

To my parents, Guy and Linda Murdock,
for giving me strength of character, a flexible mind, and the desire to realize my story
and to live life fully.

And, to my “academic parents,” Bobbi Low and Carl Simon,
for being my guides through this chapter of my life.

Acknowledgements

I first want to thank my entire committee. I would not have been able to complete this dissertation without your support and advice, and I am truly grateful for the time you have invested in me during my seven years at the University of Michigan. I would also like to thank my boyfriend, Greg Jacobs; my family, Guy, Linda, and Bevin Murdock; my close friends, Dana Jackman, Ted Lawrence, Christine Kirchoff, Derek Robinson, Dr. Phil Myers, Dr. Paul and Carol Webb; and my dog, Hunter for emotional support and balance throughout this entire journey. I want to thank my coauthors: Dr. Mark Wilson (Chapter two), Dr. Peter Adler (Chapter two), Dr. Susan Perkins (Chapter three), Dr. Carl Simon (Chapter four), and Dr. Matthew Dietz, Dr. Bobbi Low, Dr. Michael Romero, and Dr. Johannes Foufopoulos (Chapter five). I would like to thank Doug Bell, Dara Cantor, Stephanie Cox, Stephanie Gervasi, Sarah Gilman, Carl Harris, Stanley Kovak, Andrea Kraljevic, Aaron Niman, Huiling Niu, Josh Scullen, Charles Zins, Nate Schafrick, Morgan Graham, Bryan Falk, and Dr. Kevin Olival for assistance in the field and lab. I would like to thank Dr. Chet Moore, Dr. Roxanne Connelly, Dr. George O'meara, Gregory Ross, and Dr. Ellis Greiner for assistance with mosquito, black fly, and parasite identification. I also would like to thank Dr. Bobbi Low, Dr. Emily Silverman, and Dr. Johannes Foufopoulos, as well as their associated lab members, for advice on experimental design and analysis. Finally, I would like to thank Kathy Welch for statistical support. Funding for this study comes from grants provided by the National Science Foundation, American Ornithologists' Union, Wilson Ornithological Society,

University of Michigan Rackham discretionary funds, Interdisciplinary Perspectives on Infectious Diseases Training Grant, and School of Natural Resources & Program in the Environment Alumni Incentive.

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Abstract

Much of global biodiversity is comprised of parasitic organisms. It is well recognized that the selective pressures imposed by parasites shape host defenses and life-history strategies. Many studies suggest that human changes to the environment facilitate pathogen emergence by disrupting established relationships among parasites, their hosts, and their environment, as is often the case in human-modified landscapes. However, the lack of baseline knowledge of long-term, established host-parasite interactions in wildlife systems challenges our ability to make sound predictions on how future changes to the global environment will affect the health of human, domestic animal, and wildlife populations, as well as global biodiversity. Here we present data from multiple studies on the ecology of avian hemosporidian parasites in a common passerine population, the Mountain White-crowned Sparrow (*Zonotrichia leucophrys oriantha*) breeding in a temperate alpine system. The first study (see Chapter two) is a broad sampling study that describes the avian host, potential biting dipteran vector, and blood parasite communities on our field sites. The second study (Chapter three) is a molecular study describing the *Leucocytozoon* community amplified from ornithophilic black fly species. This study (Chapter four) explores the avian host, dipteran vector, and environmental factors important for transmission of *Leucocytozoon fringillinarum*, the most prevalent parasite in the White-crowned Sparrow population. Finally, the fourth study (Chapter five) examines the effects hemosporidian parasites have on the White-crowned Sparrow population. We determine *Leucocytozoon* spp. were the most prevalent hemosporidian in

the avian community, and that the black fly species *Simulium silvestre* / *S. craigi* had the potential to be a vector for a wide diversity of *Leucocytozoon* spp. in this system. We also established that relapsing infectious adults and young of the year birds are essential for seasonal persistence of *Leucocytozoon* spp. at these sites. Finally, infection with hemosporidians negatively affected bird populations by increasing stress levels and decreasing energy available to allocate towards other energetically expensive activities, such as reproduction.