

KATHERINE MERTES SCHWARTZ

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EDUCATION

YALE UNIVERSITY

New Haven, CT

Doctoral student, degree expected 2015

Primary advisor: Dr. Walter Jetz

STANFORD UNIVERSITY

Stanford, CA

Master of Science in Biological Sciences awarded May 2008. GPA 3.895

Coursework: Conservation Biology; Geographic Information Systems (GIS); Remote Sensing; Biostatistics; Environmental Interest Writing; Land Use Law; Environmental Law and Policy.

MIDDLEBURY COLLEGE

Middlebury, VT

Bachelor of Arts in Biological Sciences awarded May 2004. GPA: 3.39

Coursework: Ecology; Aquatic Ecology; Conservation Biology; Experimental Design; Statistics.

RESEARCH EXPERIENCE

YALE UNIVERSITY

New Haven, CT

PhD student

September 2010 - present

- Mobilizing point occurrence data from specimen collections in the National Museums of Kenya (NMK) for use in validating and refining expert range maps. Working with NMK staff and partner organizations (e.g. African Conservation Centre) to improve specimen digitization practices and collection location georeferencing procedures.
- Compiling georeferenced presence data for predicting alterations in East African species richness patterns under multiple scenarios of future climate change.

UCLA INSTITUTE OF THE ENVIRONMENT

Los Angeles, CA

Research Assistant

December 2009 - September 2010

- Calibrated ASTER imagery of the City of Los Angeles with ground meteorological station data to generate validated land surface temperature (LST) products. Fused 30m-resolution tree cover data (McPherson et al. 2007) with LST products to quantify modification of the urban heat island (UHI) effect by tree cover across seasons.
- Adjusted ASTER-derived NDVI to serve as adequate proxy for tree cover over Los Angeles metropolitan area. Applied cross-date and proxy corrections to NDVI data for San Francisco and San Diego, CA to extend exploration of relationship between LST and tree cover across multiple California cities with distinct climatic influences. Conducted with Dr. Sassan Saatchi, NASA Jet Propulsion Laboratory.

UCLA CENTER FOR TROPICAL RESEARCH

Los Angeles, CA

Volunteer Research Assistant

November 2009 - February 2010

- Fusing data gained from Shuttle Radar Topography Mission (SRTM), Landsat and MODIS imagery, US Forest Service Field Inventory and Analysis (FIA) Program forest censuses, land cover maps from National Land Cover Database, and the National Elevation Dataset (NED) to predict biomass of mixed, evergreen, and deciduous forest across the state of Maine. Conducted with Dr. Trevon Fuller.

CARNEGIE INSTITUTE, DEPARTMENT OF GLOBAL ECOLOGY

Palo Alto, CA

Research Technician

April 2008 - May 2009

- Supported Jasper Ridge Global Change Experiment: collected seeds of native and invasive plants, germinated and grew focal species in greenhouse, planted in study plots, and measured

survival and growth of planted individuals. Surveyed species composition; harvested aboveground biomass; and identified harvested material to species.

- Prepared samples for analysis by grinding, ball-milling, foil-balling, and KCl soil extractions. Operated Discrete Analyzer and micro-flow analyzer to determine sample NO₃, NH₄, and P concentration. Initiated and tested cost-saving UV-Visible spectrophotometry method to measure NO₃ content, and developed corresponding data analysis methods.

STANFORD UNIVERSITY

Stanford, CA

MS Research

February 2007 - May 2008

“Remote sensing analysis of rainforest fragmentation in the northern Sierra de Los Tuxtlas, Mexico, 2000 - 2006.” Conducted under the guidance of Dr. Rodolfo Dirzo.

- Used Landsat ETM+ images (2000, 2006) validated with 400+ field reference locations to produce land cover classifications (final accuracy: 86.8%, 88.9%) of the northern Sierra de Los Tuxtlas, Mexico. Calculated regional rate of deforestation and Fragstats (McGarigal et al. 2002) fragmentation metrics for rainforest and secondary forest classes over entire study area and in elevational bands.
- Explored consequences of fragment spatial characteristics and spatial configuration of fragmentation for persisting native species, especially howler monkeys (*Alouatta palliata*).

WILDMETRO

New York, NY

Research Coordinator

July 2005 - August 2006

- Explored the effects of urbanization, patch size, and habitat on small mammal communities in the New York Metropolitan region. Used 5-night capture-mark-recapture trapping sessions on 1-hectare trapping grids with Sherman live traps and numbered ear tags. Presented results to funding organizations, interest groups, undergraduate students, and at public events.

SMITHSONIAN NATIONAL ZOOLOGICAL PARK

Washington, DC

Sea Otter Nutrition Intern

June 2004 - January 2005

- Investigated potential nutritional deficiencies in Southern sea otter (*Enhydra lutris nereis*). Collected sea otter prey items from coastal California; developed otter-equivalent prey processing methods using laboratory tools; and assayed edible material nutritional composition (e.g. fat, nitrogen, gross energy). Supervised by Dr. Olav Oftedal.
- Located desert tortoise (*Gopherus agassizi*) subjects in Sonoran desert using radio telemetry; recorded feeding choice and surveyed vegetation composition along subject paths.

DISNEY'S ANIMAL KINGDOM

Buena Vista, FL

Animal Nutrition Intern

January 2005 - June 2005

- Collected and analyzed formula or milk consumption and weight gain for orphaned Southern white rhinoceros (*Ceratotherium simum simum*) calf and conspecific calves dam-reared at Disney's Animal Kingdom. Conducted comparative nutritional analyses, including first milk composition data published for species since 1968. Developed novel formula composition, feeding regime, and alterations to hand-rearing protocol. Supervised by Dr. Edward Valdes.

MIDDLEBURY COLLEGE

Middlebury, VT

Senior research

December 2003 - June 2004

“The effectiveness of buffer zones in enhancing conservation of protected areas: a review.”

Advisor: Dr. Stephen Trombulak.

- Designed and conducted literature review assessing evidence that buffer zones enhance conservation of protected area resources. Partially quantified “conservation success” for protected area buffer zone projects; analyzed World Bank conservation projects utilizing buffer zones in >100 countries; determined success rates, common correlates, and obstacles.

TEACHING EXPERIENCE

STANFORD UNIVERSITY

Stanford, CA

Teaching Assistant, Environmental Interest Writing December 2008 - September 2009

- Taught classic journalism and science writing skills to science graduate students; developed course syllabus and curriculum; designed teaching exercises to improve communication skills for public audiences; led revision workshops; and evaluated student work.
- Developed partnership with Stanford Alumni Magazine for publication of course products; edited student work and contributed original writing for publication.

STANFORD UNIVERSITY

Stanford, CA

Teaching Assistant, Core Experimental Ecology Lab January 2007 - June 2008

- Reviewed literature on woody encroachment of grassland systems, surveyed encroachment at Jasper Ridge Biological Preserve, and established study plots representing gradient of encroachment (plots included greenhouse-reared *Baccharis pilularis* outplanted seedlings and herbivore-selective exclosures).
- Designed and edited course materials; developed, gave, and critiqued teaching presentations on preserve management strategies, woody encroachment, and habitat fragmentation. Supervised teaching trainees and undergraduate students in field and classroom environments, evaluated student performance, and resolved student questions.

WILDMETRO

New York, NY

Research Coordinator July 2005 - August 2006

- Recruited volunteers for office and research activities; trained volunteers in standardized survey methods, small mammal handling, and data collection; supervised volunteers in field; and maintained data quality.
- Developed curriculum, recruited expert instructors, and managed logistics for WildMetro's pilot Ecological Field Techniques Course, which instructed undergraduate-level students in mist-netting birds, small mammal trapping, track plating, and vegetation sampling.

PUBLICATIONS

Mertes, K, and R Dirzo. *In prep.* Spatial and temporal trends in land cover change and rainforest fragmentation in Los Tuxtlas, Mexico, 2000-2006.

Burns, CE, Ekernas, LS, and K Mertes. 2007. Patch size and urbanization effects on small mammal communities in New York Metropolitan Region forests: a preliminary report. *Transactions of the Linnaean Society of New York* 10: 238-264.

Mertes, K, Schlegel, ML, Renjifo, A, and EV Valdes. 2005. Evaluation of a Hand-Rearing Protocol for a Southern White Rhinoceros (*Ceratotherium simum simum*). Proceedings of the Sixth Annual Conference of the Nutritional Advisory Group of the American Zoo and Aquarium Association, October 15 – 19, 2005, Omaha, Nebraska.

AWARDS AND GRANTS

- Recipient of Stanford University Biology Department Excellence in Teaching Award, 2008.
- Dean's List, Middlebury College, 6 semesters (of 7 attended).
- Edmund Niles Huyck Preserve and Biological Research Station Research Grant. Ekernas, L.S., Mertes, K.J., and Burns, C.E. 2005. "The influences of urbanization, *O. virginianus*, habitat fragmentation, and habitat type on small mammal diversity and abundance in the greater New York Metropolitan region." Granted \$1200 in research funds.

- National Parks Service Small Grant. 2005. Ekernas, L.S., Mertes, K.J., Bennett, C.E., and Burns, C.E. "Small mammal diversity and abundance in the salt marshes of Gateway National Recreation Area." Granted \$2496 in research funds.
- National Parks Service Small Grant. Ekernas, L.S., Mertes, K.J., Bennett, C.E., and Burns, C.E. 2006. "Small mammal diversity and abundance in the grasslands and shrublands of Gateway National Recreation Area." Granted \$2491 in research funds.
- Friends of the Marshlands Conservancy Research Grant. Ekernas, L.S., Mertes, K.J., Bennett, C.E., and Burns, C.E. 2006. "Small mammal diversity and abundance in Marshlands Conservancy, Rye, NY." Granted \$4346 in research funds.

POSTERS AND PRESENTATIONS

- Saatchi, S, Mertes, K, Fuller, T, and Radke, K. 2010. Evaluating the role of tree cover in modifying urban temperatures. Poster presented at the forum "Climate Change and Urban Forests in Los Angeles" on October 15, 2010.
- Fuller, T, Saatchi, SS, Yu, Y, Mertes Schwartz, K, Heath, LS, and E LaPoint. 2009. Distribution of Aboveground Biomass of US Forests from Fusion of Multi-scale Remote Sensing. Poster presented at American Geophysical Union fall meeting, San Francisco, CA.
- Ekernas, LS, and KJ Mertes. 2006. "The influence of habitat type, patch size, and urbanization on small mammal communities in the New York Metropolitan region." Presented to Northeast Natural History Conference, Albany, NY.
- Ekernas, LS, and KJ Mertes. 2006. "The influence of habitat type, patch size, and urbanization on small mammal communities in the New York Metropolitan region." Presented to Long Island University Biology Department, Brooklyn, NY.
- Ekernas, LS, and KJ Mertes. 2005. "Patterns of small mammal diversity and abundance in Marshlands Conservancy and the greater New York Metropolitan region." Presented to Friends of Marshlands Conservancy, Rye, NY.

ADDITIONAL SKILLS

- Software: experience with ENVI, FragStats, ArcGIS suite, R, SGems, and MS Excel.
- Writing: Stanford SAGE writer and editor; former *Stanford Daily* science issues writer.
- Other: experienced in identification of California grassland plants; extensive experience in small mammal trapping; PADI Open Water Diver.