Assistant Professor.

Ecological Immunology, Physiological Ecology, Behavioral Ecology, Avian Biology

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Lab Website

Specific Interests

My research incorporates concepts and approaches from physiology, behavioral ecology and evolutionary biology. I use this integrative approach to understand both the proximate mechanisms and the evolutionary consequences of life history trade-offs. Studies in the lab involve the integration of field and laboratory work to explore how ecological and physiological parameters act and interact to influence parent and offspring phenotypes.

Research in the lab currently centers around two main questions: (1) how does exposure to stress during development affect adult physiology and behavior? and (2) how is individual variation in hormone production translated into behavioral consistency? To address the first question, we work with a captive population of zebra finches and experimentally manipulate stress exposure either prior to egg production or after offspring hatch. Stressors utilized for these experiments include: immune challenges, fasting, corticosterone, and environmental contaminants. In offspring, we assess effects of early life stress on a suite of physiological and behavioral traits including: immune responses, stress response sensitivity, personality, learning and memory. To address the second question, we work with a wild population of Eastern bluebirds and experimentally manipulate the release of the steroid hormone, testosterone. We then relate the ability to produce testosterone to the consistent expression of behavior in parental and aggressive contexts.

For more information about our research, please consult the lab website.

Selected Publications

- J.L. Burtka and J.L. Grindstaff. In press. Repeatability of nest defense behavior in a wild population of Eastern bluebirds (Sialia sialis) as evidence of personality. Acta Ethologica.
- J.L. Grindstaff, M.B. Lovern, J.L. Burtka, A. Hallmark-Sharber. 2012. Structural coloration signals condition, parental investment, and circulating hormone levels in Eastern bluebirds

(Sialia sialis). Journal of Comparative Physiology A 198:625-637.

- J.L. Grindstaff, V.R. Hunsaker, S.N. Cox. 2012. Maternal and developmental immune challenges alter personality and learning ability of offspring. Hormones & Behavior 62:337-344.

- J.L. Grindstaff. 2010 Initial levels of maternally derived antibodies predict persistence time in offspring circulation. Journal of Ornithology 151:423-428.
- A.M. Forsman, L.A. Vogel, S.K. Sakaluk, J.L. Grindstaff, C.F. Thompson. 2008 Immune-challenged house wren broods differ in the relative strengths of their responses among different axes of the immune system. Journal of Evolutionary Biology 21:873-878.
- J.L. Grindstaff. 2008 Maternal antibodies reduce costs of an immune response during development. Journal of Experimental Biology 211:654-660.
- J.L. Grindstaff, D. Hasselquist, J-Å Nilsson, M. Sandell, H.G. Smith, M. Stjernman. 2006 Transgenerational priming of immunity: maternal exposure to a bacterial antigen enhances offspring humoral immunity. Proceedings of the Royal Society of London Series B 273:2551-2557.
- J.L. Grindstaff, G.E. Demas, E.D. Ketterson. 2005 Diet quality affects egg size and number but does not reduce maternal antibody transfer in Japanese quail (Coturnix japonica). Journal of Animal Ecology 74:1051-1058.
- J.L. Grindstaff, E.D. Brodie III, E.D. Ketterson. 2003 Immune function across generations: integrating mechanism and evolutionary process in maternal antibody transmission. Proceedings of the Royal Society of London Series B 270:2309-2320.