Robert F. Johnson
Associate Specialist
Center for Conservation Biology, 1435 Boyce Hall, University of California, Riverside 92521
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EDUCATION

M.S., Geographic Information Systems, University of Redlands, Redlands, California, 2004.
Topic: GIS Processing for Geocoding Described Collection Locations

B.A., Anthropology, University of Colorado - Boulder, 1982.

PROFESSIONAL EMPLOYMENT

UNIVERSITY OF CALIFORNIA, Riverside, California; Center for Conservation Biology
2015 – Present: Associate Specialist in Geographic Information Systems
2007 – 2015: Assistant Specialist in Geographic Information Systems
2005 – 2007: Junior Specialist in Geographic Information Systems

ASM AFFILIATES, Reno, Nevada; Bureau of Land Management, Ridgecrest (California) Field Office
2004 – 2005: Archaeologist in California

ALBION ENVIRONMENTAL, Santa Cruz, California; Reno, Nevada; and Fort Hunter Liggett, California
1998 – 2002: Archaeologist in Nevada and California

WESTERN CULTURAL RESOURCE MANAGEMENT, Boulder, Colorado; Sparks, Nevada Office
1997 – 1998, 1992 – 1995: Archaeology Field Supervisor in Nevada, Colorado, and Wyoming

GARCIA and ASSOCIATES, San Anselmo, California; Santa Cruz Office
1996 – 1997: Archaeologist in California

PAUL H. ROSENDAHL, Ph.D., Hilo, Hawaii; Guam Office
1989 – 1991: Surveyor – Cartographer and Archaeologist in Territory of Guam

FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, Davis, California
1987 – 1989: Archaeology Crew member in California

Various Private Companies, State Universities, and Federal Agencies
1982 – 1988: Archaeology contractor, crew member or crew chief in Alaska, California, Colorado, Nevada, Utah, Wyoming, and Guatemala

GIS PROJECT EXPERIENCE

As Associate Specialist (2015-current)

Conducted spatial analyses of raster, vector, and tabular biotic and abiotic environmental data, compiled results for the 181 variables into formats suitable for several modeling applications, and prepared metadata in support of habitat suitability modeling efforts by CCB researchers for the United States Marine Corps' Base Twenty-nine Palms and the combined Coachella Valley and Joshua Tree National Park areas.

Provided imagery services to graduate, post-doctoral, staff, and faculty researchers in a variety of settings. Image services are based on small unmanned aerial system (sUAS hereafter) collected true color and/or near infrared imagery including: flight planning and authorization, access coordination, remote piloting

within and outside of controlled airspace, data collection fieldwork, imagery processing, photogrammetry, data management, data analysis, and cartography. Projects include:

- Burned and unburned 1-hectare study plots and [uncovered] exclusion shelters at Pinyon Flat in UC NRS Boyd Deep Canyon,
- A 20-hectare study plot adjacent to UC NRS James Reserve but within USFS Hall Canyon Research Natural Area,
- Privately-owned 1.3-hectare orange grove within the City of Riverside,
- A 1.5-hectare grove of citrus trees within UCR's Agricultural Operations,
- A 0.7-hectare grove of pomegranate trees within UCR's Agricultural Operations,
- Select stands of honey mesquite (81-hectares combined) growing along the San Andreas Fault in Coachella Valley.

Identified specifications and vendors for three orders of sUAS hardware and/or sensors. One for collaborative project including faculty, staff, and graduate students from Departments of Engineering and Botany and Plant Sciences, and the CCB. The other orders for CCB research.

Developed workflow to calculate above-ground biomass of extant grass, shrubs, and trees using aerial imagery collected by sUAS. Workflow includes flight planning, data collection fieldwork, and post-flight imagery processing, storage, and analytic methods. Study used sites on UC's Boyd Deep Canyon Reserve.

Developed map series and descriptive statistics for the Wildland-Urban Interface of southern California using results from national analysis. Map series shows original results and range of uncertainty arising from issues of scale.

Conducted spatial analyses, compilation of environmental dataset from results, and preparation of metadata in support of habitat suitability modeling for desert tortoise relocation efforts. This in support of training area expansion at United States Marine Corps' Base Twenty-nine Palms.

Analyzed Lidar data to identify and quantify forest canopy structural characteristics in vicinity of ant nests (*Atta sp.*) in the La Selva Biological Research Station, Costa Rica.

Provided time series of monthly values for carbon dioxide and methane for select locations in the northern hemisphere. Data sources are the Greenhouse Gas Satellite and the Mauna Loa Observatory.

Provided software and data management support and collecting sUAS aerial imagery for use in mapping vegetative land cover using recent high resolution aerial imagery for the Coachella Valley Multiple Species Habitat Conservation Plan Area.

Conducted home range analysis of fringe-toed lizards (*Uma sp.*) using 30 years of observation data collected from a study plot in the Coachella Valley. Managing data preparation, writing data processing scripts to calculate and map the minimum convex polygon, the 95 and 50 percent value contours, and to generate PDF book of results.

Completed the calculation of a time-series of dry nitrogen (N) deposition within Santa Monica National Recreation Area from November 2011 through October 2012. Using a geographic information systems-based approach, modified from a method previously developed in collaboration with the U.S. Forest service. This approach uses inputs of concentrations of reactive N gases, leaf surface area, land cover, and cover type-specific N deposition velocities.

Manage CCB geospatial datasets:
-in-house species observation datasets collected by the CCB,
-updates from the California Department of Fish and Wildlife,
-updates from the Western Riverside County Biological Monitoring Program,
-nitrogen deposition studies' results,

-environmental datasets for habitat suitability modeling, and
-publically available spatial datasets.

Administer CCB server operations:
-Spatial data file servers,
-Cloud-based collaborative work spaces,
-FTP administration for: Jenerette Lab's Ozone sensors, UCR Cooperative Extension's Phenocam imagery, and La Selva Automated Minirhizotron imagery.

Manage long-term project for acquisition, scanning, and orthorectification of historical aerial photography of portions of Riverside, San Bernardino, and Los Angeles Counties. This done with goal of compilation into digital orthoquad and 3D surface model products that meets national mapping standards.

Provide cartographic services and spatial data technical support to researchers and faculty as needed.

As Assistant Specialist (2007-2015)

Conducted analyses of distribution of biotic and abiotic environmental characteristics and compiled results into spatial datasets to support habitat suitability modeling for rare plant species in a 49,487 square mile area of southwest California and the Mojave Desert. This work conducted for the Bureau of Land Management.

Acquired and processed spatial data for biotic, abiotic, and cultural characteristics of three small cities in the United States. Produced map series of characteristics analyses for each city and provided spatial data in support for the development of a selection protocol for the National Ecological Observatory Network's (NEON) Urban study sites.

Completed analyses to calculate summer season dry nitrogen deposition in San Bernardino Mountains, over a 6-year period by using remotely sensed data, gas concentration measurements, vegetative land cover, and species-specific surface deposition and stomatal uptake velocities. Also compared with results from alternate calculation methods and conducted uncertainty analysis of results. Prepared maps, tables, and methodology discussion for publication.

Completed geographic analysis for and map production of the distribution of: critical loads of nitrogen of and protection status for Coastal Sage Scrub plant community.

Provided GIS technical support in mapping changes by decade in mesquite land cover since the 1930's using historic and recent aerial imagery for the Coachella Valley.

Compiled spatial dataset of biotic and abiotic environmental characteristics to support habitat suitability modeling of the blunt-nosed leopard lizard within the Carrizo Plain National Monument.

Compiled revised and spatially expanded dataset of biotic and abiotic environmental characteristics to support habitat suitability modeling of multiple species within the greater Coachella Valley.

Completed preparation of remotely-sensed imagery and maps from numerous sources for a spatial analysis of historical land cover change during mid- to late- 20th Century near Hue, Vietnam.

Conducted spatial analyses, compilation of environmental dataset from results, and preparation of metadata in support of habitat suitability modeling for

- the proposed training area expansion at United States Marine Corps' Base Twenty-nine Palms,
- Joshua Tree National Park,
- Lake Mead National Recreation Area, and
- Coachella Valley Multiple Species Habitat Conservation Plan area.

Conducted spatial analyses, compilation of environmental dataset, and preparation of formal metadata in collaboration between Center for Conservation Biology researchers and USGS to support habitat suitability modeling for sage grouse across six western states.

Prepared state-wide California nitrogen deposition and west Riverside County historic land cover data products for distribution to public through internet.

Conducted analyses and supervised undergraduate and volunteer assistants in production of environmental datasets for use in dry land urban phenology study. Prepared report of geographic information processing methods for P.I.

Conducted analyses and produced maps of nitrogen critical load levels throughout California for eight vegetation communities and throughout conterminous United States for twelve ecoregions.

Developed data processing procedure to obtain weather records from the nearest weather station for the date of any recorded fire in the Mojave and Sonora Deserts within California for the period from 1980 through 2008.

Trained ecologists in GIS methods for building a spatial dataset appropriate for use in habitat suitability modeling.

As Junior Specialist (2005-2007):

Conducted vector- and tabular-based analyses of fire history and land cover in western Riverside County.

Collaborated in spatial analyses and compilation of environmental characteristics dataset in support of habitat suitability modeling for all of Baja and southern [Alta] California.

Developed and applied procedure that expedites conversion of [paper] historic vegetation maps to digital geospatial data products.

Supported inter-agency cooperative efforts for identification, archiving, and spatially-enabling of historic vegetation data.

Conducted hybrid, vector- and raster-based analyses of nitrogen deposition data at points and along lines.

Produced animated visualizations and maps of research findings using nominal, ordinal and ratio data.

Developed data processing procedure to calculate annual “water year” precipitation from 55 year period of monthly precipitation data.

Defined procedural methods for data capture in web-based application (Google Earth) and conversion to ESRI (ArcGIS) data format for use in further analyses.

Extracted environmental variables from vector and raster datasets using methods for: value at point, nearest neighbor, and neighborhood statistics calculations.

Developed quality control/quality assurance methods integrated in extraction procedures.

Created metadata compliant with the Federal Geographic Data Committee’s Content Standard for Digital Geospatial Metadata for public or limited distribution of data products as appropriate.

FIELD MAPPING EXPERIENCE (prior to UCR appointment)

Archaeologist/GIS Specialist, contract employee, Department of Interior, Bureau of Land Management, Ridgecrest Field Office, Kern County, California, 2004-2005. GPS data/Trimble Pathfinder/ArcGIS 9.1

Mapping Specialist, Cultural Resource Management Services, Camp Roberts, Monterey and San Luis Obispo Counties, California, 2004. GPS data/Trimble Pathfinder/ArcGIS 8.3

Archaeologist and Mapping Specialist, contract employee, Department of Army, Fort Hunter Liggett, Monterey County, California, 2000-2002. GPS data/Trimble Pathfinder/ArcView 3.x

Staff Archaeologist and Mapping Specialist, Albion Environmental, Inc., Douglas & Washoe Counties, Nevada; Monterey and San Luis Obispo Counties, California, 1999-2000. Total Station field data/AutoCAD

Archaeology Field Supervisor, Western Cultural Resource Management, White Pine County, Nevada; Pitkin County, Colorado; 1998. Total Station field data/AutoCAD

Staff Archaeologist and Mapping Specialist, Garcia and Associates/Biosystems Analysis, San Luis Obispo and Santa Clara Counties, 1996-1997. Transit and Total Station field data/AutoCAD

Archaeology Field Supervisor, Western Cultural Resource Management, White Pine, Douglas, Elko, Lander, Humboldt, and Washoe Counties, Nevada; Teller County, Colorado, 1992-1995. Total Station field data/AutoCAD

Surveyor-Cartographer, Paul H. Rosendahl, Inc., Territory of Guam, 1989-1991. Transit, dumpy level, and Total Station field data/AutoCAD

Instrument man, Contractor to Department of Agriculture, Forest Service, Tongas National Forest at Yakutat, Alaska, 1988 field season. Total Station field data

Instrument man, URS Berger, Vandenberg Air Force Base, Santa Barbara County, California, 1986. Semi-total Station field data

Archaeology Mapping Crew Chief, University of California – Santa Barbara, Santa Barbara, San Luis Obispo, and Kern Counties, 1985-1986. Transit and Semi-total Station field data/cartographic drafting

Instrument man, Applied Conservation Technology, San Bernardino County, 1985. Semi-total Station field data

Instrument man, Western Cultural Resource Management, Lincoln County, Wyoming, 1983. Semi-total Station field data/cartographic drafting

Mapping crew, El Mirador Archaeology Project, El Petén, Guatemala, 1981-1983. Aerial photo interpretation, theodolite field data collection, and cartographic drafting

PUBLICATIONS

1. Fenn M.E., E.B. Allen, S.B. Weiss, S. Jovan, L. Geiser, G.S. Tonnesen, R.F. Johnson, L.E. Rao, B.S. Gimeno, F. Yuan, T. Meixner, A. Bytnerowicz
   2010 Nitrogen critical loads and management alternatives for N-impacted ecosystems in California. Journal of Environmental Management, 91 (2010) 2404-2423.

2. Allen, E.B., L.E. Rao, G. Tonnesen, R. F. Johnson, M. E. Fenn, A. Bytnerowicz
   2014 Using fire risk and species loss to set critical loads for nitrogen deposition in southern California shrublands. Chapter 34 In: Sutton, M.A., Mason, K.E., Sheppard, L.J., Sverdrup, H., Haeuber, R., Hicks, W.K. (eds). Nitrogen Deposition, Critical Loads and Biodiversity (Proceedings of the International Nitrogen Initiative workshop, linking experts of the Convention on Long-range Transboundary Air Pollution and the Convention on Biological Diversity). Springer Science, pp. 319-327.

3. Fenn, Mark E., Hans-Dieter Nagel, Julian Aherne, Sarah E. Jovan, Linda H. Geiser, Angela Schlutow, Thomas Scheuschner, Andrzej Bytnerowicz, Benjamin S. Gimeno, Fengming Yuan, Shaun A. Watmough, Edith B. Allen, Robert F. Johnson, Thomas Meixner
   2014 A Comparison of Empirical and Modelled Nitrogen Critical Loads for Mediterranean Forests and Shrublands in California. Chapter 38 In: Sutton, M.A., Mason, K.E., Sheppard, L.J., Sverdrup, H., Haeuber, R., Hicks, W.K. (eds). Nitrogen Deposition, Critical Loads and Biodiversity (Proceedings of the International Nitrogen Initiative workshop, Linking Experts of the Convention on Long-range Transboundary Air Pollution and the Convention on Biological Diversity). Springer Science, pp. 357-368.

4. Allen, Michael F. Cameron W. Barrows, Michael D. Bell, G. Darrel Jenerette, Robert F. Johnson, and Edith B. Allen
   2014 Threats to California's desert ecosystems. Fremontia, 42(2), 3-8.

5. Rao, Leela E., John R. Matchett, Matthew L. Brooks, Robert F. Johnson, Richard A. Minnich, Edith B. Allen
   2014 Relationships between annual plant productivity, nitrogen deposition and fire size in low elevation California desert scrub. International Journal of Wildland Fire, 24(1), 48-58.

6. Cox, Robert D., Kristine L. Preston, Robert F. Johnson, Richard A. Minnich, Edith B. Allen
   2014 Influence of landscape-scale variables on vegetation conversion to exotic annual grassland in southern California, USA. Global Ecology and Conservation Global Ecology and Conservation, 2, 190-203.

7. Bytnerowicz, A., R.F. Johnson, L. Zhang, G. D. Jenerette, M.E. Fenn, S.L. Schilling, and I. Gonzalez-Fernandez
   2015 A GIS-based empirical inferential method of estimating deposition of inorganic reactive nitrogen to forests and other ecosystems - the San Bernardino Mountains case study. Environmental Pollution, 203, 69-88.

8. VanTassel, Heather L. Hulton, Michael D. Bell, John Rotenberry, Robert Johnson, and Michael Allen
   2017 Environmental change, shifting geographical distributions, and habitat conservation plans: A case study of the California Gnatcatcher. Ecology and Evolution, 7, 10326–10338.

In Review:

Aronson, E.L, D. Dierick, J.K. Botthoff, O. Oberbauer, T.J. Zelicova, T. Harmon, P. Rundel, R.F. Johnson, A.C. Swanson, A. Pinto, A. Artavia-Leon, B. Matarrita-Carranza, and M.F. Allen
ENSO-Influenced Soil Moisture and Drought Drive Methane Flux Dynamics in a Costa Rican Rainforest Soil.

Mark Fisher, Allan Muth, and Robert F. Johnson
A Long-Term Study of Home Range of Coachella Fringe-Toed Lizards, *Uma inornata*.

SELECTED REPORTS

1. Johnson, Robert F.
   1992 *A Cultural Resource Report on the Results of Shovel Probe Testing of Eight Sites in Elko County, Nevada for the Independence Mining Company*. BLM Report No. 1-1682(P) Prepared for Independence Mining Company, Inc.

2. Stoner, Edward J., and Robert F. Johnson
   1992 *A Class III Cultural Resource Inventory of the USMX Horseshoe/Galaxy Project, White Pine County, Nevada*. BLM Report No. CR-92-04-1060(P). Prepared for USMX.

3. Stoner, Edward J., Renee Kolvet, Robert Peterson, and Robert Johnson
   1994 *A Cultural Resource Survey of 2,125 Acres for the Santa Fe Pacific Mining, Inc. Dry Hills Pass Project*, Humboldt *County, Nevada*. BLM Report No. CRR-02-2591(P). Prepared for Santa Fe Pacific Mining, Inc.

4. Johnson, Robert F., Renee Kolvet, and Robert Peterson
   1994 *National Register Evaluation of Twenty Previously Recorded Sites for the Independence Mining Company in Elko County, Nevada.* BLM Report No. BLM1-1786(P) Prepared for Independence Mining Company, Inc.

5. Johnson, Robert F., and Clinton Blount
   1998 *Coastal Branch, Phase II, State Water Project, Cultural Resources, Compliance Monitoring Review Report for Reach 4 and Ancillary Areas.* Prepared for State of California Department of Water Resources, California State Water Project, Coastal Branch, Phase II.

6. Johnson, Robert F., and Clinton Blount
   1998 *Coastal Branch, Phase II, State Water Project, Cultural Resources, Compliance Monitoring Review Report for Reach 5a and Ancillary Areas.* Prepared for State of California Department of Water Resources, California State Water Project, Coastal Branch, Phase II.

7. Johnson, Robert F.
   1998 *Archaeological Extended Survey at the Hilltop Site, CA-SLO-1763, San Luis Obispo County, California*. Prepared for The California Department of Water Resources, California State Water Project, Coastal Branch, Phase II.

8. Johnson, Robert F., Clinton Blount, and Terry L. Joslin
   1999 *The Cultural Context and Preliminary Inventory of Resources for the Lake Tahoe Erosion Control and Storm Water Master Plan, Douglas, Carson, and Washoe Counties, Nevada.* Submitted to Nevada Department of Transportation in conjunction with Harding Lawson Associates.

9. Blount, Clinton, and Robert Johnson
   2000 *Historic Property Treatment Plan, State Route 28, Erosion Control And Storm Water Management Master Plan, Nevada Department Of Transportation.* Submitted to Nevada Department of Transportation in conjunction with Harding Lawson Associates.

10. Johnson, Robert, and Susan H. Alvarez
    2000 *Cultural Resources Inventory Report, Nevada State Route 28, Douglas, Carson City, and Washoe Counties, Nevada.* Submitted to Nevada Department of Transportation in conjunction with Harding Lawson Associates.

11. Johnson, Robert, and Clinton Blount
    2000 *Archaeological Evaluation of 26-DO-357 (Spooner Station), Nevada State Route 28, Douglas County, Nevada.* Submitted to Nevada Department of Transportation in conjunction with Harding Lawson Associates.

12. Johnson, Robert, and Susan H. Alvarez
    2001 *Cultural Resources Study Following Wild Fire in Training Area 9/Steel Bridge, Fort Hunter Liggett Military Installation, Monterey County, California.* Prepared for Fort Hunter Liggett Cultural Resource Office.

13. Farrell, Nancy, Todd Hannahs, Robert Johnson, and Allison Lober
2005 *Camp Roberts and Camp San Luis Obispo Army National Guard Training Installations. After-Field Report for the Archaeological Evaluation of Nine Locations.* Prepared for California Military Department/California Army National Guard.

14. Johnson, Robert and Michael Baskerville
2005 *Rademacher Mining District, Historic Abandoned Mine Lands Study Phase II, Kern County, California.* Prepared for the USDI-BLM Ridgecrest Field Office.

15. Rotenberry, J. T., K. D. Fleming, Q. Latif, R. Johnson, and C. W. Barrows
2010 *Inventory and Monitoring of Western Burrowing Owls for the Coachella Valley MSHCP*. Prepared by Center for Conservation Biology for the Coachella Valley Association of Governments.

PRESENTATIONS

1. 2007 Kelso Conference, Paradise Springs, Barstow, California, USA, Gwyn Alcock and Robert Johnson. The Half-Moon Cave Trail Segment, Exploring the Creation and Destination of a Trail in the Vicinity of Halloran Spring, in the Central Mojave Desert of California. Invited Talk
2. 2009 California Native Plant Society, Sacramento, California, USA, K.P. Preston, P. Sadler, R.F. Johnson, G. Miller, and E.B. Allen. Using Historic and Recent Vegetation maps to Evaluate Environmental Drivers of Landscape-Scale Conversion of Coastal Sage Scrub to Exotic Grassland. Invited Talk
3. 2010 ESRI International User Conference, San Diego, California, USA, R.F. Johnson "Nitrogen Deposition and Critical Loads in California". Poster
4. 2010 Nitrogen Deposition, Critical Loads and Biodiversity, Edinburgh, Scotland, UK, Using Fire Risk and Species Loss to Set Critical Loads for N Deposition in Southern California Shrublands". Poster
5. 2011 GIS Day, University of California, Riverside, California, USA, R.F. Johnson "Historic Imagery for Contemporary GIS". Short Presentation
6. 2012 ESRI International User Conference, San Diego, California, USA, R.F. Johnson "Calculating Nitrogen Flux in the San Bernardino Mountains, California". Invited talk
7. 2012 Ecological Society of America Annual Meeting, Portland, Oregon, USA, Andrzej Bytnerowicz, Robert Johnson, Leiming Zhang, Darrel Jenerette, Edith Allen "Deposition of gaseous reactive nitrogen to forests and other ecosystems in the San Bernardino Mountains, California" . Invited talk
8. 2013 National Atmospheric Deposition Program Annual Meeting and Scientific Symposium, Park City, Utah, USA, Andrzej Bytnerowicz, Witold Fraczek, Robert Johnson, Darrel Jenerette, Edith Allen, and Mark Fenn. "From passive samplers to estimates of nitrogen deposition in arid and semi-arid areas of the western United States". Invited Talk.
9. 2013 American Geophysical Union Annual Meeting, San Francisco, California, USA, Andrzej Bytnerowicz, Mark Fenn, Witold Fraczek, Robert Johnson, and Edith Allen. "Inorganic nitrogenous air pollutants, atmospheric nitrogen deposition and their potential ecological impacts in remote areas of western North America". Invited talk
10. 2014 American Association for the Advancement of Science Pacific Division, Annual Meeting, Riverside, California, USA, Bytnerowicz A, Witold Fraczek, Robert Johnson, Mark Fenn, Leiming Zhang, and Darrel Jenerette. "From passive samplers to estimates of dry nitrogen deposition in the western United States". Invited talk
11. 2014 GIS Day, University of California, Riverside, California, USA, R.F. Johnson, lecture on Professional Development presented to Geology 157 (GIS) class.
12. 2017 Soil Ecology Society, Biennial Meeting, Fort Collins, Colorado, USA, Michael F. Allen, Michael Taggart, George Rothbart, Thomas C. Harmon, Rebecca R. Hernandez, and Philip W. Rundel. "Peering into the Soil Black Box: A Soil Ecosystem Observatory: Rhizosystems, LLC". Poster
13. 2017 GIS Day, University of California, Riverside, California, USA, R.F. Johnson, "Vegetation Mapping and Measure for Research Using Small Drones". Short Presentation followed by flight demonstration.

SELECTED CARTOGRAPHIC / GIS RESEARCH SUPPORT CONTRIBUTIONS

Allen, Michael F. and Kristine L. Preston

2006 *Core 2 Refinement Workshop Report*. Center for Conservation Biology. Paper CCB2006. Prepared for County of Riverside, Regional Conservation Agency.

Allen, Edith

2007 Annual 2002 Nitrogen Deposition Map Series for Southern California on *Thresholds of Vegetation Change Following N Deposition in Southern California Ecosystems* web page (http://ccb.ucr.edu/biocommaps.html).

Preston, Kristine

2008 Developed a geographic dataset of selected environmental variables for use in analysis of land cover type change over time. Prepared as part of NSF-funded Biocomplexity Project.

Barrows, Cameron

2009 Supervised development of a geographic dataset consisting of selected environmental variables for use in habitat suitability modeling climate change. Prepared for U.S. Department of Interior, National Park Service.

Bytnerowicz, Andrzej

2009 A series of nine maps showing leaf area index, predicted NO3 concentration, and nitrogen flux for the San Bernardino Mountains. Prepared for presentation at 41st Annual Air Pollution Workshop and Symposium, Fort Collins, Colorado.

Fenn, Mark

2009 A series of eight maps showing extent of critical load for nitrogen deposition on select vegetation within California. Prepared for presentation at 41st Annual Air Pollution Workshop and Symposium, Fort Collins, Colorado.

Minnich, Richard, E. Franco-Vizcaíno, and M. Salazar-Ceseña

2011 Data format conversion, analyses, and cartography for dataset and map of the distribution of palm species across southern California and the Baja peninsula in *Aliso*, Volume 29.

Robert F. Thorne, Reid V. Moran, and Richard A. Minnich

2011 A series of seven map plates showing newly identified vegetation distributions interpreted from Google Earth imagery. Vascular Plants of the High Sierra de San Pedro Martir, Baja California Mexico - An Annotated Checklist in *Aliso*, Volume 28.

Pardo, L.H., Robin-Abbott, M.J., Driscoll, C.T., eds.

2011 A series of 10 maps showing empirical critical load and exceedance by ecoregion. Assessment of effects of N deposition and empirical critical loads for nitrogen for ecoregions of the United States. USDA Forest Service General Technical Report NRS-80, 291 pp. Pardo, L. H., Fenn, M. E., Goodale, C. L., Geiser, L. H., Driscoll, C. T., Allen, E. B., Baron, J., Bobbink, R., Bowman, W. D., Clark, C., Emmett, B., Gilliam, F. S., Greaver, T., Hall, S. J., Lilleskov, E. A., Liu, L., Lynch, J., Nadelhoffer, K., Perakis, S. S., Robin-Abbott, M. J., Stoddard, J., Weathers, K. C., Dennis, R. L. 2011. Effects of nitrogen deposition and empirical nitrogen critical loads for ecoregions of the United States, Ecological Applications 21:3049-3082.

Fenn, Mark

2013 Spatial analysis with results shown as two maps illustrating the change from 2006 to 2011 in oxidized and reduced nitrogen deposition across the western United States.

Trafzer, Clifford

2014 One map showing six Native American trail alignments with selected named rivers, reservations, and mountain ranges in eastern California, western Arizona, and southern Nevada. Technical report to Department of Defense.

Tajima, Yuhki

2014 A series of five maps showing the distribution of phenomena related to communal violence in Indonesia in The Institutional Origins of Communal Violence, Indonesia's Transition from Authoritarian Rule. Cambridge University Press.

Baerenklau, Kenneth

2014 Spatial dataset of census data for a study of tree cover and demographics in greater Los Angeles area.

Trafzer, Clifford

2015 Prepared one map showing alignment of the Salt Song Trail, traditional tribal domains, and contemporary place names in the American southwest in The Chemehuevi Way. University of Washington Press.

Trafzer, Clifford

2015 Prepared two maps showing the Palouse region and Snake River-Palouse Tribal area in Salt Song. University of Washington Press.

Baerenklau, Kenneth

2015 Revised spatial dataset of census data aggregated by postal zip code and by water utility district for a study of tree cover, water use, and demographics in greater Los Angeles area.

Oikawa, P. Y., C. Ge, J. Wang, J.R. Eberwein, L.L. Liang, L.A. Allsman, D.A. Grantz, and G.D. Jenerette

2015 One figure comprising 8 maps showing the distribution of tropospheric and surface gaseous nitrogen dioxide and ozone from remotely-sensed and modeled datasets. Unusually high soil nitrogen oxide emissions influence air quality in a high-temperature agricultural region. Nature Communications 6:8753 | DOI: 10.1038/ncomms9753.

Muth, Allen

2015 Completed home range analysis results for 83 individual fringe-toed lizards selected from 30 years of observation data. Prepared a single PDF map book of results for each individual showing minimum convex polygon with the 95 and 50 percentile volume contours on a base of imagery and the study plot extent.

Valliere, Justin

2016 Completed calculations for nitrogen deposition in the Santa Monica Mountains National Recreation Area using a modified version of the empirical inferential method presented in Bytnerowicz et al (2015). Prepared map of total annual N deposition with study plot and gaseous sampler locations.

Allen, Michael et al.

2016 Calcium carbonate geological sources and soil concentration distribution map for proposal to California Energy Commission.

Cleland, E.E., J. Funk, and E.B. Allen

2016 Prepared two maps showing Coastal Sage Scrub by Protection Status and by nitrogen critical load status. Chapter 22. Coastal Sage Scrub. In Zavaleta, E. and H. Mooney, editors. Ecosystems of California. University of California Press.

Allen, Michael

2016 A network node figure consisting of three maps at local, regional, and global scales including the Center for Conservation Biology, the Allen Lab, and Rhizosystems assets and collaborators.

Allen, Edith

2016 For field trip, prepared a map of large wildfire perimeters in the San Bernardino and San Jacinto Mountains since 1991 with extra detail for the Poppet Flat area.

Jenerette, G. Darrel

2016 Prepared a map of selected U.S. and Canadian cities on plot of temperature gradient for an article entitled Dimensions: Collaborative Research: Toward a predictive understanding of the dimensions of tree biodiversity in U.S. cities. Global Ecology and Biogeography (Accepted).

Jenerette, G. Darrel

2016 Map of selected U.S. and Canadian cities on plot of temperature gradient for an article entitled Climate Tolerances and Trait Choices Shape Continental Patterns of Urban Tree Biodiversity. (Submitted).

Sweet, Lynn

2016 Completed aerial photo production of drainages, ridge slopes, and ridge crests in mountainous terrain for use in vegetation mapping. Prepared UAS flight plans, piloted craft, and processed imagery collections to series of orthorectified mosaics suitable for spatially referenced interpretation.

Michael, Allen

2017 Conducted analysis of and prepared maps and tabular data for spatial relationship between location of ant nests (*Atta sp*.) and forest canopy structure at the La Selva Biological Research Station in Costa Rica. Used GPS locations collected for ant nests and LIDAR and aerial photographs collected by the Tropical Ecology Assessment & Monitoring Network (TEAM).

Buhler, Monica

2017 Prepare time-series dataset of leaf area index values from MODIS for correlation with reactive nitrogen levels measured in Devils Postpile National Monument.

Allen, Michael and Travis Stanton

2017 Review LIDAR dataset for use in forest structure analysis in Yucatan, Mexico.

Allen, Michael

2017 Prepared time-series dataset of monthly values of carbon dioxide and methane gas concentration at several locations in the northern hemisphere. Data presented in tabular and graph formats using measures from the “Greenhouse Gas Satellite” and the Mauna Loa Observatory.

Swanson, Amanda

2017 Currently developing workflow and methods to measure biomass of desert shrub *Larrea tridentata* (creosote) using aerial imagery collected by UAS.

Jenerette, G. Darrel

2017 Create map series as a single figure for use in journal article manuscript. Figure shows the distribution of invasive mosquitos, land surface temperature, air pollution, and distance to park lands and their combined relation to human environmental quality.

Jenerette, G. Darrel

2018 Produced digital orthophotographs and 3D models for 1-hectare burned and unburned study plots at Pinyon Flats in UC NRS Boyd Deep Canyon.

Diez, Jeffery and Marko Spasojevic

2018 Produced a digital orthophotograph and 3D model of a 20-hectare forested study plot in the Hall Canyon Research Natural Area.

Homyak, Peter

2018 Produced a digital orthophotograph and 3D model of [uncovered] precipitation exclusion shelters at Pinyon Flats in UC NRS Boyd Deep Canyon.

Avila, Claudia Christine

2018 Produced a digital orthophotograph and 3D model of a 1.3-hectare orange grove within the City of Riverside.

Chater, John and Zhenyu Jia

2018 Produced a digital orthophotograph and 3D model of a 0.7-hectare grove of pomegranate trees within UCR's Agricultural Operations.

Sweet, Lynn

2018 Updated and expanded two previously developed geographic datasets, each set now includes the same 181 environmental variables for use in habitat suitability modeling considering climate change. Variables include edaphic, terrain, historical and predicted climate, land cover, and disturbance information. The two study areas comprise 3,285,306 hectares and include the Twenty-nine Palms Marine Corps Air Ground Combat Center, Joshua Tree National Park, and the Coachella Valley plus peripheral areas.

Barrows, Cameron

2019 Currently producing from sUAS imagery, a normalized distribution vegetation index (NDVI) of honey mesquite growing along the San Andreas Fault in the Coachella Valley and planning a decades-long time series study using satellite imagery.

RELATED TRAINING

University of California Riverside Extension

- Network Administration
  -Installing and Configuring Windows Server 2012
- The Science of Multi-species Habitat Conservation Plans

University of Redlands Theory and Technology Classes

- Spatial data modeling, database design and management, and computer assisted software engineering
- Geostatistics
- User interface customization, application development in Visual Basic
- Internet mapping service development using Active Server Page
- Cartography, visualization, and advanced coordinate systems with geodesy
- Analysis and interpretation of remote sensing data from airborne and orbiting sensors

ESRI Instructor-led Software Instruction

Introduction to ArcView GIS (3.x)
Introduction to ArcGIS II
Working with ArcGIS Spatial Analyst
Building Geodatabases 1
Modeling Geodatabases using CASE Tools
Introduction to Programming ArcObjects with VBA
Introduction to ArcIMS
What's New in ArcGIS 9
Arc Hydro

Online Software Instruction

training.esri.com:
Planning for a GIS
Introduction to ArcGIS Survey Analyst
Working with Survey Data in ArcGIS
Geoprocessing with ArcGIS Desktop
Field GIS: Collecting and Editing Data Using ArcPad 10
Using Lidar Data in ArcGIS 10
Managing Lidar Data in ArcGIS 10
Managing Lidar Data Using LAS Datasets

lynda.com:
SQL Server 2008 Essential Training
Foundations of Programming: Fundamentals
Foundations of Programming: Databases
Up and Running with Aptana Studio
Up and Running with Python
Up and Running with R
Up and Running with Visio 2013

May 2019