

# Carlos D. Ramirez-Reyes

Conservation science & Research data services

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## Research interests

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Landscape ecology, land systems science, socio-ecological systems, impact evaluation

## Education

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| <b>PhD</b> | <b>Forestry</b> University of Wisconsin-Madison  | 12/2016 |
|            | Dissertation: Improving forest fragmentation detection in Mexico and assessing jaguar habitat in Central Mexico. Advisor: Volker Radeloff                            |         |
| <b>MSc</b> | <b>Applied Ecology</b> University of Poitiers, France  | 09/2010 |
|            | Master thesis: Biodiversity and landscape patterns in agricultural and riparian systems in France and Austria. Advisors: Catherine Souty-Grosset and Gael Freyssinel |         |
| <b>BSc</b> | <b>Biology</b> National Autonomous University of Mexico  | 08/2008 |
|            | Senior thesis: Modelling land cover change in coffee growing areas in southern Mexico. Advisor: Gustavo Cruz-Bello   |         |

## Recent work experience

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**Assistant professor** 05/2022 – Present  
Research Data Services Coordinator. DeLaMare Science and Engineering Library; University of Nevada, Reno

**Primary responsibilities:** Coordinate the Research Data Services team, which provides support to faculty, staff and students throughout the research data lifecycle: data acquisition, data processing, analysis and visualization, as well as data archiving. Provide support in GIS for students, faculty and staff projects.

**Current research topics:** a) Develop spatial predictions for marsh bird habitat across the Gulf of Mexico; b) Recover data from 1930's James E. Church snow surveys in the Sierra Nevada that can be used for longitudinal analysis of snow levels.

**Postdoctoral Researcher** 01/2019 – 04/2022  
Department of Wildlife, Fisheries and Aquaculture, Mississippi State University, 775 Stone Boulevard, P.O. Box 96901, Mississippi State University, MS 39762  
Supervisor: Dr. Kristine O. Evans (662-617-2643, [kristine.evans@msstate.edu](mailto:kristine.evans@msstate.edu))

- Analysis & Research:**
  - Created a series of Species Distribution Models to optimize surveys for at-risk species in support of US Fish and Wildlife Service's Species Status Assessments. Gathered, created and analyzed tabular and spatial environmental data to describe species-habitat associations.
- Collaboration & Communication**
  - Compiled biological records for focal plant and animal species from species experts, NGOs & Natural Heritage Program offices in the states of GA, AL, FL, MS, NC and SC. Communicated research findings through clear data visualization, led professional publications, reports and presentations at professional conferences.
- Leadership, Service & Mentorship**
  - Served as the point of contact for partner organizations, collaborators and stakeholders interested in the recovery of focal at-risk species. Led and managed the Quantitative Ecology and Spatial Technologies (QuEST) lab meetings through the academic year. Organized and assigned weekly discussion topics for faculty, staff and students, as well as co-led discussions and other activities for these meetings. Directly mentored one

undergraduate, two Master and one PhD level students in their respective degree thesis projects.

### **Postdoctoral Researcher**

08/2017 – 08/2018

Institute on the Environment, University of Minnesota. 1954 Buford Ave. Suite 325 Saint Paul MN.

Supervisor: Dr. Kate Brauman (612-626-9502, kbrauman@umn.edu)

#### ***Analysis & Research:***

- Co-organized and co-led a series of multidisciplinary workshops for a NASA funded project that aimed to find linkages between Earth observations and ecosystem services assessments. Prepared proof-of-concept analyses to demonstrate the utility of Earth observations for analysis of ecosystem services.

#### ***Collaboration & Communication***

- Served as the point of contact for more than 25 multidisciplinary scientists and practitioners attending the workshops. Led a peer-reviewed article summarizing the findings and a white paper that will help NASA's Biodiversity and Forecasting Program to plan future research programs. Communicated research findings through clear data visualization, professional publications, reports and presentations at professional conferences.

#### ***Leadership, Service & Mentorship***

- Participated as instructor assistant for a workshop in ecosystem services valuation methods for conservation practitioners.

### **Additional relevant work experience**

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**Research Assistant** – University of Wisconsin-Madison

04/2017 – 08/2017

Contributed on a research project that evaluated California's housing adaptation to historic wildfires using historic aerial imagery.

**Teaching Assistant** – University of Wisconsin -Madison

09/2015 – 12/2016

Led six laboratory sessions for the 152 Introductory Biology course. During this period, participated in the training of more than 150 undergraduate students in ecology and evolution methods and directly supervised 40 students through their semester-long research projects and report writing.

**NASA Earth and Space Science fellow** – University of Wisconsin-Madison

08/2012 – 07/2015

Processed and analyzed spatial data to quantify forest cover changes in Mexico using a combination of GIS and remote sensing datasets to quantify the outcome of government environmental programs aimed to avoid deforestation

**Research Assistant** – University of Wisconsin -Madison

08/2010 – 7/2012

Processed and analyzed GIS data for a project evaluating the Payment for Ecosystem Services program in Mexico.

**Research Intern** – University of Poitiers (France)

04/2010 – 08/2010

Created a landscape characterization of two agricultural landscapes to understand the effects of agricultural intensity practices on terrestrial and aquatic insects.

**Research Intern** – Mexico's National Forestry & Livestock Institute

08/2007– 08/2008

Analyzed spatial databases and classified Spot satellite imagery for ongoing lab projects, with emphasis in the analysis of land cover changes for agricultural coffee lands in southern Mexico.

**Field Forestry Technician** – Servicios Técnicos Forestales y Ambientales.

05/2005– 03/2006

Conducted field forestry surveys in areas near Mexico City and helped preparing environmental impact assessments, ecotourism plan proposals, and forest management programs.

## Publications

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- Zarba, L., Piquer-Rodriguez, M. and 12 authors including **Ramirez-Reyes, C.** 2022. Mapping and characterizing social-ecological land systems of South America. *Ecology and Society* 27 (2)
- Boudreau, M., Gantchoff, M., **Ramirez-Reyes, C.**, Conlee, L., Belant, J., and Iglay, R. 2021. Human-Bear Networks: Prioritizing community public outreach and management in the face of carnivore recolonization. *Journal of Applied Ecology* 59 (3): 757-767
- Hale, C. W., Granjer, J., Paulson, A., **Ramirez-Reyes, C.**, Ma, Q. and Yang, Y. 2022. Habitat suitability of mountain stewartia (*Stewartia ovata*) across the Cumberland Plateau. *Castanea* 86 (2), 173-184
- Ramirez-Reyes, C.**, Nazeri, M., Jones-Farrand, D. T., Street, G., Vilella, F. and Evans, K. O. 2021. Embracing ensemble species distribution models to inform at-risk species status assessments. *Journal of Fish and Wildlife Management* 12 (1): 98-111
- Kramer, A., Butsic, V., Mockrin, M., **Ramirez-Reyes, C.**, Alexander, P. and Radeloff, V. C. 2021. Post-wildfire rebuilding and new development in California reveals minimal adaptation to fire risk. *Land Use Policy* 107: 105502
- Ramirez-Reyes, C.**, Street, G., Vilella, F., Jones-Farrand, D. T., Wiggers, M. S. and Evans, K. O. 2021. Ensemble species distribution model identifies survey opportunities for at-risk bearded beaksedge (*Rhynchospora crinipes*) in the southeastern United States. *Natural Areas Journal* 41(1): 55-63
- Lazaro-Lobo, A., Lucardi, R., **Ramirez-Reyes, C.** and Ervin, G. N. 2021. Region-wide assessment of fine-scale associations between invasive plants and forest regeneration. *Forest Ecology and Management* 483: 118930
- Lazaro-Lobo, A., **Ramirez-Reyes, C.**, Lucardi, R. and Ervin, G. N. 2021. Multivariate analysis of invasive plant species distributions in southern US forests. *Landscape Ecology* 36: 3539–3555
- Ramirez-Reyes, C.**, Brauman, K. A., Chaplin-Kramer, R., Galford, G. L. et al. 2019. Reimagining the potential of Earth observations for ecosystem service assessments. *Science of the Total Environment* 665: 1053-1063
- Ramirez-Reyes, C.**, Sims, K., Potapov, P. and Radeloff, V.C. 2018. Payments for ecosystem services in Mexico reduce forest fragmentation. *Ecological Applications* 28(8): 1982-1997
- Ramirez-Reyes, C.**, Bateman, B. L. and Radeloff, V. C. 2016. Effects of habitat suitability and minimum patch size thresholds on the assessment of landscape connectivity for Jaguars in the Sierra Gorda, Mexico. *Biological Conservation* 204 (B) 296–305
- Sims, K., Alix-Garcia, J., Shapiro-Garza, E., Fine, L., Radeloff, V. C., Aronson, G., Castillo, S., **Ramirez-Reyes, C.** and Yañez-Pagans, P. 2014. Improving environmental and social targeting through adaptive management in Mexico's payments for hydrological services program. *Conservation Biology* 28 (5) 1151-1159

### *Manuscripts in review*

- Boudreau, M., Adjaye, D., Dentinger, J., Dolan, L., Ripa, G., **Ramirez-Reyes, C.**, Sklarczyk, C., Thornton, B., Todaro, H. and Davis, B. Coming up short? Do mallard winter home ranges contain enough duck energy days?
- Halpern, B. and 116 authors including **Ramirez-Reyes, C.** Priorities for synthesis in ecology and environmental science. Accepted in *Ecosphere*.

## *Technical reports*

- Alix-Garcia, J., Aronson, G., Radeloff, V. C., **Ramirez-Reyes, C.**, Shapiro, E., Sims, E. and Yanez-Pagans, P. 2014. Evaluation of CONAFOR's payment for hydrological services program. Technical report
- Ramirez-Reyes, C.**, Brauman, K. A., Chaplin-Kramer, R. and Galford, G. L. 2019. Potential of Earth observations for ecosystem service assessments. White paper for NASA's Ecological Forecasting Program Element
- Ramirez-Reyes, C.**, Jones-Farrand, D. T., Street, G., Vilella, F. and Evans, K. O. 2020. Four separate technical reports summarizing species distribution modeling results for the U.S. Fish & Wildlife Service

## **Conference presentations**

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- 2021 **Ramirez-Reyes, C.**, Jones-Farrand, D. T., Street, G., Vilella, F. and Evans, K. Lessons learned on using ensemble species distribution models in Species Status Assessments. North American Regional Association of the International Association for Landscape Ecology meeting. April 12. Reno, Nevada, USA
- 2020 **Ramirez-Reyes, C.**, Jones-Farrand, D. T., Street, G., Vilella, F. and Evans, K. Monitoring at-risk species in the Southeastern U.S. can be improved with an ensemble habitat modeling approach. Southeastern Partners in Plant Conservation. Mar 4. Atlanta, Georgia, USA
- 2019 a) **Ramirez-Reyes, C.**, Nazeri, M., Jones-Farrand, D. T., Street, G., Vilella, F. and Evans, K. An ensemble modeling framework to better predict distribution of at-risk species in the southeastern U.S. Ecological Society of America. Aug 11. Louisville, Kentucky, USA  
b) **Ramirez-Reyes, C.**, Sims, K., Potapov, P., and Radeloff, V.C. Forest fragmentation and payment for ecosystem services in Mexico. 4th Open Science Meeting of the Global Land Programme. Apr 24-26. Bern, Switzerland  
c) **Ramirez-Reyes, C.**, Nazeri, M., Jones-Farrand, T., Street, G. M., Evans, K. An ensemble modeling framework to better predict distribution of at-risk species in the southeastern U.S. The Wildlife Society and American Fisheries Society 2019 Annual Conference, The Wildlife Society and American Fisheries Society, September 29, 2019, Reno, Nevada.
- 2018 **Ramirez-Reyes, C.**, Chaplin-Kramer, R., Galford, G., and Brauman, K. Earth Observations for Ecosystem Services: A series of workshops. NASA Biodiversity and Ecological Forecast Team Meeting. Apr 24-26. Washington, DC, USA
- 2017 Kramer, A., Mockrin, M. H., Butsic, V., Alexandre, P., **Ramirez-Reyes, C.**, and Radeloff, V. C. Rebuilding and new construction trends after California wildfires. The 7th AFE International Fire Congress. Dec 1, Orlando, Florida, USA
- 2016 **Ramirez-Reyes, C.** and Radeloff, V. C. Use of Spectral Mixture Analysis in STARFM fusion images to assess deforestation in diverse forest types in Mexico. Society for Conservation Biology meeting. Jul 18-20, Madison, Wisconsin, USA (Poster)
- 2014 **Ramirez-Reyes, C.** and Radeloff, V. C. Potential habitat mapping for Jaguars in the Sierra Gorda Biosphere Reserve in central Mexico: Priority conservation sites for habitat connectivity. Society for Conservation Biology meeting. Jul 13-16, Missoula, Montana, USA (Poster)
- 2013 **Ramirez-Reyes, C.**, Aronson, G., Radeloff, V. C. and E. J. Duerr. Deforestation detection in Mexico using remote sensing. NASA Land-Use/ Land-Cover Change

## **Invited presentations**

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- 2022 Impact of payments for ecosystem services and coffee markets on forest fragmentation in Mexico. Feb 9. Geography Colloquium University of Nevada, Reno
- 2021 Targeting surveys for at-risk species through species distribution models. Jul 22. Webinar for The Natural Areas Association
- 2020 a) Preventing deforestation: Coffee and lessons from Mexico's payment for ecosystem services program. Environmental Engineering program International Seminar Series. Jul 21. Universidad Peruana Cayetano Heredia, Lima, Peru.  
b) Species Distribution Modeling. Guest lecture for the WFA 4633/6633 Problem Solving in Conservation Biology. Feb 28, Mississippi State University
- 2019 a) Coffee, jaguars, and payments for ecosystem services in Mexico. Departmental Seminar of the Department of Wildlife, Fisheries and Aquaculture. Jan 24, Mississippi State University  
b) Protected areas beyond limits: PAs are not zoological gardens. International project seminar for alumni network of ecology, sustainability, and conservation. May 6, Greifswald, Germany  
c) Forest fragmentation in Mexico and payment for ecosystem services. Guest lecture for WFA 3133 Applied Ecology. Nov 7, Mississippi State University  
d) Modeling habitat for species distribution and payments for ecosystem services. Wildlife Conservation Society "*Miércoles de Conocimiento*" webinar series. Nov 20, Quito, Ecuador
- 2017 a) Forest fragmentation: Methods for deforestation detection and impact of forest protection incentives. Jul 13, Ecology 460. UW-Madison  
b) Patterns of forest fragmentation in Nepal and their relationship to Chitwan National Park. German environmental study programs, alumni meeting. Oct 8, Kathmandu, Nepal
- 2013 Monitoring deforestation to evaluate Mexico's payments for ecosystem services. German environmental study programs, alumni meeting. Oct 11, Greifswald, Germany
- 2012 Measuring forest changes in Mexico using remote sensing. CONAFOR and UW-Madison Partnership Meeting. Nov7, Guadalajara, Mexico
- 2011 Long term monitoring of deforestation. CONANP & UW-Madison Partnership meeting. June 4, Jalpan de Serra, Queretaro, Mexico
- 2008 Observing vegetation using satellite images. La ciencia desde el museo series. Aug 10, UNAM, Museum of Sciences, Mexico City, Mexico
- 2006 Soil removal and its consequences in Mexico City's protected areas. Natural Resources course winning projects series. May 23, UNAM, Faculty of Sciences, Mexico City, Mexico

## **Mentoring & teaching**

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- 2019-2021 Mentored one undergraduate and three graduate students at Mississippi State University
- 2017 a) Co-instructor in the use of InVEST tools at "El Valor de la Naturaleza" regional symposium. Nov 28-Dec1, Quito, Ecuador  
b) Introduction to InVEST habitat quality model at SETAC annual meeting. Nov 12
- 2016 Laboratory teaching assistant for Intro to Biology Spring & Fall terms, UW-Madison
- 2015 Laboratory teaching assistant for Intro to Biology Fall term, UW-Madison
- 2013 Trainer for four undergraduate student assistants in digital image analysis projects, Jan-May, UW-Madison
- 2012 Co-instructor in a Landsat imagery processing workshop, Nov 7-9, Conafor, Guadalajara
- 2012 Teaching assistant at Forestry Summer Camp, July 13-15, UW-Madison

- 2008 Biology teacher for prospective university students, Jan-May, Comité Estudiantil Mexico
- 2006-2008 UNAM Museum of Sciences. Performed demonstrations about biodiversity, conservation, and astronomy topics to general audiences

### **Grants, awards & fellowships**

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- 2020 US Fish and Wildlife Service; Research grant \$50,000 (Co-PI)
- 2019 University of Greifswald (Germany); Travel grant \$1,000  
Mississippi State University; Undergraduate Research Scholars Program (Co-PI, mentored student) \$3,000
- 2017 University of Greifswald (Germany); Travel grant \$1,000
- 2012-2015 NASA; Earth and Space Science Fellowship \$90,000
- 2014 UW-Madison; FWE department travel grant \$400
- 2013 University of Greifswald (Germany); Travel grant \$1,000
- 2008-2010 European Commission; Erasmus Mundus Fellowship €42,000
- 2006-2008 UNAM (Mexico); Science Communication Fellowship \$3,600

### **Technical skills**

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Excellent Command of Microsoft Office tools, ArcGIS, R, ENVI, Erdas Imagine, Maxent, MSPA, Conefor Sensinode, Fragstats. Working knowledge of Python, Linux, InVEST and Google Earth Engine

### **Additional professional development & training**

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- Data and software carpentry workshops, NEON data skills, NatCap introduction to ecosystem services, ESRI cartography
- Write winning grant proposals, COMPASS science communication workshop, Structured decision making,
- Diversity & inclusion in the classroom, Overcoming implicit bias, Improv for scientists, Preparing future faculty certificate, Oral and presentation skills for science communication

### **Languages**

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Spanish: Native; English: C2 (Fluent both written and spoken); French: B2 (Intermediate); Italian A2 (Upper Beginner)

### **Professional memberships**

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- SNI Mexico's National Researchers System (Entry level)
- Global Land Programme
- Society for Conservation Biology
- NSF IGERT Program in Novel Ecosystems
- Latin American Society for Remote Sensing and Spatial Information Systems
- Alumni Network for Environment, Sustainability and Conservation (Germany)

Reviewer for *Land Use Policy*, *Environmental Development*, *Ecology and Evolution*, *Ecology and Society*, *Biological Conservation*, *Ecological Informatics*, *Regional Environmental Change*, *PeerJ*, *Madera y Bosques*, *Remote Sensing*, *NASA EPSCoR*, *International Journal of Environmental Research and Public Health*