

## News and Events

### 2016 World Ecology Award



(Left to right: Anna Harris, Kay Drey, and Sylvia Earle.)

On Sunday, October 16<sup>th</sup> [Dr. Sylvia A. Earle](#) became the 21st recipient of the [World Ecology Award](#). Called “Her Deepness” by [The New York Times](#) and “Hero for the Planet” by [TIME](#) magazine, the 81-year-old Earle continues to dive for segments shown on the National Geographic channel. She is the founder of [Deep Ocean Exploration and Research, Inc.](#), founder of [Mission Blue and SEAlliance](#), and chair of the Advisory Councils of the [Harte Research Institute](#) and the [Ocean in Google Earth](#).

“We thought we could put anything in the ocean and take anything out,” she said, “but there are limits to what we can do to the world that keeps us alive. In the ocean, it’s only taken a few decades for us to consume what we did on land. Fish don’t even have to taste good or be slow enough to be caught anymore.” Despite the crushing fact that it only took a couple hundred years for humans to destroy ecosystems that formed over centuries, Earle remains hopeful. “We’ve learned more and lost more,” she said. “But children today are so lucky. They’ve come at just the right moment. They are the beneficiaries of all our knowledge” – a thought that highlighted another important part of the night: supporting the education of future conservationists.

In conjunction with the Gala dinner held in honor of Sylvia Earle, the Harris Center raised almost \$60,000, thanks to the efforts of the Gala Program Committee (co-chairpersons Kay Drey and Dan and Connie Burkhardt), and to all supporters of and attendees to the Gala dinner. These funds will be used to support the research and training of undergraduate and graduate students at UMSL studying in the areas of Ecology, Evolution, and Conservation. A big thank you to Cindy Vantine of [University Events](#), Deborah Godwin of [University Development](#), and Liz de Laperouse and Dr. Donna Nonnenkamp of the [Harris Center Leadership Council](#).

*In partnership with the Missouri Botanical Garden and the Saint Louis Zoo*

## 2016 Whitney and Anna Harris Conservation Forum

[The Whitney and Anna Harris Conservation Forum](#) took place on November 10<sup>th</sup> at the Saint Louis Zoo. The title of this year's forum was *Mosquitos: Ecology, Disease Vectors, and Control*. There were over 200 guests in attendance to hear four presentations from mosquito experts from across the country. This annual forum, organized and co-sponsored by the Harris Center, provides an opportunity for conservation organizations and academics to interact with each other and with the general public. Its goal is to promote collaboration in the field of conservation, and to explore various conservation issues in depth. This year attendees learned about mosquito history, control methods, and disease risks.



(Left to right: Dr. Raul Medina, Dr. Gordon Patterson, Dr. Steven Julano, and Dr. Kathleen Westby.)

We heard from four leading mosquito experts who presented on their specific topics of research. [Dr. Steven Juliano](#), from Illinois State University, specializes in community, population, and behavioral ecology and gave an overview on mosquito ecology and their role as disease carriers. [Dr. Kathleen Westby](#), from the Tyson Research Center at Washington University, specializes in mosquito vectors of Dengue, West Nile, and La Crosse viruses which is what she presented on. [Dr. Gordon Patterson](#), from the Florida Institute of Technology, focuses his research on the history of vector and mosquito control and presented a unique historical perspective on the Zika virus. [Dr. Raul Medina](#), from Texas A&M University, researches the role that ecological factors play in the population genetics of insects and gave his talk on new developments in mosquito control.

## Sixth Annual SLEEC Retreat

The sixth annual retreat of the St. Louis Ecology Evolution and Conservation Consortium (SLEEC) was held on September 17 at Principia College, Elsah, Illinois. [The SLEEC Retreat](#) brings together scientists who work in biodiversity and conservation to exchange ideas on their research and conservation strategies, and to socialize. Approximately 150 scientists and students from across the St. Louis region, including one from Mizzou, participated this year. There were 18 fifteen-minute talks during the day, two poster sessions involving 39 research posters, and two short field trips at lunch time. The keynote address was given by Dr. Ruth Shaw (University of Minnesota), and was entitled, "Studying the adaptive process in wild plant populations: purple coneflower and partridge pea". A catered dinner was held at the Audubon Center at Riverlands. The Retreat was supported financially by Harris Center, the Missouri Botanical Garden, Washington University, Saint Louis University, South Illinois University at Edwardsville, and Principia College. Bob Marquis, who oversaw the organization of the Retreat this year, would especially like to thank Chrissy McAllister of Principia College for co-chairing the event, the students, faculty and administrators of Principia for helping with logistics and allowing us to use their campus, Ken Buchholz and Al DeGrand for permission to use Riverlands, and Ashley Johns and Leticia Soares for help with logistics. During its 2011 meeting, the Scientific Board of the Harris Center recommended that the Harris Center be a supporter of this annual event, and we have done so since its inception.

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## New Harris Center Leadership



Dr. Patricia Parker has stepped in as the Interim Director of the Harris Center, following Dr. Robert Marquis who served as Interim Director for eight years. From Dr. Parker: “I have been associated with the Harris Center since I arrived at UMSL in 2000, when it was known as the International Center for Tropical Ecology. The existence of such an organization as the Harris Center at UMSL is a big reason I left my faculty job at The Ohio State University and came to St. Louis. I have never regretted that decision, and I continue to be impressed by our wonderful graduate students from around the world and the dedication of our community leaders in support of the Harris Center and what it is trying to accomplish in training the future world leaders in the science of conservation. I am happy to be able to fill in now as Interim Director while we hope to be able to expand our faculty and grow the Harris Center.”

Liz de Laperouse is the new chair of the Harris Center Leadership Council, stepping in as Max McCombs wrapped up his two years as chair. She is joined by Dr. Donna Nonnenkamp who is serving as Vice Chair. [In an interview with UMSL Daily](#), Liz commented, “I hope that more high school students will consider a biology degree from UMSL. Many students that enjoy science do not realize the wonderful careers they can have in environmental and ecology fields and the opportunities offered by the Harris Center.”



## News from Alumni and Harris Associates



Dr. Steven Blake was featured by National Geographic in the Explorers section of their magazine and website. When asked about his favorite experience in the field, Dr. Blake said: “In terms of sheer exhilaration, putting GPS collars onto forest elephants must rate as the high point and the most challenging. A deeply rewarding experience has been many hundreds of nights around the campfire in the forest with my pygmy tracker friends, telling stories, and learning from them. Now on Galápagos, the thrill of downloading data from GPS-tagged tortoises and seeing how they have moved in the months since last time we met, is right up there.” Read the rest of his interview [here](#).

## Fall Graduate Profiles



After successfully defending his thesis, *Forgetting and the Value of Social Information*, Ben Abts graduated from UMSL with an MS. His research investigated “whether foraging bumblebees place more value on information they learn themselves or information they learn from observing others.” His study provided interesting results, in summary he found that “information they learn from others is more important in the short term, but in the long term it is all close to random.” However, it is also not all that simple. He explains that “context, previous experience, and environmental stochasticity all influences decision making.”

Ben received support from the Harris Center for his Master’s project as well as funding for an “OTS course, Field Biology: Skills for Science and Beyond”, as well as conference travel support. “The OTS course was one of the best experiences of my graduate career. I learned about tropical biology, experimental design, and that I am more capable than I ever imagined.”



Dr. Leticia Soares’ dissertation, *Historical Biogeography, Spatial Distribution, and Within-Host Interactions of Avian Haemosporidian Parasites (Apicomplexa, Haemosporida)*, “was aimed at understanding how parasites that cause malaria-like disease in birds are distributed across different geographic scales, and how such distributions change over time.” She surveyed “malaria and other blood parasites on bird populations occurring on a diversity of habitats: shorelines of Patagonia, the Amazon forest, islands of the West Indies, and even here in Missouri.” As a result of this study, Dr.

Soares demonstrated that “birds and their pathogens are on a fast-paced, and constant arms race, in which birds might be evolving resistance to parasite strains, and parasites might be rapidly answering to this evolved immunity by developing alternative ways of infecting the hosts. These studies also teach us how much we can learn about diseases and pathogens that affect human populations by looking at how wildlife deals with the same issues.”

Leticia received a lot of support both financially and professionally from the Harris Center. She was awarded research funding to do field work and data analysis. Moreover, she explains that she is “currently supported by the Community Scholarship, to develop a handbook of collaborative resources between the Biology Dept. at UMSL and the St. Louis Zoo. The Center has supported two of my undergraduate students, funding part of my own dissertation work, and has funded two field expeditions related to my research. I received one book award, and two travel awards to help me attend conferences. I was also a member of the first graduate student board, which helped with revision of grant proposals, and was part of the graduate student group during the development of the latest 5-year strategic plan for the center — all of these were incredible contributions to my professional development.”



Dr. Gyanpriya Maharaj's dissertation, *Color mediated foraging by pollinators, a comparative study of two passion flower butterflies at Lantana camara*, was aimed at researching the "color related floral signaling and resulting insect foraging behaviors." These behaviors "have only been extensively examined in bees, in comparison to other pollinators such as, butterflies regardless of their ecological importance. Therefore, my study provides novel information by focusing on color mediated foraging behaviors of adult passionflower butterflies, *Heliconius melpomene* and *Dryas iulia*, to the color changing flowers of *Lantana camara*. I found

that my study species visited flowers that closely matched their wings, and these color choices were also affected by rewards offered and competitors, additionally I found that *L. camara* plants signal honestly with their inflorescences acting as multi-colored advertising billboards."

She thinks of UMSL fondly: "the ecology group at UMSL is a close knit family where students and professors alike offer support and help when needed. It was great to share my PhD experience with such a diverse local and international cohort that has so many different field and laboratory skill sets." Now, Priya will be returning to her home country to work as the Co-manager of the Center for the Study of Biological Diversity at the University of Guyana.



Dr. Leticia Gutierrez's dissertation, *Anthropogenic disturbance modulates mammal community diversity, assembly and abundance: emerging infectious disease risk in the Greater Yellowstone Area*, "examines the role of mammalian biodiversity in maintaining overall ecosystem health in the Greater Yellowstone Ecosystem. The study explores the pathways by which anthropogenic disturbance prevents or promotes the emergence of human infectious diseases." To

research this, she "first surveyed the GYE rodent community and their pathogens by using land use as a measure of anthropogenic disturbance (e.g., human settlements, horseback ranches, pastures, undisturbed). I identified pathogens in rodent blood samples belonging to 8 pathogen genera. Next, I used a variety of methods to elucidate the general pattern of host-pathogen association in the system, to tease apart the effect of land use change on infection patterns in the rodent assembly, and to study reservoir population density change among treatments." She explains that she also "addressed the role of rodent life-history strategies in determining community disease prevalence by measuring innate and acquired immune responses across land use change." As a result, Dr. Gutierrez found that anthropogenic disturbances do increase the risk of diseases, mainly because other host species become abundant. She concluded that "the direct effect of anthropogenic disturbance on the occurrence and density of infectious diseases reflects a complex array of numerous interacting factors."

The Harris Center funded Leticia's work in several ways, which were "fundamental to obtain pilot data, which enabled me to receive several highly competitive grants that fully funded my dissertation. I also received partial travel support which allowed me to present my dissertation results in numerous renowned international scientific conferences." Leticia will be starting the position of "Field Veterinarian: Epidemiology/Disease Ecology" with EcoHealth Alliance in January 2017.

## Scholarships Awarded

Abts, Ben (MS, Dunlap Lab): Travel scholarship to attend the 2016 Animal Behavior Society Annual Meeting and present a poster. Mallinckrodt Graduate Fellowship in Tropical Ecology \$300.

Acha, Serena (PhD, Muchhala Lab): Research scholarship for her project: ***“Systematics and evolution of one of the most diverse clades of passion flowers: Passiflora section Decaloba.”*** Stephen Mitchell Doyle Scholarship \$4,000.

Austin, Matt (PhD, Dunlap Lab): Research scholarship for his project: ***“Comparative assessment of behavioral plasticity capacities and declines in species of North American bumblebees (Apidae:Bombus).”*** Terracon Research Scholarship \$3,443.

Calderon-Acevedo, Camilo (PhD, Muchhala Lab): ***“Research scholarship for his project: “Molecular phylogeny of the genus Anoura using target capture of ultra conserved elements; Continuation of the project: Species limits of the genus Anoura Gray 1838 and its diversification pattern in the Andes.”*** Stephen Mitchell Doyle Scholarship \$1,430; Peter H. Raven World Ecology Research Award \$2,570.

Erkenswick, Gideon (PhD, Parker Lab): Travel scholarship to attend 2016 joint meeting of the International Primatological Society and the American Society of Primatologists and present three posters: ***“Reproductive status affects scent-marking behavior in a free-ranging group of saddleback tamarins (Saguinus weddelli) with multiple breeding females in Peru”, “An analysis spatial associations by home range overlap and land-use densities between free-ranging groups of saddleback (Saguinus weddelli) and emperor (S. imperator) tamarins”, and “Tamarin hips don’t lie: modeling breeding status from reproductive morphology in the saddleback (Saguinus weddelli) and emperor (S. imperator) tamarin”.*** Mallinckrodt Graduate Fellowship in Tropical Ecology \$300.

Hoffman, Christina (MS, Dunlap Lab): Travel scholarship to attend the 2016 Animal Behavior Society Annual Meeting and present a poster. Mallinckrodt Graduate Fellowship in Tropical Ecology \$300.

Humphries, Meghann (PhD, Ricklefs Lab): Travel scholarship to attend the 2017 International Biogeography Society Meeting and present her poster: ***“Historical Biogeography of Bananaquits on Puerto Rico.”*** Harris Center Conference Travel Award \$461.66

Jones, Nathaniel (undergraduate, Parker Lab): Research scholarship for his project: ***“Molecular Approaches to Screen for Avian Malaria in Galapagos Mosquitoes, Aedes taeniorhynchus and Culex quinquefasciatus.”*** Marcelle Kranzberg Undergraduate Research Scholarship \$1,336.

Namgay, Rinchen (MS, Marquis): Research scholarship for his project: ***“Estimating range shifts of Juniperus species in the Himalaya of Bhutan.”*** John Denver Memorial Scholarship \$4,000.

Rasambainarivo, Fidisoa (PhD, Parker Lab): Research scholarship for his project: ***“I like to move it, move it: Home range, movement and space use patterns of the Fosa (Cryptoprocta ferox) in a human dominated landscape of Madagascar.”*** Van Trease Graduate Scholarship \$1,800; Stokes Family Scholarship \$1,600; Jane Harris Scholarship \$460.

Salah, Sawsan (undergraduate, Parker Lab): Research scholarship for her project: ***“Troubleshooting PCR primers for screening blood meals of Culex quinquefasciatus, a species of mosquito in the Galapagos archipelago.”*** Thomas F. George Undergraduate Ecology Research Fund \$2,007.

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Smith, Laura (undergraduate, Muchhala Lab): Research scholarship for her project: “*Have differences in Burmeistera calyx lobes evolved to promote floral constancy?*” Marcelle Kranzberg Undergraduate Research Scholarship \$1,671.

Street, Lynnsey (undergraduate, Dunlap Lab): Research scholarship for her project: “*Assessing evolutionary tradeoffs in memory forms with evolved populations of Drosophila melanogaster.*” Marcelle Kranzberg Undergraduate Research Scholarship \$1,000.

## Student External Research Grants

Baer, Christina: Graduate School Dissertation Fellowship for Spring 2017 and Fall 2017.

## New Publications

Arellano G., Umaña M. N., Macia M., **Loza M. I.**, Fuentes A., Cala V., and **Jørgensen P. M.**, 2016. The role of niche overlap, environmental heterogeneity. Landscape roughness and productivity in shaping species abundances distributions along the Amazon-Andes gradient. *Global Ecology and Biodiversity*. <http://onlinelibrary.wiley.com/doi/10.1111/geb.12531/full>

**Dunlap A. S.**, Stephens D. W. Reliability, uncertainty, and costs in the evolution of animal learning. *Current Opinion in Behavioral Sciences*. Volume 12, December 2016, Pages 73–79. <http://www.sciencedirect.com/science/article/pii/S2352154616301759>

Ellis, V. A., M. C. I. Medeiros, M. D. Collins, E. H. R. Sari, E. D. Coffey, R. C. Dickerson, C. Lugarini, J. A. Stratford, D. R. Henry, L. Merrill, A. E. Marrhews, A. A. Hanson, J.R. Roberts, M. Joyce, M. R. Kunkel, and **R. E. Ricklefs**. 2016. Prevalence of avian haemosporidian parasites is positively related to the abundance of host species at multiple sites within a region. *Parasitology Research*, DOI: 10.1007/s00436-016-5263-3.

Ettling, JA, LA Aghasyan, AL Aghasyan, **PG Parker**. 2016. Spatial ecology of Armenian Vipers, *Montivipera raddei*, in two different landscapes: Human-modified vs. recovered-natural. *Russian Journal of Herpetology* 23:93-102.

**Gamba, D., Maguiña, N.R.**, Calderón-Acevedo, C.A., Torres, K., **Muchhala, N.C.** (2016). Seed dispersal for the unusual inflated berries of *Burmeistera* (Campanulaceae). *Neotropical Biodiversity*. In Press. <http://dx.doi.org/10.1080/23766808.2016.1258868>

Holl K.D., Reid J.L., **Chaves-Fallas J.M.**, F. Oviedo-Brenes & R.A. Zahawi. 2016. Local forest restoration strategies affect biodiversity recovery more strongly than does landscape forest cover. *Journal of Applied Ecology*. doi: 10.1111/1365-2664.12814

**Jaramillo, M.** M Donaghy-Cannon, FH Vargas, **PG Parker**. 2016. The diet of the Galapagos Hawk (*Buteo galapagoensis*) before and after goat eradication. *J. Raptor Research* 50:33-44.

Jiménez, J.E., Juárez P., **Chaves-Fallas J.M.** 2016. *Cupania moralesii* (Sapindaceae), a new tree species from the premontane forest of Costa Rica. *Phytotaxa* 275: 69–74.

Levin, II, RE Colborn, D Kim, NG Perlut, RB Renfrew, **PG Parker**. 2016. Local parasite lineage sharing in temperate grassland birds provides clues about potential origins of Galapagos avian Plasmodium. *Ecology and Evolution* 6: 716-726.

**Marquis R.**, Salazar D., **Baer C.**, Reinhardt J., Priest G., Barnett K. Ode to Ehrlich and Raven or how herbivorous insects might drive plant speciation.  
<http://onlinelibrary.wiley.com/doi/10.1002/ecy.1534/full>

Medeiros, M. C. I., **R. E. Ricklefs**, J. D. Brawn, M. O. Ruiz, T. L. Goldberg, and G. L. Hamer. 2016. Overlap in the seasonal infections patterns of avian malaria parasites and West Nile Virus in vectors and hosts. *American Journal of Tropical Medicine and Hygiene* 95(5): 1121-1129.

**Parker, P.G.** 2016. A Most Unusual Hawk: One Mother and Several Fathers. pp. 130-137 in, "Galapagos: Preserving Darwin's Legacy." Tui de Roy, editor. Bloomsbury Press, London.

**Parker, P.G.** 2016. Parasites and Pathogens: Threats to Native Birds. pp. 177-183 in, "Galapagos" Preserving Darwin's Legacy." Tui de Roy, editor. Bloomsbury Press, London.

Pomerantz, J, **FT Rasambainarivo**, L Dollar, LP Rahajanirina, R. Andrianaivoarivelo, **PG Parker**, E Dubovi. 2016. Prevalence of antibodies to selected viruses and parasites in introduced and endemic carnivores in Western Madagascar. *J. Wildlife Diseases* 52:544-552.

Qian, H., and **R. E. Ricklefs**. 2016. Our of the tropical lowlands: latitude versus elevation. *Trends in Ecology and Evolution* 31 (10): 738-741.

**Ricklefs R.**, Medeiros M., Ellis V., Svensson-Coelho M., **Soares L.**, Fecchio A., Marra P., Latta S., Valkiunas G., Hellgren O. and Bensch S. Migration and the distribution of avian malaria parasites in New World passerine birds. (accepted at *Journal of Biogeography*)

**Ricklefs, R. E., L. Soares**, V. A. Ellis, and S. C. Latta. 2016. Haemosporidian parasites and avian host population abundance in the Lesser Antilles. *Journal of Biogeography* 43(7): 1277-1286.

Salazar, D., M. A. Jaramillo, and **R. J. Marquis**. Chemical similarity and local community assembly in the species rich tropical genus *Piper*. *Ecology* 97: 3176-3183.

Santos, A. M. C., R. Field, and **R. E. Ricklefs**. New directions in island biogeography. *Global Ecology and Biogeography* 25(7): 751-768.

**Soares L.**, Ellis V. and **Ricklefs R.** 2016. Co-infections of haemosporidian and trypanosome parasites in a North American songbird. *Parasitology* 143 (14): 1930-1938. doi: 10.1017/S0031182016001384

**Soares L.**, Escudero G., Penha V., **Ricklefs R.** 2016. Low prevalence of haemosporidian parasites on shorebird species of Argentina. *Ardea* 104 (2): 129-141.

Svensson-Coelho, M., B. A. Loiselle, J. G. Blake, and **R. E. Ricklefs**. 2016. Resource predictability and specialization in avian malaria parasites. *Molecular Ecology* 25 (17): 4377-4391.

Svensson-Coelho, M., G. T. Silva, S. S. Santos, L. S. Miranda, L. A. Araujo-Silva, **R. E. Ricklefs**, C. Y. Miyaki, and M. Maldonado-Coelho. 2016. Lower detection probability of avian *Plasmodium* in blood compared to other tissues. *Journal of Parasitology* 102(5): 559-561.

## World Ecology Award Winners in the News

**Jacques Cousteau** (1992 WEA Recipient): Read an interesting article about Jacque Cousteau's relationship with Fidel Castro and how it influenced the preservation of Cuba's oceans. <http://www.ecowatch.com/castro-cousteau-kennedy-cuba-2128503553.html>

**Harrison Ford** (2002 WEA Recipient): Ford received the 2016 Murie Spirit of Conservation Award. [http://www.jhnewsandguide.com/valley/feature/murie-center-honors-spirit-of-conservation/article\\_c8179ae4-7137-55dd-8c43-d13bc5da0944.html](http://www.jhnewsandguide.com/valley/feature/murie-center-honors-spirit-of-conservation/article_c8179ae4-7137-55dd-8c43-d13bc5da0944.html)

**HRH Prince of Whales** (2003 WEA Recipient): Prince Charles named new Patron of Wildfowl and Wetlands Trust. <http://royalcentral.co.uk/uk/charlesandcamilla/prince-charles-named-new-patron-of-wildfowl-and-wetlands-trust-73776>

**Dereck and Beverly Joubert** (2008 WEA Recipients): Catch up on what the Jouberts have been up to this year in this brief overview of their work, which included yet another documentary entitled "Game of Lions". [http://www.huffingtonpost.com/2013/12/01/dereck-and-beverly-joubert\\_n\\_4368212.html](http://www.huffingtonpost.com/2013/12/01/dereck-and-beverly-joubert_n_4368212.html)

**His Serene Highness Prince Albert II of Monaco** (2013 WEA Recipients): Prince Albert discusses the need to address climate change and has reached out to Donald Trump to address the topic. <https://eos.org/articles/monaco-leader-urges-climate-action-calls-trump-help>



Students from the Harris Center were able to meet with the 2016 World Ecology Award winner Sylvia Earle. From left to right: Juan Moreira, Andreia Figuerido, Christina Baer, Miguel Chaves, Heritiana Ranarivelo, Sylvia Earle, Serena Acha, Patricia Mendoza, and Rossana Maguina (alumni).