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Department of Ecology and Evolutionary Biology

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University of Arizona

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Current Position

Research Associate in the Center for Insect Science PERT Program, University of Arizona (2009-present)

Post-doctoral Mentors: Anna Dornhaus and Daniel Papaj

Education

- Ph.D. (2009) Ecology, Evolution, & Behavior; University of Minnesota– Twin Cities, Minnesota
Dissertation: *Change and reliability in the evolution of learning and memory*
Advisor: David W. Stephens
- M.S. (2002) Biology; Northern Arizona University, Flagstaff, Arizona
Thesis: *Social learning, neophobia, habituation, and seed specialization in wild, juvenile pinyon jays (Gymnorhinus cyanocephalus)*
Advisor: Russell P. Balda
- B.S., B.A. (2000) Biology, History, and English; The University of Memphis, Memphis, Tennessee
Senior Research: *Social biology of voles*
Advisors: Jerry O. Wolff & Stephen G. Mech
- Partial B.S. work 1996-1998
The University of Helsinki, Finland

Publications

1. **Dunlap, A.S.**, MacCormick, H., McLinn, C.M., Scott, M. and Kerr, B. *accepted*. Why some memories do not last a lifetime: optimal long-term recall in changing environments. *Behavioral Ecology*.
2. **Dunlap, A.S.** & Stephens, D.W. *in press*. Components of change in the evolution of learning and non-learning. *Proceedings of the Royal Society B*.
3. Stephens, D.W. & **Dunlap, A.S.** 2009. Why do animals make better choices in patch-leaving problems? *Behavioral Processes* 80:252-260.
4. Stephens, D.W. and **Dunlap, A.S.** 2008. Foraging. In: *Learning and Memory: A Comprehensive Reference*. Byrne, J. Menzel, R. et al (Eds.), Oxford: Elsevier Ltd. pp 365-383.
5. Henly, S., Ostdiek, A., Blackwell, E., Knutie, S., **Dunlap, A.S.**, and Stephens, D.W. 2008. The discounting-by-interruptions hypothesis: model and experiment. *Behavioral Ecology* 19:154-162.

6. **Dunlap, A.S.**, Chen, B., Bednekoff, P., Greene, T., and Balda, R.P. 2006. A state dependent sex difference in spatial memory in pinyon jays (*Gymnorhinus cyanocephalus*): mated females forget as predicted by natural history. *Animal Behaviour* 72: 401-411.
7. Mech, S.G., **Dunlap, A.S.**, and Wolff, J.O. 2003. Female prairie voles do not choose males based on their frequency of scent marking. *Behavioral Processes*. 61: 101-108.
8. Wolff, J.O., Mech, S.G., **Dunlap, A.S.**, and Hodges, K.E. 2002. Multi-male mating by paired and unpaired female prairie voles (*Microtus ochrogaster*). *Behaviour* 139: 1147-1160.
9. Wolff, J.O. and **Dunlap, A.S.** 2002. Multiple male mating, probability of conception, and litter size in the prairie vole (*Microtus ochrogaster*). *Behavioral Processes*. 58: 105-110.
10. Wolff, J.O., **Dunlap, A.S.**, and Ritchart, E. 2001. Female prairie voles and meadow voles do not suppress reproduction in their daughters. *Behavioral Processes*. 55: 157-162.

Manuscripts in Revision or Review

1. **Dunlap, A.S.** & Balda, R.P. *in revision*. Social learning, neophobia, and patch habituation: correlates of foraging flexibility in juvenile, wild pinyon jays.

Selected Fellowships and Awards

2009	NIH-funded Postdoctoral Excellent in Research and Teaching (PERT), Center for Insect Science, University of Arizona
2009	Animal Behavior Society Conference Travel Award (\$1,000)
2008-09	Doctoral Dissertation Fellowship, University of Minnesota Graduate School (\$22,000)
2008	Mini-Grant for Conference Travel, Center for Cognitive Sciences (\$767)
2008	Conference Travel Award, Ecology, Evolution & Behavior Department (\$200)
2005	Frank McKinney Fellowship in Animal Behavior, University of Minnesota (\$1,500)
2004-07	Pre-doctoral traineeship, Center for Cognitive Sciences, University of Minnesota (\$92,904)
2004	Florence Rothman Award, University of Minnesota (\$1,000)
2004-06	Ecology, Evolution, & Behavior Departmental Summer Fellowships (\$3,200)
2000	Best Student Paper, Organismal Biology and Social Science Division, Tennessee Academy of Science Western Collegiate Division Student Meeting
2000	Best Undergraduate Biology Oral Presentation, The University of Memphis 12 th Annual Student Research Forum
2000	Biology Faculty Award, Department of Biology, The University of Memphis (\$150)
1999-00	Undergraduate Teaching Scholarship, Department of Biology, The University of Memphis (\$2,500)
1999	Best Student Paper, Zoology Section, Tennessee Academy of Science Annual Meeting
1996-1997	Study Abroad Scholarship, The University of Memphis (\$2,000)
1993-1997	Cecil C. Humphreys Presidential Scholarship, The University of Memphis (Four-year full academic scholarship)

Selected Research and Professional Experience

Dissertation Research, University of Minnesota (2005-2009)

Evolution of cognitive strategies in variable environments using multi-generational experiments with *Drosophila* and modeling.

Dissertation Research, University of Minnesota (2004-2008)

Adaptive forgetting and the role of memory length in variable environments. Modeling and experiments with blue jays in operant settings.

Research Assistant, University of Minnesota (2003-2009)

Data management and analysis of experiments on impulsivity, cooperation, and signaling, writing computer programs and protocols, mentoring undergraduates, training blue jays for experiments, and building experimental apparatuses.

Senior Scientist, Elan Pharmaceuticals, San Diego CA (2002-2003)

Read and cataloged medical literature pertaining to adverse events, neurological conditions, and drugs in the pipeline. Developed departmental training materials, intranet site, and software testing and validation to federal requirements.

Thesis Research, Northern Arizona University (2000-2002)

Conducted experiments on patch exploration, neophobia, and social learning in juvenile pinyon jays and investigated the role of ontogeny in foraging specialization in the pinyon jay.

Research Assistant, Northern Arizona University (2000-2002)

Conducted laboratory experiments on social and spatial cognition in pinyon jays and Clark's nutcrackers. Field work banding and resighting pinyon jays.

Undergraduate Research Assistant, The University of Memphis (1999-2000)

Maintained and bred a colony of prairie voles, designed and conducted experiments on the social biology of the prairie vole, conducted some field trapping, and managed and analyzed data. Funded by an NSF-REU Fellowship.

Invited and Guest Lectures

St. Cloud State University, St. Cloud, MN. Seminar (October 2007)

University of Minnesota, MN. Guest lecturer in *Evolution of Cognition* (October 2006)

St. John's University, Collegeville, MN. Seminar (March 2006)

University of Minnesota, MN. Seminar (September 2005)

University of Minnesota, MN. Guest lecturer in *Introduction to Animal Behavior* (April 2004)

University of Minnesota, MN. Guest lecturer in *Introduction to Animal Behavior* (February 2004)

University of Minnesota, MN. Seminar (November 2004)

Northern Arizona University, AZ. Guest lecturer in *Introduction to Animal Behavior* (October 2001)

Teaching & Related Experience

Research Assistant, University of Minnesota (2006-2008)

Developed curriculum including seminars and lab exercises to incorporate more math and statistics into undergraduate biology education. Funded by an HHMI Professorship to Claudia Neuhauser.

Preparing Future Faculty Coursework and Workshops, University of Minnesota (2004-2007)

Participated in coursework on higher education pedagogy including designing courses and developing course syllabi, incorporating active learning and group activities into large classes, developing a teaching and grading philosophy. Participated in additional workshops on topics such as developing exercises in the sciences with writing, effective classroom management, and giving feedback on assigned writing.

Teaching Assistant, University of Minnesota (2004)

Introduction to Animal Behavior. Taught lab sections and guided students through individual research projects.

Science Instructor, Four Corners Math and Science Program, Northern Arizona University (2002)

Developed and taught courses for high school students on the basics of scientific inquiry, critical reading and review, and preparatory work for the ACT science section. A large portion of the students were underrepresented minorities in science (Native American and Hispanic).

Teaching Assistant, University of Memphis (1999-2000)

General Biology laboratory for non-majors. Tasks included lab set-up, organizing course review sessions, and writing and grading all quizzes and exams.

Writing Tutor, Educational Support Program, University of Memphis (1999)

Worked in the English Learning Center to help students develop their writing skills. Taught summer sections on introductory computing and word processing to inner city high school students. Tutored elementary school students in reading.

Science Tutor, Educational Support Program, (1993-1996, 1998-2000)

Worked in the Science Learning Center tutoring students for biology, chemistry, and physics courses. Became a university-certified tutor and worked with students with learning disabilities.

Advising and Mentoring

Directed Research Mentor in *Drosophila* behavior for Tyler Blazey (2008-09), Jason Lund (2008-09), Andrea Molina (2008-09) Marina Pillai (2008), Mark Peterson (2007-08), Kevin Poss (2008), Meghan Whelihan (2007), Jenny Miller (2006), Chris Souther (2006), Karen Koch (2005), & Jonathan Herseth (2005).

Research Experiences for Undergraduates Lab Mentor in Impulsive Choice with Blue Jays for Sarah Knutie, Sam Henly, Alison Ostdiek, & Erika Blackwell (all 2004-2005); Heather Oehler, Jackie Wentworth, Brooke Gilbert, & Rebekah Wilson (all 2005-2006); Peter Gailans, Tamer Shaker, Jesse Kovash, & Laura Cremin (all 2006-2007).

Selected Abstracts & Presentations

1. **Dunlap, A.S.** & Stephens, D.W. "Experimental evolution of learning and non-learning." International Behavioral Ecology Congress, Ithaca, New York. Oral Presentation. (9-15 August 2008).
2. **Dunlap, A.S.** & Stephens, D.W. "Change and reliability matter: experimental evolution of learning and nonlearning." Evolution 2008 (Annual Meeting of American Society of Naturalists, Society for the Study of Evolution, and Society of Systemic Biologists), Minneapolis, Minnesota. Oral Presentation. (20-24 June 2008).

3. **Dunlap, A.S.** & Stephens, D.W. "Sampling and tracking in a variable environment: memory and decision making after long intervals." Annual Meeting of the Animal Behavior Society, Burlington, Vermont. Oral presentation. (21-25 July 2007)
4. **Dunlap, A.S.**, Henly, S. Ostdiek, A., Blackwell, E., Knutie, S. and Stephens, D.W. "Impulsivity, discounting and interruptions: an experimental test of discounting by interruptions." Annual Meeting of the Animal Behavior Society, Snowbird, Utah. Oral presentation. (12-16 August 2006)
5. **Dunlap, A.S.**, McLinn, C.M., MacCormick, H., Scott, M. and Kerr, B. "Why some memories do not last a lifetime: optimal long-term recall in changing environments." Annual Meeting of the Animal Behavior Society, Snowbird, Utah. Oral Presentation. (6-10 August 2005)
6. **Dunlap, A.S.** and Balda, R.P. "Social learning, neophobia, and patch habituation in juvenile, wild pinyon jays." International Society for Behavioral Ecology, Jyväskylä, Finland. Poster. (10-15 July, 2004)
7. **Dunlap, A.S.**, Webb, L., Greene, T., Smith, M., and Balda, R.P. "Comparison of spatial memory in Pinyon Jay males and females using an analogue of the radial arm maze." Cooper Ornithological Society, Albuquerque, New Mexico. Oral Presentation. (April 2001)
8. **Dunlap, A.S.**, Wolff, J.O., and Hodges, K.E. "The effects of multiple mating, litter size and pregnancy rate in the prairie vole." 37th Annual Meeting of the Animal Behavior Society, Atlanta, Georgia. Oral Presentation. (5-9 August 2001)
9. **Dunlap-Lehtilä, A.S.** and Wolff, J.O. "Are prairie voles as monogamous as we think they are?" 80th Annual Meeting of the American Society of Mammalogists, Durham, New Hampshire. Oral Presentation. (17-21 June 2000)
10. **Dunlap-Lehtilä, A.S.** "Scent-marking, dominance, and reproductive success in prairie voles." 14th National Conference on Undergraduate Research, Missoula, Montana. Oral Presentation. (27-29 April 2000)
11. **Dunlap, A.S.** "Multi-male mating in the female prairie vole, *Microtus ochrogaster*: testing of alternative hypotheses." Association of Southeastern Biologists, Chattanooga, Tennessee. Oral Presentation. (March 2000)
12. **Dunlap, A.S.** "The social and reproductive biology of the prairie vole: testing of alternative hypotheses." Tennessee Academy of Science State Meeting, Memphis, Tennessee. Oral Presentation. (November 1999)

Professional Memberships and Affiliations

American Association for the Advancement of Science
Animal Behavior Society
Center for Cognitive Sciences, University of Minnesota
Comparative Cognition Society
International Society for Behavioral Ecology
Sigma Xi

Professional Service

2008-2009	Faculty Search Committee, Ecology, Evolution, & Behavior, University of Minnesota
2006-2008	Colloquium Committee, Center for Cognitive Sciences, University of Minnesota
2006-2007	Student Representative to the Ecology, Evolution, & Behavior Faculty
2005-2006	Student Representative to the Center for Cognitive Sciences Executive Council

2004-2005 Co-President, Department of Ecology, Evolution & Behavior Graduate Students
2004-2006 Friday Noon Seminar Committee, Ecology, Evolution, & Behavior Department
2003-2004 Seminar Audiovisual Committee, Ecology, Evolution, & Behavior Department
1999-2000 President, University of Memphis Biological Society
1995-1996 President, College Bowl and Academic Team, The University of Memphis
1994, 1995 Director, University of Memphis High School Academic Tournament
1995-1996 Student Representative to the University of Memphis Fee Appeals Committee