The next deadlines for grant proposals are in October. More information is available at http://green.gmu.edu/pgf/index.html.

GMU Doctoral Candidate J. Thomas Hanley and Associate Professor of Geology Dr. Randolph A. McBride were published in the Proceedings of the Coastal Sediments 2011. Their contribution was titled, “Repetitive breaching on Cedar Island, VA, USA: History, Geomorphology and Deposits.”

The theme of the Society for Marine Mammalogy’s 19th Biennial Conference was "Cumulative effects of threats to marine mammals: challenges to animals, scientists and managers.” It brought together nearly 2,000 attendees from all over the world. The conference was filled with presentations about cutting edge research and management strategies on a variety of local threats, from the Deepwater Horizon oil spill to the critically endangered status of the north Atlantic right whale (Eubalaena glacialis). Ultimately, participants discussed threats and possible solutions to issues ranging from polar bears to otters.

Attendees also enjoyed learning about new approaches that are making positive differences for marine mammals around the world. The conference provided Patterson with unique networking opportunities. She has worked as a consultant with the Humane Society International on captive orca survivorship issues and was given the opportunity to meet the leading scientist, Dr. Doug DeMaster. Other highlights for Patterson included attending the panel discussion on the Deepwater Horizon oil spill and reconnecting with friends and colleagues from all over the world.

The IUCN Species Survival Commission’s Conservation Breeding Specialist Group meeting, attended by Schwartz, is a global network of conservation professionals dedicated to saving threatened species by increasing the effectiveness of conservation efforts worldwide. The annual meeting is an opportunity for collaboration with international colleagues to discuss conservation issues in working groups (WG) and plan conservation action for each topic of discussion.

Schwartz participated in the One Plan Approach WG as a recorder and presenter. This WG discussed the issue of how to integrate ex situ breeding and zoo-based intensively managed populations across a continuum of regimes into
**Events in Photos:**

**Washington Youth Summit on the Environment @ GMU**

**National Youth Delegates at the U.S. Capitol**

**GMU ESP graduate Dr. Jennifer Mickelberg talks to youth delegates at the Smithsonian National Zoo**

**WYSE Faculty Advisor Jannifer Hannum with a youth delegate at the National Aquarium in Baltimore**

**WYSE youth delegates attending a workshop at the Smithsonian Conservation Biology Institute**

**Pick Up America Founder Davey Rogner gives the opening speech to youth delegates at GMU’s Dewberry Hall**

Photos courtesy of the Washington Youth Summit on the Environment & Director Richard Friesner
Graduate Article:

Warm Winters and Virginia’s Wildlife

By Meredith Penthorn,
GMU Graduate Student

As daffodil shoots began to emerge at the tail end of December, spring seemed bound to eclipse winter’s normal course in Virginia. Unusually warm temperatures predominated across the eastern United States, facilitating storm development as early as February. According to the National Climatic Data Center’s State of the Climate National Overview, the average temperatures across the country from December to February were almost 4 F above the 20th century average. Record-breaking warmth continued into the spring months of March and April (http://www.ncdc.noaa.gov/sotc/national/2012/2). This heralded an early growing season.

In the nation’s capital, for example, cherry blossoms peaked almost two weeks ahead of the average, according to the National Cherry Blossom Festival’s Bloom Watch. By the end of March, the blooms had subsided and plants were entering their growth phase.

Wildlife watchers perhaps noticed altered activity patterns in the winter of 2011 – 2012. Squirrels continued their hectic foraging in the absence of temperatures that would otherwise force them to take cover. Robins, those harbingers of spring, never seemed to leave at all. In fact, results of 2012’s Great Backyard Bird Count, an annual event in which citizen scientists observe and report bird sightings, revealed earlier migrations along with some migratory birds that remained sedentary. The event, which takes place in February, captured sandhill cranes (Grus canadensis) migrating north ahead of schedule, while ducks and other waterfowl remained in unfrozen ponds even at higher latitudes (http://www.birdsource.org/gbbc/press/news-stories/2012-gbbc-results-news-release). It was no surprise, then, that the nesting season started early as well.

Activity in adult animals tends to increase conspicuously in spring. On the other hand, juvenile wildlife is not often noticeable to the general public, so it can be difficult to pin down when they are starting to emerge from season to season. Wildlife rehabilitation is a fairly accurate gauge of the major trends in temporal and spatial distributions from year to year. Animals migrate and breed during different times of the summer to take advantage of different available resources, so different species peak in abundance at wildlife rehabilitation centers during different months. For example, common grackles (Quiscalus quiscula) breed early, no later than May, while neonate gray squirrels (Sciurus carolinensis) start arriving in late July.

On a broader scale, people usually start finding orphaned birds at the end of April. However, this year, the first juvenile birds were admitted to rehabilitation facilities in early March, and some were
fully fledged. This indicates that both temperatures and resource availability were favorable for breeding much earlier than normal. The diversity of birds and mammals has also been an intriguing departure from conditions in previous seasons. Species that are usually admitted midsummer at lower abundances, such as tanagers and orioles, are appearing in June. Young squirrels and flying squirrels (*Glaucomys* sp.) may well appear earlier in July, while adult birds may migrate later (and therefore be admitted to rehabilitation centers as late as October). This year’s warm winter is most commonly attributed to La Niña effects.

This climate pattern, which arises from cooler ocean temperatures influencing the atmosphere, causes warm winters in the southeastern United States. La Niña also increases the risk of hurricane activity in the lower forty-eight states, according to the National Oceanic and Atmospheric Administration. However, similar weather patterns in subsequent years could contribute to a long-term trend of warming in line with climate change predictions. Needless to say, what benefits plant and animal life now may become detrimental with such a trend.

While the variety and abundance of animals may be fascinating to wildlife watchers, the underlying benefits and consequences of warm winters are less apparent. Plants enjoy a longer growing season after earlier reproduction, but can be subject to sudden freezes if they start developing leaves too soon. Insects emerge earlier in the absence of freezing conditions. In response, animals of higher tropic levels become more active and productive earlier. Thus, a warm winter can impart benefits on resident wildlife. Yet the altered timing of such events may have negative impacts on both migratory and resident wildlife. Migratory birds, for instance, make their way to their northern breeding grounds based on food availability. An earlier abundance of food items thus favors resident birds, as they can immediately take advantage of these resources. By the time the migratory birds arrive, food sources could be dramatically decimated.

Additionally, animals that have coevolved and are thus dependent on one another, such as plants and their pollinators, could suffer a “mismatch” if the plants bloom when the pollinators are still overwintering, as published in a *New York Times* article by Heidi Cullen (“Spring Gets Ahead of Itself” March 20, 2012). Warmer winters also allow the spread of invasive plants and animals northward. Some of these may have value as food or cover initially, but they could also displace native species, leading to lower diversity in the long term. This summer has yet to reveal any serious storm events in Virginia, but if February’s tornados in the Great Plains are any indication, such natural disasters are likely to affect wildlife to a greater extent this year (http://www.ncdc.noaa.gov/sotc/tornadoes/2012/2). Storms not only impact foraging, they cause injury and mortalities among young and adult animals alike.

Warm winters can be good news for outdoor enthusiasts. They can also benefit plants and animals in the short term, allowing them to increase their productivity. However, migratory species and those that rely on certain resources for their survival may suffer losses if warm winters are indeed becoming a trend. The observations of bird watchers, rehabilitators, and other citizen scientists can be important in documenting wildlife’s response to warming conditions, no matter how subtle or extravagant it may be.

- Meredith Penthorn is a master’s degree student of environmental science and policy. Her current research focuses on habitat fragmentation and foraging behavior in small mammals.
caused a noticeable price increase for the Japanese, says the New York Times.

SOLVING THE PROBLEM
A new conservation initiative called “Chopsticks for Salamanders” has recently started to address the issue of deforestation related to disposable chopsticks. Their mission has three significant goals:

♦ to disseminate information about the production of disposable chopsticks
♦ to increase awareness about salamander diversity in the United States
♦ to raise money for salamander conservation, education and research

This project selected salamanders as its flagship species because deforestation for the production of disposable chopsticks is an international problem and comes with the loss of critical animal habitat. Deforestation not only affects terrestrial ecosystems, it also affects aquatic ecosystems by increasing runoff, raising ground temperatures, and disrupting vernal pools.

The Appalachian Mountains are home to the highest diversity of salamanders in the world. These mountains range from Canada to Alabama, and according to the proceedings of the Appalachian Salamander Conservation Workshop, are home to 14 percent of the approximately 618 species of caudates in the world.

According to a southern Appalachian conservation assessment done in 2004 by the Open Space Institute, two-thirds of this region’s land is publicly owned, while a large portion is still unprotected and in the hands of private land owners. This habitat is vital to a plethora of species, and the proceedings of the Appalachian Salamander Conservation Workshop identified current threats as mountain top removal, encroaching development, pollution and intensive logging.

The old growth Appalachian forests could be targeted for chopstick production in the future, as the disposable chopstick industry has besieged the United States and Canada in the past. This is vital habitat for salamanders, a group of vertebrates whose populations are already in decline from other threats, such as Chytridiomycosis and climate change.

This article hopes to not only discourage the use of wooden disposable chopsticks but also raise awareness about the uses of our dwindling resources. Disposable chopsticks are an unnecessary commodity that, much like the plastic bag, has an environmentally friendly counterpart. As the New York Times blog points out, disposable chopsticks cost approximately two cents a pair for restaurants and reusable chopsticks cost around $1.17 a pair. However, reusable chopsticks have a life span of about 130 meals, making them cheaper in comparison over a period of time.

WHAT CAN YOU DO?
Bring your own chopsticks (BYOC) when dining out! Talk to your local restaurant owners about changing over to reusable/washable chopsticks. Taking a stand against wooden disposable chopsticks now can save vital habitat not only in Asia and Russia, but in the United States and Canada as well.

For more information on this topic, please visit Chopsticks for Salamanders (www.ncaazk.org/chopsticksforsalamanders), an up-and-coming conservation initiative that hopes to raise awareness about the effects of disposable chopsticks while raising money for salamander conservation, education and research.

• Lauren Augustine is a first-year master’s degree student in the Environmental Science and Policy program, concentrating in conservation science. She is a herpetology keeper at the Smithsonian National Zoological Park in the Reptile Discovery Center. She will be conducting her graduate research on four species of Vietnamese turtles, three of which she currently works with at the zoo.
How far should a scientist go to promote the results of their research? Should scientists be advocates for the general use of science in decision making? Further, should they be advocates for the use of their own research results? These and related questions have been the subject of debate within many fields of science - conservation biology being no exception.

At one end of the debate are those who feel that it imperative that scientists avoid any appearance of advocacy. They believe that scientists should work hard to conduct objective research and then publish their findings in peer-reviewed journals. From here, the knowledge will trickle down to those who can move the results into action. They believe that moving beyond this and advocating for the use of their results in decision making, or even the use of science in general, may cause scientists to insert their own values into the research, making them less objective as scientists. Many fear that this can lead to a loss of credibility and standing for scientists and the science of conservation as a whole.

At the other end of the debate are those that argue that most science will never have a real world impact and move into the realm of policy and action if the scientists don’t actively bring the science to the attention of the public and decision makers. This idea is supported by studies showing that knowledge that is published in peer-reviewed journals often does not ever “trickle down” to decision makers. Instead, this knowledge remains locked away in these journals, except when it is unearthed by other academics working on a related topic. Further, Brownson et al. (2006) found that interactions between scientists and decision makers is the number one, most effective method for moving science into the decision making process.

While both camps make sound arguments and have valid concerns, I believe that it is critical, and possible, that conservation scientists become effective advocates for science without compromising their objectivity and credibility. However, moving to the place where advocacy is seen as acceptable by the majority of conservation scientists will require some cultural changes and careful planning.

There are several reasons why advocating for the use of science is increasingly important. First, journalists and decision makers have limited time and motivation to dig for scientific information buried in journals. In recent years, many news outlets have dramatically cut their science reporting staff leaving very little time for journalists to uncover scientific information that may be hidden away in academic journals. The same is true for policy makers. Every day, they and their staff are inundated with information on a wide variety of topics.

They have very little time to devote to any one piece of information that comes across their desk so chances are slim that they will consult the latest issue of Conservation Biology to learn more about the data supporting one policy position or another. However, scientists who step out of their role as pure academic researchers and make an effort to meet with journalists and congressional staffers to talk about their research may become a valuable source of information. These interactions may help give science a “place at the table” when decision are being made.

Second, the nature of conservation biology is such that the results of our research often have strong implications for the world at large. In other words, the topics of most conservation research do not operate in a vacuum but instead intersect with issues such as human health, development, transportation and the economy.
Dr. Carol D. Litchfield had been part of the Mason community since 1993, originally as part of the biology department and more recently as an asset to environmental science and policy. Her passing in April, at age 75, meant the loss of a talented microbial ecologist and professor emerita to the department. Earlier this year, she received the Charles Porter Award from the Society for Industrial Microbiology for her outstanding accomplishments in the field of applied microbiology. She was president of the organization from 2007-2008.

Litchfield retired in 2010 but continued to be an active member of the ESP department. The Carol D. Litchfield Microbiology collection is kept at the GMU Special Collections and Archives Repository. It includes government studies, published reports, research data, personal documents and papers. The collection spans the subjects of microbiology of organisms, industrial microbiology, environmental microbiology and water quality, as well as other related topics. Research methods and policy analysis are also included.

Originally from Cincinnati, Litchfield graduated from the University of Cincinnati with a master’s degree in biochemistry. She worked as a researcher at Texas A&M, where she received her doctorate in organic biochemistry. She also held a faculty position at Rutgers University and served as a senior environmental scientist for DuPont, as well as environmental toxicology head for Haskell Laboratory.

The loss of Litchfield came after a battle with liver cancer. She requested, instead of donating flowers to her memorial service in May, monetary donations be made to the American Cancer Society. Anyone wishing to honor Litchfield may still make donations in her name to the organization.

Litchfield is missed by the biology and ESP departments. Her contributions enhanced the expert knowledge base of both departments, and her impact on GMU will be remembered. Mason mourns the passing of an immeasurably gifted scientist.
Graduate Column (from page 8)

holistic global species conservation measures. Active participation in the One Plan Approach WG gave Schwartz the opportunity to participate in action planning for integration of in situ and ex situ conservation efforts benefitting endangered species. She also gained experience that will assist in completion of her dissertation research.

Conferences and workshops provide a unique opportunity for learning and networking in your field. The next deadline for travel grant awards is October 1, 2012. The ESP GSA awards up to $300 for conference travel. All awards are given post conference attendance. For more information, contact ESP GSA Treasurer Marieke Kester (mkester2@gmu.edu).

Events

After long periods of April showers on a semi-sunny Saturday in April, the ESP GSA hosted their first end-of-the-year celebration at Naked Mountain Vineyard. The small quaint vineyard provided a quiet place for ESP friends and family to meet and mingle over fun game of cricket, a large potluck lunch and a beautiful view of rolling hills of grape vines. Thanks to a great turn out of over 20 ESP graduate students -- current graduates, alumni and incoming graduates -- ESP faculty and many guests, this event provided a wonderful opportunity for faculty and students to intermingle in a casual setting. The ESP GSA hopes to continue to host events as successful as Naked Mountain to build a stronger sense of community in the ESP department.

The ESP GSA continues to work with the graduate student community. Over the summer session, the GSA is advocating for graduate student concerns. Based on responses from our Spring 2012 survey, the GSA has begun looking into concerns over graduate teaching assistantship (GTA) stipends. We have begun working with other College of Science departments and have a meeting with the Dean to discuss this matter. But we need your help!! In order to proceed, we need student support. Even if you are not a GTA, support those that are. If you have not had a chance to express your concerns or sign our petition to the College of Science, please contact Christine Gleason at cgleaso2@gmu.edu and find out how you can help!

Additionally the GSA is scheduling events for the fall. Look for a new student mixer in September, as well as other academic and social events to follow. As the fall semester approaches, check out our webpage for dates and times (http://esp.gmu.edu/news/groups/index.html). Remember, to be eligible for the ESP GSA Conference Travel Grant, you must be a current member (dues are $10 a semester) and have attended at least one GSA event in the semester you are applying. For more information on how you can become involved with the ESP GSA, please contact one of our newly elected board members: Christine Gleason (President), Ashley Sitar (Vice President), Katie Busch (Secretary), Marieke Kester (Treasurer) and Katie Layman (Student Representative).

The ESP GSA would like to thank Katheryn Patterson and Karin Schwartz for contributing their conference experiences to the Summer 2012 GSA column.

Graduate Essay (from page 13)

Often the interests associated with these intersecting issues will be represented by strong advocates. If scientists don’t step up and make their voices heard, decision makers will be more likely to rely only on information from those who are present and demanding to be heard. In the absence of scientists, chances are that no one will speak for the science and provide the relevant, objective data.

For these reasons and many more, I believe that it is important that conservation scientists be advocates. More important than just being advocates though, I believe that scientists should be knowledgeable, thoughtful, objective and skilled advocates. Unfortunately, our discipline currently lacks a culture and infrastructure that provides guidelines for and trains scientists to be effective advocates.

If we are to begin moving the anti- and pro- advocacy camps closer to agreement and allow advocacy to be seen as a valuable trait among conservation scientists, we first need to focus on crafting a definition of and guidelines for advocacy, developing training curricula for advocates, and providing incentives for academic researchers to become effective and objective advocates.

These steps can help to elevate the field of conservation science to a place where scientists feel confident about their ability to advocate, understand the larger context in which they are operating, remain objective and honest, advocate based on sound science and feel confident that they can help to move their important research results beyond journals and into the realm of policy and action.

- Jennifer Thornhill is a Ph.D. Candidate in the Environmental Science and Policy program, where she is studying the role that scientific publications play in policy and management decisions. She is also a science analyst at the National Science Foundation.
study-abroad:

esp faculty-led study abroad opportunities for winter break

belize: ridges to reefs
led by katheryn patterson

study cultures, caves, rainforests and coral reefs in this tropical study abroad opportunity.
undergraduate credits are available in evpp 490, nclc 399 or bio 497. graduate credits are available in evpp 741.
for more information, visit http://globaled.gmu.edu/programs/facultyled/winterstudy/columbia.html

colombian geology & geomorphology
led by dr. randolph a. mcbride

study volcanoes, volcanic hazards, glaciers and surficial processes in colombia.
credits may be available in geo 315, geo 501, ggs 399, ggs 590 or evpp 505. prerequisites are required.
for more information, visit http://globaled.gmu.edu/programs/facultyled/winterstudy/columbia.html

kения: ecology & conservation
led by ryan valdez

study africa’s megafauna, including lions, leopards, elephants, buffalo and rhino.
credits may be available in bio 435, evpp 490, ggs 399 or nclc 399. graduate credit may also be available.
for more information, visit http://globaled.gmu.edu/programs/facultyled/winterstudy/kenya.html
News Story:

In Loving Reflection of Lonesome George: Iconic Catalyst for Conservation

By Samantha Oester, GREENovation Editor

GALAPAGOS, Ecuador – Lonesome George was the last of his subspecies, the Pinta Island tortoise (*Chelonoidis nigra abingdoni*). The June death of George, a Galapagos and worldwide conservation icon, has brought the topic of modern extinction into the media. Earth is currently experiencing a sixth mass extinction event, according to the National Council for Science and Environment (NCSE). The rate of extinction and the cause make this extinction event different from all others in Earth’s history. Estimates from biologist Dr. Edward O. Wilson and the NCSE state the current mass extinction may be approximately 10,000 times the background rate of extinction, and the cause for this increased rate is humans. Human-induced climate change, habitat destruction and fragmentation, overexploitation, disease and invasive species are just a few human contributions to the endangerment and extinction of many of the world’s species and subspecies. George and his fellow Pinta Island tortoises were no exception.

The main threat to endangered Galapagos giant tortoises is human-introduced invasive species. The chief threats, ferrel goats, compete with tortoises for food. Another significant threat to Pinta Island tortoises was tortoise poachers, hunting tortoises for their shells and meat. To save Galapagos Island subspecies from these threats, the Galapagos National Park (GNP) and Charles Darwin Foundation (CDF) have established breeding centers on Isabela and Santa Cruz Islands. Bred tortoises are repatriated into the wild, once threats have been removed. The two conservation partners also help to develop invasive species eradication programs and influence policy concerning Galapagos endangered species. For example, tortoise nests have also been regularly protected in the wild by the GNP from feral pigs and rats that prey on eggs and young tortoises.

Breeding attempts were made by GNP and CDF at their Santa Cruz facility to pass on George’s genes. George was paired with two other subspecies closely related to *C.n. abingdoni*, but on the occasion George actually mated, the eggs produced were infertile. “They’ve had eggs, but none hatched,” Jose Yepez, Galapagos guide for Andean Discovery, explained in a 2011 interview. There were many different estimates of George’s age, all hovering around 100 years old. “He may just not be able to reproduce any more,” Yepez lamented while looking out at George slowly eating his lunch last January.

Other subspecies have been more successful. From 1997 to 2007, a total of more than 4,000 tortoises had been repatriated from CDF rearing centers. Increased efforts to save the giant tortoises of the Galapagos are in the works, as well as better eradication of invasive species. Funding and public perception, however, remain obstacles. Despite these impediments, it is important to continue educating the public on the importance of increasing tortoise populations and augment CDF’s endeavors, argued Yepez. Yepez contended, “We destroy, so we must help.”

With the news of George’s death, an iconic extinction of our lifetime, many are hopeful conservation of biodiversity will become a more urgent issue among policymakers and the general public. The CDF reports George may be preserved to remind everyone of the crucial need to conserve, sustain and be held responsible for our actions. The famous Lonesome George may be the symbolic catalyst necessary to inspire support for conservation efforts.

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