

CHRIS RAY, Ph.D.

Research Scientist
Institute for Bird Populations, Point Reyes, CA 94956-1346
(303) 489-8863, cray@birdpop.org
and

Research Associate
Institute for Arctic and Alpine Research, University of Colorado, Boulder, CO 80309-0450
(303) 489-8863, cray@colorado.edu

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.**, J. Saracco, K. Jenkins, M. Huff, P. Happe, and J. Ransom. 2017. Development of a robust analytical framework for assessing landbird population trends, dynamics and relationships with environmental covariates in the North Coast and Cascades Network. Natural Resource Report NPS/NCCN/NRR—2017/1483. National Park Service, Fort Collins, Colorado.

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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.
- Sackett, L. C., T. B. Cross, R. T. Jones, W. Johnson, K. Ballare, **C. Ray**, S. Collinge and A. P. Martin. 2012. Connectivity of prairie dog colonies in an altered landscape: inferences from analysis of microsatellite DNA variation. *Conservation Genetics* 13: 407–418. <http://dx.doi.org/10.1007/s10592-011-0293-yL>.
- 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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