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Education

1997 Ph.D. in Population Biology, *University of California, Davis*
1991 M.S. in Biology, *University of California, San Diego*
1990 B.A. in Ecology, Behavior and Evolution, *University of California, San Diego*

Career Employment

2015-Present *Research Scientist, Institute for Bird Populations*: Hierarchical modeling of point count data on bird species in western national parks
2008-Present *Research Associate, Institute for Arctic and Alpine Research, University of Colorado, Boulder*: Ecology of sub-surface habitat specialists
2014 *Research Associate, Museum Collections, University of Colorado, Boulder*: User interface development and research applications for several data archives
2008-2013 *Research Associate, Ecology and Evolutionary Biology, University of Colorado, Boulder*: Modeling the metacommunity dynamics of vernal pool plants
2008 *Instructor, Ecology and Evolutionary Biology, University of Colorado, Boulder*: Graduate seminar in population biology—modeling and data analysis
2002-2007 *Research Associate, Ecology and Evolutionary Biology, University of Colorado, Boulder*: Modeling the dynamics of plague in prairie dogs and alternate hosts
2001-2005 *Independent contractor, US Fish & Wildlife Service*: Black-footed ferret endangered species recovery plan revision
1998-2003 *Research Associate, University of Nevada, Reno*: Developing predictive models of population dynamics and population genetics for species at risk

Selected publications

Ray, C., J. F. Saracco, A. L. Holmgren, R. L. Wilkerson, R. B. Siegel, K. J. Jenkins, J. I. Ransom, P. J. Happe, J. R. Boetsch and M. H. Huff. 2017. Recent stability of resident and migratory landbird populations in National Parks of the Pacific Northwest. *Ecosphere* 8(7).
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- Ray, C.**, E. A. Beever and T. J. Rodhouse. 2016. Distribution of a climate-sensitive species at an interior range margin. *Ecosphere* 7(6):e01379. <http://dx.doi.org/10.1002/ecs2.1379>
- Castillo, J. A., C. W. Epps, M. R. Jeffress, **C. Ray**, T. J. Rodhouse and D. Schwalm. 2016. Replicated landscape genetic and network analyses reveal wide variation in functional connectivity for American pikas. *Ecological Applications* 26:1660-1676. <http://dx.doi.org/10.1890/15-1452.1>
- Schwalm, D., C. W. Epps, T. J. Rodhouse, W. B. Monahan, J. A. Castillo, **C. Ray** and M. R. Jeffress. 2016. Habitat availability and gene flow influence diverging local population trajectories under scenarios of climate change: a place-based approach. *Global Change Biology* 22(4):1572–1584. <http://dx.doi.org/10.1111/gcb.13189>
- Bhattacharyya, S., and **C. Ray**. 2015. Of plants and pikas: evidence for a climate-mediated decline in forage and cache quality. *Plant Ecology & Diversity* 8(5-6):781–794. <http://dx.doi.org/10.1080/17550874.2015.1121520>
- Wilkening, J., **C. Ray** and J. Varner. 2015. Relating sub-surface ice features to physiological stress in a climate sensitive mammal, the American pika (*Ochotona princeps*). *PLoS ONE* 10(3):e0119327. <http://dx.doi.org/10.1371/journal.pone.0119327>
- Ray, C.** and S. K. Collinge. 2014. Quantifying the dominance of local control and the sources of regional control in the assembly of a metacommunity. *Ecology* 95:2096–2108. <http://dx.doi.org/10.1890/13-0628.1>
- Erb, L. P., **C. Ray** and R. Guralnick. 2014. Determinants of pika population density versus occupancy in the Southern Rocky Mountains. *Ecological Applications* 24:429–435. <http://dx.doi.org/10.1890/13-1072.1>
- Collinge, S. K., **C. Ray** and J. Martee. 2013. A long-term comparison of hydrology and plant community composition in constructed versus naturally occurring vernal pools. *Restoration Ecology* 21:704–712. <http://dx.doi.org/10.1111/rec.12009>
- Wilkening, J. L., **C. Ray** and K. L. Sweazea. 2013. Stress hormone concentration in Rocky Mountain populations of the American pika (*Ochotona princeps*). *Conservation physiology* 1:cot027 (13 pp.). <http://dx.doi.org/10.1093/conphys/cot027>.
- Jeffress, M. R., T. J. Rodhouse, **C. Ray**, S. Wolff and C. W. Epps. 2013. The idiosyncrasies of place: geographic variation in the climate-distribution relationships of the American pika. *Ecological Applications* 23:864–878. <http://dx.doi.org/10.1890/12-0979.1>
- Cuddington, K., M.-J. Fortin, L. R. Gerber, A. Hastings, A. Liebhold, M. O'Connor and **C. Ray** 2013. Process-based models are required to manage ecological systems in a changing world. *Ecosphere* 4:art20. <http://dx.doi.org/10.1890/ES12-00178.1>
- Ray, C.**, E. Beever and S. Loarie. 2012. Retreat of the American pika: up the mountain or into the void? Pages 245-270 in Brodie, J. F., E. Post and D. F. Doak (eds.) *Wildlife conservation in a changing climate*. University of Chicago Press. 416 pp.
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- Guralnick, R., L. P. Erb and **C. Ray**. 2011. Mammalian distributional response to climatic change: a review and research prospectus. Pages 85-106 in E. A. Beever and J. Belant (eds.) *Ecological consequences of climate change: mechanisms, conservation, and management*. CRC Press (Taylor and Francis Group). 302 pp.

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- Erb, L. P., **C. Ray** and R. Guralnick. 2011. On the generality of a climate-mediated shift in the range of the American pika (*Ochotona princeps*). *Ecology* 92: 1730–1735.
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