
Dr. Kevin J. McGraw

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APPOINTMENTS

Assistant professor in Evolutionary and Systems Biology, Arizona State University, School of Life Sciences, Tempe, AZ (August 2004-present)
Post-doctoral associate, University of California, Davis, CA
Department of Animal Science, Jan.-Aug. 2004 (in collaboration with Dr. Kirk Klasing)
“Colorful pigments as natural immunostimulants in wild birds: an ecological perspective”

EDUCATION

Ph.D., Cornell University, Ithaca, NY
Department of Neurobiology and Behavior, 1999-2003
“The costs and benefits of sexual coloration in songbirds”
M.S., Auburn University, Auburn, AL
Department of Zoology and Wildlife Science, 1997-1999
“Information content of carotenoid-based plumage coloration in the house finch”
B.S., St. Lawrence University, Canton, NY
Department of Biology, 1993-1997
Salutatorian, Suma Cum Laude, with Honors
“Hummingbird-flower coevolution at a montane riparian site in Costa Rica”

TEACHING EXPERIENCE

Course instructor, Arizona State University, AZ
Bird coloration (Spring and Fall 2006)
2 hr/week seminar (discussion of co-edited two-volume text)
Current Topics in Behavioral Ecology (Spring 2005)
2.5 hr./week discussion-based seminar (syllabus available upon request)
Animal Behavior (Summer and Fall 2005-2007, Spring and Summer 2008)
Fall: Two 1.25-hr. lectures/week for 13-week course (syllabus available)
Summer: Five 1-hr. lectures per week for 4-week course
Vertebrate Zoology (Spring 2006, Fall 2006, Fall 2007)
Two 1.25-hr. lectures + a 3-hr. lab/week (syllabus available upon request)
Graduate Teaching Assistant, Cornell University, NY
Introductory Biology (Fall 2003)
Two weekly laboratory sections: 20 min. lecture and 3 hr. lab
Course Instructor, Cornell University, NY
Animal Behavior (Summer 2003)

- Five 1-hr. lectures per week for 6-week course
 One 1-hr. discussion section per week
 Guest Lecturer, Cornell University, NY
Methods in Animal Behavior (Fall 2002)
 1 hr. workshop: "Quantifying animal colors"
 Graduate Teaching Assistant, Cornell University, NY
Hormones and Behavior (Fall 2002)
 2 weekly group discussions: 10 min. lecture and 50 min. discussion
 1 hr. guest lecture: "Hormones and animal signals"
 *Chosen 'Outstanding Graduate TA' in the Dept. of Neurobiology & Behavior
 Graduate Teaching Assistant, Auburn University, AL
Introductory Biology (Fall and Winter 1997 and 1998)
 3 weekly laboratory sections: 15 min. lecture and 3 hr. lab (student rating: 9/10)
Environmental Biology (Fall and Winter 1997 and 1998)
 3 weekly discussion sections: 10 min lecture and 50 min. discussion (rating: 9/10)
 Undergraduate Teaching Assistant, St. Lawrence University, NY
General Biology (1995-1997)
 3 weekly laboratory sections: 10 min. introductory lecture and 3 hr. lab
Ecology (1996)
 2 weekly laboratory sections: 10 min. introductory lecture and 3 hr. lab

STUDENT AND POST-DOC RESEARCH MENTORING

GRADUATE STUDENTS

Degree-pursuing under my direction

- Matthew Toomey (Ph.D. student, 2005-present), "Control and function of retinal carotenoid accumulation in house finches", passed qualifying exams 8/2008.
Lisa Taylor (Ph.D. student, 2005-present), "Color signal evolution in male jumping spiders", earned prestigious NSF pre-doctoral fellowship to take qualifying exam 10/2008.
Melissa Meadows (Ph.D. student, 2005-present), "Iridescent color ornaments as honest signals of fighting ability in Anna's hummingbirds", earned prestigious NSF pre-doctoral fellowship, to take qualifying exam 10/2008.
Mike Butler (Ph.D. student, 2006-present), "Early-life nutritional and immunological control of ornamental carotenoid coloration in mallard ducks", to take qualifying exam in 3/2009.

Visiting, rotating, or non-thesis

- Carlos Navarro Puig (visiting Ph.D. student, 2007), "Circulating antioxidants in starlings", 3-month visiting student from CSIC, Spain (advisor: Dr. J. J. Soler).
Jared Underwood (rotation Ph.D. student, 2005-6), volunteer researcher studying "Carotenoid pigments in the plasma of wild white-winged crossbills".
Jack Cerchiara (non-thesis graduate student, 2006-7), volunteered as a researcher to study "A comparative evaluation of circulating antioxidants in avian species".
Heather Adams (non-thesis graduate student, 2005-6), volunteered as a researcher to study "Coloration as an aggressive signal in molting male house finches".

POST-DOCTORAL RESEARCHERS

- Dr. Paul Nolan (2004-5), "Antioxidants, neurodevelopment, and vocal performance in a songbird", currently assistant professor at The Citadel (2006-present).
Dr. William Medina (2005-6), "Coloration as an aggressive signal in molting male house finches",

currently assistant professor at The University of Wyoming (2006-present).

Dr. Trevor Rivers (2006-7), “Variation in the fluorescent pigments of penguins and parrots”, currently post-doctoral associate at Barrow Neurological Institute (2007-present)

Dr. Melissah Rowe (2008-present), “The molecular costs of being sexually attractive: a quantitative evaluation of carotenoid trade-offs between coloration and self-maintenance”, currently working on funded grant by National Science Foundation.

UNDERGRADUATE RESEARCHERS

2008-9: 1 SOLUR researcher (Izzy Tourville), 2 Barrett honor’s thesis students (Ana Bascunan and Izzy Tourville), 1 SCENE high school student (Vicki Peng), and 4 undergraduate researchers.

2007-8: 2 SOLUR apprentices (Izzy Tourville and Shana Quinn), 1 Barrett honor’s thesis student (Shana Quinn), 1 SCENE high school student (Vicki Peng), and 11 undergraduates.

2006-7: 1 Barrett honor’s thesis student (Kristen Lee) and 9 undergraduate researchers

2005-6: 2 SOLUR Researchers (Lauren Washington, Laura Beard) and 5 undergraduate researchers

2004-5: 2 SOLUR Apprentices (Lauren Washington, Laura Beard) and 4 undergraduate researchers

2004: 1 undergraduate at UC-Davis (Cedric Uytingco), “Carotenoids as colorants and immunostimulants in red junglefowl”.

2003: 1 undergraduate at Cornell University (Theodore Chalupa), “Color ornaments as predictors of male competitive ability in zebra finches”.

2002: 1 honor’s thesis student at Cornell University (Alexander Gregory), “Sexual and seasonal differences in circulating carotenoid levels and dietary intake in American goldfinches”.

2001: 1 honor’s thesis student at Cornell University (Emiko Mackillop), “Social dominance, nutritional condition, and cell-mediated immune response: their interactions and effects on the expression of the badge in the male house sparrow”.

PUBLICATIONS

EDITED BOOKS

2006

Hill, G. E. and **K. J. McGraw**. 2006. Bird Coloration. Volume I. Mechanisms and measurements. Harvard University Press: Cambridge, MA.

Hill, G. E. and **K. J. McGraw**. 2006. Bird Coloration. Volume II. Function and evolution. Harvard University Press: Cambridge, MA.

PEER-REVIEWED JOURNAL ARTICLES (UNDERLINED NAMES = MENTORED STUDENTS AND POST-DOCS IN MY LAB)

2008

McGraw, K. J., E. A. Tourville, and M. W. Butler. 2008. A quantitative comparison of the commonly used methods for extracting carotenoids from avian plasma. *Behav. Ecol. Sociobiol.* (in press).^c (<http://www.springerlink.com/content/t67747j727321808/>)

Cohen, A. A., **K. J. McGraw**, P. Wiersma, J. B. Williams, W. D. Robinson, T. R. Robinson, J. D. Brawn, and R. E. Ricklefs. 2008. Interspecific associations between circulating antioxidant levels and life history variation in birds. *Am. Nat.* 172: 178-193.^b

Piault, R., J. Gasparini, P. Bize, M. Paulet, **K. J. McGraw**, and A. Roulin. 2008. Experimental support for the makeup hypothesis in nestling tawny owls (*Strix aluco*). *Behav. Ecol.* 19:703-709.^b

Safran, R. J., J. Adelman, **K. J. McGraw**, and M. Hau. 2008. Sexual signal exaggeration affects physiological state in male barn swallows. *Current Biology* 18:R461-R462.^b

- Deviche, P., **K. J. McGraw**, and J. Underwood. 2008. Age-, sex- and season-specific accumulation of plasma carotenoid pigments in white-winged crossbills. *J. Avian Biol.* 39:283-292.^c
- Blount, J. D. and **K. J. McGraw**. 2008. Signal functions of carotenoid colouration. In: *Carotenoids. Volume 4: Natural Functions* (G. Britton, S. Liaaen-Jensen, and H. Pfander, eds.). Birkhauser, Switzerland.^c
- McGraw, K. J.** 2008. An update on the honesty of melanin-based color signals in birds. *Pigment Cell Melanoma Res.* 21:133-138.^c
- Schaefer, H. M., **K. J. McGraw**, and C. Catoni. 2008. Birds use fruit colour as an honest signal of dietary antioxidant rewards. *Funct. Ecol.* 22:303-310.^b
- Juola, F. A., **K. J. McGraw**, and D. C. Dearborn. 2008. Carotenoids and throat pouch coloration in the great frigatebird (*Fregata minor*). *Comp. Biochem. Physiol. B.* 149:370-377.^b
- Safran, R. J., Pilz, K. M., **McGraw, K. J.**, Correa, S. M., and Schwabl, H. 2008. Are yolk androgens and carotenoids in barn swallow eggs related to parental quality? *Behav. Ecol. Sociobiol.* 62:427-438.^b
- Jouventin, P., **K. J. McGraw**, M. Morel, and A. Celerier. 2008. Dietary carotenoid supplementation affects orange beak but not foot coloration in gentoo penguins. *Waterbirds* 30:573-578.^a

2007

- Clotfelter, E., Ardia, D., and **McGraw, K. J.** 2007. Red fish, blue fish: tradeoffs in pigmentation and immunity in *Betta splendens*. *Behav. Ecol.* 18:1139-1145.^b
- Toomey, M. B. and **K. J. McGraw**. 2007. Modified saponification and HPLC methods for analyzing carotenoids from the retina of Japanese quail (*Coturnix japonica*): implications for its use as a nonprimate model species. *Invest. Ophthalmol. Vis. Sci.* 48:3976-3982.^c
- Taylor, L. A. and **K. J. McGraw**. 2007. Animal coloration: sexy spider scales. *Curr. Biol.* 17:R592-R593.^c
- McGraw, K. J.**, M. B. Toomey, P. M. Nolan, N. I. Morehouse, M. Massaro, and P. Jouventin. 2007. A description of unique fluorescent yellow pigments in penguin feathers. *Pigment Cell Res.* 20:301-304.^c
- Bezzerides, A. L., **K. J. McGraw**, R. S. Parker, and J. Husseini. 2007. Elytra color as a signal of chemical defense in the Asian ladybird beetle (*Harmonia axyridis*). *Behav. Ecol. Sociobiol.* 61:1401-1408.^a
- McGraw, K. J.** and D. R. Ardia. 2007. Do carotenoids buffer testosterone-mediated immunosuppression?: an experimental test in a colorful songbird. *Biol. Letters* 3:375-378.^a
- Hofmann, C. M., **K. J. McGraw**, T. W. Cronin, and K. E. Omland. 2007. Melanin coloration in New World orioles I: carotenoid masking and pigment dichromatism in the orchard oriole complex. *J. Avian Biol.* 38:163-171.^b
- McGraw, K. J.**, W. Medina-Jerez, and H. Adams. 2007. Carotenoid-based plumage coloration and aggression during molt in male house finches. *Behaviour* 144:165-178.^c
- Steffen, J. and **K. J. McGraw**. 2007. Patterns of carotenoid and pterin pigmentation in the colorful dewlaps of two anole species. *Comp. Biochem. Physiol. B.* 146:42-46.^b
- McGraw, K. J.** 2007. Dietary mineral content influences melanin-based ornamental coloration. *Behav. Ecol.* 18:137-142.^a

2006

- Shawkey, M. D., G. E. Hill, **K. J. McGraw**, and W. R. Hood. 2006. An experimental test of the

contributions and condition-dependence of microstructure and carotenoids in yellow plumage coloration. *Proc. R. Soc. Lond. B.* 273:2985-2991.^b

- McGraw, K. J.** and K. C. Klasing. 2006. Carotenoids, immunity, and integumentary coloration in red junglefowl (*Gallus gallus*). *Auk* 123:1161-1171.^a
- McGraw, K. J.**, O. L. Crino, W. Medina-Jerez, and P. M. Nolan. 2006. Effect of dietary carotenoid supplementation on food intake and immune function in a songbird with no carotenoid coloration. *Ethology* 112:1209-1216.^c
- McGraw, K. J.** 2006. Carotenoids mediate a trade-off between egg quantity and quality in Japanese quail. *Ethol. Ecol. Evol.* 18:247-256.^a
- McGraw, K. J.** 2006. Sex-steroid dependence of carotenoid-based coloration in female zebra finches. *Physiol. Behav.* 88:347-352.^a
- McGraw, K. J.**, P. M. Nolan, O. L. Crino. 2006. Carotenoid accumulation strategies for becoming a colorful house finch: analyses of plasma and liver pigments in wild molting birds. *Funct. Ecol.* 20:678-688.^c
- McGraw, K. J.**, S. M. Correa, and E. Adkins-Regan. 2006. Testosterone upregulates lipoprotein status to control sexual attractiveness in a colorful songbird. *Behav. Ecol. Sociobiol.* 60:117-122.^a
- McGraw, K. J.** and R. S. Parker. 2006. A novel lipoprotein-mediated mechanism controlling sexual attractiveness in a colorful songbird. *Physiol. Behav.* 87:103-108.^a
- McGraw, K. J.** and L. Hardy. 2006. Astaxanthin is responsible for the pink plumage flush of Franklin's and Ring-billed gulls. *J. Field Ornithol.* 77:29-33.^a
- 2005
- Safran, R. J., C. R. Neuman, **K. J. McGraw**, and I. J. Lovette. 2005. Dynamic paternity allocation as a function of male plumage color in barn swallows. *Science* 309:2210-2212.^b
- McGraw, K. J.** 2005. Interspecific variation in dietary carotenoid assimilation in birds: links to phylogeny and color ornamentation. *Comp. Biochem. Physiol. B* 142:245-250.^c
- McGraw, K. J.**, R. J. Safran, and K. Wakamatsu. 2005. How feather colour reflects its melanin content. *Funct. Ecol.* 19:816-821.^c
- Deviche, P., **K. McGraw**, and E. Greiner. 2005. Interspecific differences in hematozoan infection in Sonoran Desert *Aimophila* sparrows. *J. Wild. Dis.* 41:532-541.^c
- McGraw, K. J.**, R. S. Parker, and E. Adkins-Regan. 2005. Maternally derived carotenoids affect offspring survival, sex ratio, and sexual attractiveness in a colorful songbird. *Naturwiss.* 92:375-380.^a
- McGraw, K. J.** and D. R. Ardia. 2005. Sex differences in carotenoid status and immune performance in zebra finches. *Evol. Ecol. Res.* 7:251-262.^a
- McGraw, K. J.**, J. Hudon, G. E. Hill, and R. S. Parker. 2005. A simple and inexpensive chemical test to determine the presence of carotenoid pigments in animal tissues. *Behav. Ecol. Sociobiol.* 57:391-397.^a
- McGraw, K. J.**, G. E. Hill, and R. S. Parker. 2005. The physiological costs of being colorful: nutritional control of carotenoid utilization in the American goldfinch (*Carduelis tristis*). *Anim. Behav.* 69:653-660.^a
- McGraw, K. J.** and M. C. Nogare. 2005. Distribution of unique red feather pigments in parrots. *Biology Letters* 1:38-43.^a
- McGraw, K. J.** 2005. The antioxidant function of many animal pigments: are there consistent health benefits of sexually selected colorants? *Anim. Behav.* 69:757-764. *TOP 10 MOST DOWNLOADED ARTICLE IN THE JOURNAL IN 2005*^a

2004

- McGraw, K. J.** 2004. Not all red, orange, and yellow animal colors are carotenoid-based: the

- need to couple biochemical and behavioral studies of color signals. *Proc. Ind. Natl. Sci. Acad. B* 70:475-481.^a
- McGraw, K. J.**, K. Wakamatsu, A. B. Clark, and K. Yasukawa. 2004. Red-winged blackbirds use carotenoid and melanin pigments to color their epaulets red and yellow. *J. Avian Biol.* 35: 543-550.^a
- McGraw, K. J.** 2004. Colorful songbirds metabolize carotenoids at the integument. *J. Avian Biol.* 35:471-476.^a
- McGraw, K. J.** and A. J. Gregory. 2004. Carotenoid pigments in male American goldfinches: what is the optimal biochemical strategy for becoming colorful? *Biol. J. Linn. Soc.* 83:273-280.
- McGraw, K. J.** and J. G. Schuetz. 2004. The evolution of carotenoid coloration in estrildid finches: a biochemical analysis. *Comp. Biochem. Physiol. B* 139:45-51.
- McGraw, K. J.** 2004. Winter plumage coloration in male American goldfinches: do reduced ornaments serve signaling functions in the non-breeding season? *Ethology* 110:707-715.
- McGraw, K. J.**, G. E. Hill, K. Navara, and R. S. Parker. 2004. Differential accumulation and pigmentation ability of dietary carotenoids in colorful finches. *Physiol. Biochem. Zool.* 77:484-491.
- Hörak, P., L. Saks, U. Karu, I. Ots, P. F. Surai, and **K. J. McGraw**. 2004. How coccidian parasites affect health and appearance of greenfinches. *J. Anim. Ecol.* 73:935-947.
- McGraw, K. J.**, R. J. Safran, M. R. Evans, and K. Wakamatsu. 2004. European barn swallows use melanin pigments to color their feathers brown. *Behav. Ecol.* 15:889-891.
- McGraw, K. J.** and G. E. Hill. 2004. Plumage color as a dynamic trait: carotenoid pigmentation of male house finches (*Carpodacus mexicanus*) fades during the breeding season. *Can. J. Zool.* 82:734-738.
- McGraw, K. J.** and M. C. Nogare. 2004. Carotenoid pigments and the selectivity of psittacofulvin-based coloration systems in parrots. *Comp. Biochem. Physiol. B* 138:229-233.
- McGraw, K. J.** and K. Wakamatsu. 2004. Melanin basis of ornamental feather colors in male zebra finches. *Condor* 106:686-690.
- Safran, R. J. and **K. J. McGraw**. 2004. Plumage coloration, not the length or symmetry of tail streamers, is a sexually selected trait in North American barn swallows. *Behav. Ecol.* 15:455-461.
- McGraw, K. J.**, K. Wakamatsu, S. Ito, P. M. Nolan, P. Jouventin, F. S. Dobson, R. E. Austic, R. Safran, L. Siefferman, G. Hill and R. Parker. 2004. You can't judge a pigment by its color: carotenoid and melanin content of yellow and brown feathers in swallows, bluebirds, penguins, and domestic chicks. *Condor* 106:390-395.
- Mays, Jr., H. L., **K. J. McGraw**, G. Ritchison, S. Cooper, V. Rush, and R. S. Parker. 2004. Sexual dichromatism in the Yellow-breasted Chat (*Icteria virens*): spectrophotometric analysis and biochemical basis. *J. Avian Biol.* 35:125-134.
- McGraw, K. J.** 2004. Multiple UV reflectance peaks in the iridescent neck feathers of pigeons. *Naturwiss.* 91:125-129.
- McGraw, K. J.** and G. E. Hill. 2004. Mate attentiveness, seasonal timing of breeding and long-term pair bonding in the house finch (*Carpodacus mexicanus*). *Behaviour* 141:1-13.
- McGraw, K. J.** and D. R. Ardia. 2004. Immunoregulatory activity of different dietary carotenoids in male zebra finches. *Chemoecol.* 14:25-29.
- Hill, G. E. and **K. J. McGraw**. 2004. Correlated changes in plumage coloration and female mate choice in cardueline finches. *Anim. Behav.* 67:27-35.
- 2003
- McGraw, K. J.** and D. R. Ardia. 2003. Carotenoids, immunocompetence, and the information content of sexual colors: an experimental test. *Am. Nat.* 162:704-712.
- Saks, L., **K. McGraw**, and P. Hörak. 2003. How feather colour reflects its carotenoid content.

Funct. Ecol. 17:555-561.

McGraw, K. J., M. D. Beebee, G. E. Hill, and R. S. Parker. 2003. Lutein-based plumage coloration in songbirds is a consequence of selective pigment incorporation into feathers. *Comp. Biochem. Physiol. B* 135:689-696.

McGraw, K. J., G. E. Hill, and R. S. Parker. 2003. Carotenoid pigments in a mutant cardinal: implications for the genetic and enzymatic control mechanisms of carotenoid metabolism in birds. *Condor* 105:587-592.

McGraw, K. J. 2003. Melanins, metals, and mate quality. *Oikos* 102:402-406.

McGraw, K. J., A. J. Gregory, R. S. Parker, and E. Adkins-Regan. 2003. Diet, plasma carotenoids, and sexual coloration in the zebra finch (*Taeniopygia guttata*). *Auk* 120:400-410.

Hill, G. E. and **K. J. McGraw**. 2003. Melanin, nutrition, and the lion's mane. *Science* 299:660.

McGraw, K. J., J. Dale, and E. A. Mackillop. 2003. Social environment during molt and the expression of melanin-based plumage pigmentation in male house sparrows (*Passer domesticus*). *Behav. Ecol. Sociobiol.* 53:116-122.

2002

McGraw, K. J., E. A. Mackillop, J. Dale, and M. E. Hauber. 2002. Different plumage colors reveal different information: how nutritional stress affects the expression of melanin- and structurally based ornamental coloration. *J. Exp. Biol.* 205:3747-3755.

McGraw, K. J., E. Adkins-Regan, and R. S. Parker. 2002. Anhydrolutein in the zebra finch: a new, metabolically derived carotenoid in birds. *Comp. Biochem. Physiol. B* 132:811-818.

McGraw, K. J. 2002. Environmental predictors of geographic variation in human mating preferences. *Ethology* 108:303-317. *MOST FREQUENTLY DOWNLOADED ARTICLE IN THIS JOURNAL FOR 2002*

McGraw, K. J., G. E. Hill, R. Stradi, and R. S. Parker. 2002. The effect of dietary carotenoid access on sexual dichromatism and plumage pigment composition in the American goldfinch. *Comp. Biochem. Physiol. B* 131:261-269.

Badyaev, A. V., M. L. Beck, A. A. Dervan, R. A. Duckworth, G. E. Hill, **K. J. McGraw**, P. M. Nolan, and L. A. Whittingham. 2002. Sex-biased hatching order and adaptive population divergence in a passerine bird. *Science* 295:316-318.

McGraw, K. J. and G. E. Hill. 2002. Testing reversed sexual dominance from an ontogenetic perspective: juvenile female House Finches *Carpodacus mexicanus* are dominant to juvenile males. *Ibis* 144:39-42.

2001

McGraw, K. J., P. M. Nolan, A. M. Stoehr, and G. E. Hill. 2001. Intersexual differences in age-specific parental effort in the house finch (*Carpodacus mexicanus*). *Etologia* 9:35-41.

McGraw, K. J., G. E. Hill, and R. Stradi. 2001. The influence of carotenoid acquisition and utilization on the maintenance of species-typical plumage pigmentation in male American goldfinches (*Carduelis tristis*) and northern cardinals (*Cardinalis cardinalis*). *Physiol. Biochem. Zool.* 74:843-852.

McGraw, K. J. and G. E. Hill. 2001. Carotenoid access and intraspecific variation in carotenoid-based plumage pigmentation in male American goldfinches (*Carduelis tristis*) and northern cardinals (*Cardinalis cardinalis*). *Funct. Ecol.* 15:732-739.

Stoehr, A. M. and **K. J. McGraw**. 2001. Ultraviolet reflectance of bright coloration in *Sceloporus undulatus* and *Anolis carolinensis*. *J. Herpetol.* 35:168-171.

Stoehr, A. M., **K. J. McGraw**, P. M. Nolan, and G. E. Hill. 2001. Parental care and brood size: testing a critical assumption. *J. Field Ornithol.* 72:412-418.

Nolan, P. M., A. M. Stoehr, G. E. Hill and **K. J. McGraw**. 2001. The number of provisions to the nest by house finches predicts the mass of food delivered. *Condor* 103:851-855.

McGraw, K. J., A. M. Stoehr, P. M. Nolan, and G. E. Hill. 2001. Plumage redness predicts breeding onset and reproductive success in the house finch: a validation of Darwin's theory. *J. Avian Biol.* 32:90-94.

2000

Badyaev, A. V., G. E. Hill, A. M. Stoehr, P. M. Nolan, and **K. J. McGraw**. 2000. The evolution of sexual dimorphism in the house finch: II. Population divergence in relation to local selection. *Evolution* 54:2134-2144.

McGraw, K. J. and G. E. Hill. 2000. Plumage brightness and breeding-season dominance of male house finches: a "negatively correlated handicap"? *Condor* 102:456-461.

McGraw, K. J. and G. E. Hill. 2000. Carotenoid-based ornamentation and status signaling in the house finch. *Behav. Ecol.* 11:520-527.

McGraw, K. J. and G. E. Hill. 2000. Differential effects of endoparasitism on the expression of carotenoid- and melanin-based ornamental colors. *Proc. R. Soc. Lond. B* 267:1525-1531.

Stoehr, A. M., P. M. Nolan, G. E. Hill and **K. J. McGraw**. 2000. Nest parasites in a passerine bird: seasonal patterns and effects on reproductive biology. *Can. J. Zool.* 78:2126-2133.

1999

McGraw, K. J. and G. E. Hill. 1999. Induced homosexual behaviour in male house finches (*Carpodacus mexicanus*): the "Prisoner Effect". *Ethol. Ecol. Evol.* 11:197-201.

McGraw, K. J., G. E. Hill, and A. J. Keyser. 1999. Ultraviolet reflectance of colored leg bands. *J. Field Ornithol.* 70:236-243.

BOOK CHAPTERS

McGraw, K. J. and J. D. Blount. 2008. Control and function of carotenoid coloration in birds: a review of case studies. In *Carotenoids: Physical, Chemical, and Biological Functions and Properties* (J. T. Landrum, ed.). CRC Press, Boca Raton, FL (in press).

McGraw, K. J. and A. L. A. Middleton. 2008. American Goldfinch (*Carduelis tristis*). *The Birds of North America Online* (A. Poole, Ed.). Ithaca, NY: Cornell Laboratory of Ornithology.

McGraw, K. J. 2008. Visual signaling in animals. In: *New Encyclopedia for Neuroscience* (L. R. Squire, ed.). Elsevier Ltd., Oxford, in press.

Blount, J. D. and **K. J. McGraw**. 2007. The signal functions of carotenoid coloration in plants and animals. In: *Carotenoids. Volume 4: Natural Functions* (G. Britton, S. Liaaen-Jensen, and H. Pfander, eds.). Birkhauser, Switzerland.

McGraw, K. J. 2006. The mechanics of uncommon colors in birds: pterins, porphyrins, and psittacofulvins. In: *Bird Coloration. Volume 1. Mechanisms and measurements* (G. E. Hill and K. J. McGraw, eds.). Harvard University Press: Cambridge, MA.

McGraw, K. J. 2006. The mechanics of carotenoid coloration in birds. In: *Bird Coloration. Volume 1. Mechanisms and measurements* (G. E. Hill and K. J. McGraw, eds.). Harvard University Press: Cambridge, MA.

McGraw, K. J. 2006. The mechanics of melanin coloration in birds. In: *Bird Coloration. Volume 1. Mechanisms and measurements* (G. E. Hill and K. J. McGraw, eds.). Harvard University Press: Cambridge, MA.

POPULAR ARTICLES

McGraw, K. J. 2005. Polly want a pigment? Cracking the chemical code to red coloration in parrots. *Australian Birdkeeper Magazine* 18:608-611.

McGraw, K. J. 2004. What flamingos might look like if they ate blueberries. *ASK magazine (Arts and Sciences for Kids)* 3:33.

McGraw, K. J. 2003. Color me chemically: an analysis of feather pigments in colorful birds. *The Sample (Retsch Inc. newsletter)* 23:6-7.

McGraw, K. J. and G. E. Hill. 2003. Why birds wear bright colors. *Highlights for Children* 58:24-25.

FUNDED SCIENTIFIC GRANTS

FEDERALLY FUNDED

National Science Foundation, Functional and Regulatory Systems panel, PI (\$344,467); “The Molecular Costs of Being Sexually Attractive: A Quantitative Assessment of Carotenoid Limitations for Coloration and Self-Maintenance”; 2008-2011.

Graduate STAR Fellowship, Environmental Protection Agency (\$100,000; 2000-2003)

PROFESSIONAL-SOCIETY FUNDED

Conference travel grant, International Penguin Conference (\$1500; 2004)

Conference travel grant, International Symposium on Avian Endocrinology (\$500; 2004)

Student Research Award, American Ornithologists’ Union (\$1793; 2003)

Grant-in-Aid-of-Research, Society for Integrative and Comparative Biology (\$765; 2003)

Student Travel Award, International Carotenoid Society (2001)

Marcia Brady Tucker Travel Award, American Ornithologists’ Union (2001, 2003)

Frank Chapman Fund, American Museum of Natural History (\$1000; 2001)

Sigma Xi Grant-in-Aid-of-Research, National Chapter (2000, 2001)

UNIVERSITY FUNDED

Frontiers in Life Sciences conference grant, School of Life Sciences, ASU (\$30,000; awarded to my Ph.D. students to organize a conference on iridescent coloration in Feb. 2008).

Excellence in Graduate Student Mentoring Award, Division of Graduate Studies and the Office of the Vice President for Research, Arizona State University (\$2000; 2007)

In-house research grant, SoLS Initiatives Program, Arizona State University (\$8200; 2005)

Graduate Student Conference Transportation Grant, Cornell University (2000, 2001, 2002, 2003)

Sigma Xi Grant-in-Aid-of-Research, Cornell Chapter (1999, 2000, 2001, 2002, 2003)

Graduate Student Travel Award, Auburn University (1999)

COSAM Student Travel Grant, Auburn University (1999)

Graduate Student Research Award, Auburn University (1999)

Goldberg Travel Fund Recipient, St. Lawrence University (1996)

Crowell Summer Award in Field Biology, St. Lawrence University (\$500; 1996)

PEW Undergraduate Research Fellowship, St. Lawrence University (\$2500; 1996)

SUBMITTED SCIENTIFIC GRANTS

National Science Foundation, Functional and Regulatory Systems panel, co-PI (\$75,275); 3rd submission (“An Integrative Analysis of the Biophysics, Biochemistry, and Evolution of Avian Plumage Coloration”). Collaborative research with Yale Univ. and Univ. of Akron.

National Science Foundation, Behavioral Systems Panel, lone PI, CAREER grant competition (\$527,222; under review); 2nd submission (“Condition-dependent signal reception: limitations and functions of carotenoids in avian color vision”).

SCIENTIFIC AWARDS AND HONORS

Elective Member, American Ornithologists' Union (2006)
Featured investigator of the month, Research and Development (R&D) Magazine (02/2006)
Outstanding New Investigator Award, American Ornithologists' Union (2005)
Outstanding New Investigator Award, Animal Behavior Society (2005)
Job offer, Assistant professor, Dartmouth College, Hanover, NH (2004; declined)
Post-doctoral fellowship, Centre National de la Recherche Scientifique, France (2003; declined)
Post-doctoral fellowship, University of California-Los Angeles (2003; declined)
Outstanding Student Presentation, Meeting of the American Ornithologists' Union (2003)
Outstanding Graduate Teaching Assistant, Dept. Neurobiol. & Behavior, Cornell Univ. (2002-3)
CALS Fellowship, Cornell University, for pursuit of Ph.D. (1999)
Phi Kappa Phi Honor Society, Auburn University (1999)
Membership to Association of Field Ornithologists, Inc. (1999)
CALS Fellowship, Cornell University, for pursuit of Ph.D. (1999)
βββ Outstanding Senior Biology Major Award (1997)
Edward and Gertrude Warner Award, for pursuit of graduate education (1997)
Phi Beta Kappa Honor Society, St. Lawrence University (1996-1997)
βββ Biology Honor Society, St. Lawrence University (1994-1997)

ACADEMIC PRESENTATIONS

Invited Seminars

- McGraw, K. J.** and M. B. Toomey. 2009. Carotenoids as narcissistic agents of color evolution: a bird's eye view. Annual meeting of the American Association for the Advancement of Science, Chicago, IL.
- McGraw, K. J.** 2008. New roles of unique pigments in birds. Department of Integrative Biology, University of California-Berkeley, Berkeley, CA.
- McGraw, K. J.** 2008. Interspecific variation in avian iridescent coloration: ecological, phylogenetic, and quality-signaling predictors. Frontiers in Life Science conference on Iridescence, Arizona State University, Tempe, AZ.
- McGraw, K. J.** 2008. Animal instincts: the science of human mating, dating, and copulating. Paradise Valley Community College, Phoenix, AZ.
- McGraw, K. J.** 2008. Communication in color: novel pigments in parrot plumage. Meeting of the American Society of Aviculturalists, Glendale, AZ.
- McGraw, K. J.** 2007. The evolution of ornate colors in songbirds: from biochemicals to behavior. Observatoire Océanologique Européen, Centre Scientifique de Monaco, Principality of Monaco.
- McGraw, K. J.** 2007. The evolution of ornate colors in songbirds: from biochemicals to behavior. Department of Biology, University of Puget Sound, Tacoma, WA.
- McGraw, K. J.** 2007. The costs and benefits of melanin coloration in birds. Plenary talk, Meeting of the Japanese Society for Pigment Cell Research, Toyoake, Aichi, Japan.
- McGraw, K. J.** 2007. The evolution of ornate colors in songbirds: from biochemicals to behavior. Arizona State University-West, Department of Integrated Natural Sciences, Phoenix, AZ.
- McGraw, K. J.,** M. Massaro, and T. Rivers. 2007. Annual, sexual, size-, and condition-related variation in the color and fluorescent pigment content of yellow crests in Snares penguins (*Eudyptes robustus*). Plenary talk, 6th International Penguin Conference, University of Tasmania, Australia.

- McGraw, K. J.** 2007. Carotenoids as narcissistic agents of color evolution. Plenary talk, Center for Ecology, Evolution, and Behavior annual symposium, University of Kentucky, Lexington, KY.
- McGraw, K. J.** 2007. The evolution of ornate colors in songbirds: from biochemicals to behavior. Department of Biology, Ohio Wesleyan University, Delaware, OH.
- McGraw, K. J.** and M. B. Toomey. 2007. Carotenoid partitioning among body tissues in an avian model species: implications for trade-offs and differential functions. Gordon Conference on Carotenoid Pigments, Ventura, CA.
- McGraw, K. J.** 2006. Birds communicate in color: what the costs of color production tell us about how colors are used as signals. Cognition, Action, and Perception Seminar Series. Department of Psychology, Arizona State University, Tempe, AZ.
- Safran, R. J., **K. J. McGraw**, C. R. Neuman, I. J. Lovette, M. R. Evans, and A. Lotem. 2006. Geographic variation in the expression and function of mate choice signals in *Hirundo rustica*. Symposium, IV North American Ornithological Conference, Veracruz, Mexico.
- McGraw, K. J.** 2006. Birds communicate in color: different colors send different messages. The Citadel, Charleston, SC.
- McGraw, K. J.** 2006. The evolution of ornate colors in songbirds: from biochemicals to behavior. University of Massachusetts, Amherst, MA.
- McGraw, K. J.** 2006. The evolution of ornate colors in songbirds: from biochemicals to behavior. New England Aquarium, Boston, MA.
- McGraw, K. J.** 2006. The evolution of ornate colors in songbirds: from biochemicals to behavior. Department of Biology, St. Lawrence University, Canton, NY.
- McGraw, K. J.** 2005. The evolution of ornate colors in songbirds: a biochemical perspective. Department of Animal Care and Technologies, Arizona State University, Tempe, AZ.
- McGraw, K. J.** 2005. The evolution of ornate colors in songbirds: from biochemicals to behavior. Department of Biology, Ithaca College, Ithaca, NY.
- McGraw, K. J.** 2005. The evolution of ornate colors in songbirds: from biochemicals to behavior. Department of Ecology and Evolution, University of Chicago, Chicago, IL.
- McGraw, K. J.** 2005. The evolution of ornate colors in songbirds: from biochemicals to behavior. Centre National de la Recherche Scientifique, Montpellier, France.
- McGraw, K. J.** 2005. The evolution of ornate colors in songbirds: from biochemicals to behavior. Max-Planck Institute for Ornithology, Seewiesen, Germany.
- McGraw, K. J.** 2004. Sexual selection for plumage ornaments in barn swallows: revisiting signal production and function. University of California-Riverside, CA.
- McGraw, K. J.** 2004. Nutrition and animal colors. Comparative Nutrition seminar, Department of Animal Science, University of California-Davis, Davis, CA.
- McGraw, K. J.** 2004. The evolution of ornate colors in songbirds: from biochemicals to behavior. Animal Behavior Graduate Group, University of California-Davis, Davis, CA.
- McGraw, K. J.** 2004. The evolution of ornate colors in songbirds: from biochemicals to behavior. School of Life Sciences, Arizona State University, Tempe, AZ (faculty job interview).
- McGraw, K. J.** 2004. The evolution of ornate colors in songbirds: a biochemical perspective. University of California-Berkeley, Berkeley, CA.
- McGraw, K. J.** 2004. Antioxidants and avian health: an ecological perspective. Department of Biological Sciences, Dartmouth College, Hanover, NH (faculty job interview).
- McGraw, K. J.** 2004. The evolution of ornate colors in songbirds: from biochemicals to behavior. Department of Biological Sciences, Dartmouth College, Hanover, NH (faculty job interview).
- McGraw, K. J.** 2003. Biochemical and physiological costs and benefits of carotenoid coloration in finches. Department of Biological Sciences, Binghamton University, Binghamton, NY.

- McGraw, K. J.** 2003. The evolution of ornamental coloration in songbirds: a biochemical perspective. Department of Organismic Biology, Ecology, and Evolution. University of California, Los Angeles, CA.
- McGraw, K. J.** 2003. Carotenoids as immunostimulants in birds: an ecological approach. Department of Avian Science, University of California, Davis, CA.
- McGraw, K. J.** 2003. The evolution of ornamental coloration in songbirds: a biochemical perspective. Department of Animal Science, University of California, Davis, CA.
- Hill, G. E. and **K. J. McGraw.** 2003. A biochemical and phylogenetic approach to the study of ornamental coloration in birds. *Plenary lecture, 2nd European Conference on Avian Colour Vision and Coloration*, Muséum National d'Histoire Naturelle, Paris, France.
- McGraw, K. J.** 2003. Androgens and attractiveness: a novel, testosterone-mediated mechanism for the expression of sexual coloration in zebra finches. Reproductive Endocrinology seminar series, Department of Animal Sciences, Cornell University, Ithaca, NY.
- McGraw, K. J.** 2001. The costs and benefits of carotenoid deposition in zebra finch eggs. Department of Biology, Queen's University, Kingston, Ontario, Canada.
- McGraw, K. J.** 2001. Carotenoid intake, metabolism, and deposition in colorful songbirds. Division of Nutritional Sciences, Cornell University, Ithaca, NY.

CONFERENCE SEMINARS

- Weiss, S., E. Kennedy, and **K. J. McGraw.** 2008. Maternal ornamentation and yolk antioxidants correlate in female striped plateau lizards. Meeting of the International Society of Behavioral Ecology, Cornell University, Ithaca, NY.
- Safran, R. J., J. Adelman, **K. J. McGraw,** and M. Hau. 2008. Sexual signal exaggeration affects physiological state in male barn swallows. Meeting of the International Society of Behavioral Ecology, Cornell University, Ithaca, NY.
- Meadows Rader, M. and **K. J. McGraw.** 2008. Iridescent ornamentation as a status signal in male Anna's hummingbirds (*Calypte anna*). Meeting of the International Society of Behavioral Ecology, Cornell University, Ithaca, NY.
- Toomey, M. B. and **K. J. McGraw.** 2008. Variation in and correlates of retinal carotenoid accumulation in wild house finches (*Carpodacus mexicanus*). Meeting of the International Society of Behavioral Ecology, Cornell University, Ithaca, NY.
- Dierenfeld, E. S., **K. J. McGraw,** K. Fritsche, and K. Kerr. 2007. Nutrient composition of whole crayfish eaten by hellbender salamanders (*Cryptobranchus alleganiensis* spp.). Nutrition Advisory Group conference, Knoxville, TN.
- Clotfelter, E., Ardia, D., and **McGraw, K. J.** 2007. Red fish, blue fish: tradeoffs in pigmentation and immunity in *Betta splendens*. 44th Annual meeting of the Animal Behavior Society, Burlington, VT.
- Meadows, M. G. and **K. J. McGraw.** 2007. The role of iridescent coloration in hummingbird aggressive interactions. 44th Annual Meeting of the Animal Behavior Society, Burlington, VT.
- McGraw, K. J.,** K. Lee, and A. Lewin. 2007. The effect of stress on carotenoid-based coloration in zebra finches. 44th Annual Meeting of the Animal Behavior Society, Burlington, VT.
- Safran, R. J., Hau, M., Adelman, J., and **K. J. McGraw.** 2007. Testosterone increase from sexual signal enhancement in barn swallows. 44th Annual Meeting of the Animal Behavior Society, Burlington, VT.
- Taylor, L. A., **K. J. McGraw,** and D. Clark. 2007. Condition-dependence and microstructural mechanisms of coloration in male jumping spiders. Meeting of the American Arachnology Society, Susquehanna University, Selinsgrove, PA.

- Taylor, L. A., **K. J. McGraw**, and D. Clark. 2007. Condition-dependence and microstructural mechanisms of coloration in male jumping spiders. XVII International Congress of Arachnology, Sao Pedro, Brazil.
- Taylor, L. A., **K. J. McGraw**, and D. Clark. 2007. Condition-dependence and microstructural mechanisms of coloration in male jumping spiders. Meeting of the Arizona Imaging and Microanalysis Society, Arizona State University, Tempe, AZ.
- Smith, L. A., Burt, Jr., E. H., Sroka, J. R., Schroeder, M. R., and **K. J. McGraw**. 2007. Colorful parrot feathers inhibit bacterial degradation. Meeting of the Wilson Ornithological Society, Boston, MA.
- Burt, Jr., E. H., M. R. Schroeder, L. A. Smith, J. E. Sroka, and **K. J. McGraw**. 2007. Differently colored parrot feathers are differentially resistant to bacterial degradation. Annual Meeting of the American Ornithologists Union, University of Wyoming, Laramie, WY.
- Hipfner, M., J. Dale, and **K. McGraw**. 2007. Foraging strategies and yolk carotenoid deposition in a community of marine birds. Pacific Seabird Group Meeting, Pacific Grove, CA.
- Toomey, M. B. and **K. J. McGraw**. 2007. Carotenoid pigments in the tissues of zebra finches (*Taeniopygia guttata*): identity, distribution, and intercorrelations. Meeting of the Society for Integrative and Comparative Biology, Phoenix, AZ.
- Meadows, M. G. and **K. J. McGraw**. 2007. How hummingbirds choose their fights: the role of iridescent coloration in aggressive interactions. Meeting of the Society for Integrative and Comparative Biology, Phoenix, AZ.
- McGraw, K. J.** 2006. Carotenoids as buffers for testosterone-induced immunosuppression. IV North American Ornithological Conference, Veracruz, Mexico.
- Hill, G. E. and **K. J. McGraw**. 2006. A biochemical, nutritional, and phylogenetic approach to the study of ornamental coloration in birds. Meeting of the Comparative Nutrition Society, Keystone, Colorado.
- McGraw, K. J.** 2006. The signal content of avian color signals: a meta-analysis. Meeting of the Animal Behavior Society, Snowbird, UT.
- Bezzerides, A. L. and **K. J. McGraw**. 2006. Elytra color as a signal of chemical defense in the Asian ladybird beetle *Harmonia axyridis*. Meeting of the Animal Behavior Society, Snowbird, UT.
- Dale, J., Williams, T. D., and **K. J. McGraw**. 2006. Social control of bill colouration in zebra finches. Meeting of the International Society for Behavioral Ecology, Tours, France.
- Safran, R. J., C. R. Neuman, **K. J. McGraw**, and I. J. Lovette. 2006. Adaptive dynamics of paternity allocation. Meeting of the International Society for Behavioral Ecology, Tours, France.
- McGraw, K. J.** 2005. Carotenoids, immunity, and integumentary coloration in red junglefowl. Meeting of the Animal Behavior Society, Snowbird, UT.
- Pizzi, R., **K. J. McGraw**, P. M. Nolan, and M. Gibbons. 2005. Novel plumage pigments, novel prey species antioxidants and immunostimulants: implications for captive penguin nutrition. Meeting of the European Zoo Nutrition Centre, Leipzig, Germany.
- McGraw, K. J.** 2005. The carotenoid cocktails that create sexually attractive colors in birds. 14th International Carotenoid Symposium, Edinburgh, Scotland.
- McGraw, K. J.** 2005. Carotenoids as immunomodulators in birds: a review. 14th International Carotenoid Symposium, Edinburgh, Scotland.
- McGraw, K. J.** and K. C. Klasing. 2005. Carotenoids mediate a trade-off between offspring quantity and quality in quail. Meeting of the Society for Integrative and Comparative Biology, San Diego, CA.
- Mays, Jr., H. L., **K. J. McGraw**, G. Ritchison, S. Cooper, V. Rush, and R. S. Parker. 2004. Plumage dichromatism in the yellow-breasted chat (*Icteria virens*). Post-ISBE workshop on

- colour signaling. Konnevesi, Finland.
- McGraw, K. J.**, Nolan, P. M., Jouventin, P., and Dobson, F. S. 2004. Penguins use a novel class of plumage pigments to color their feathers yellow. 5th International Penguin Conference, Ushuaia, Tierra del Fuego, Argentina.
- Hill, G. E. and **K. J. McGraw**. 2004. A biochemical and phylogenetic approach to the study of ornamental coloration in birds. Meeting of the American Ornithologists' Union, Université Laval, Québec, Canada.
- Hofmann, C., **McGraw, K. J.** and Omland, K. 2004. Orchard orioles: a tale of two pigments. Meeting of the American Ornithologists' Union, Université Laval, Québec, Canada.
- Hill, G. E. and **K. J. McGraw**. 2004. A biochemical and phylogenetic approach to the study of ornamental coloration in birds. 10th International Symposium for Behavioral Ecology, University of Jyväskylä, Finland.
- Safran, R. S., **K. J. McGraw**, and M. Evans. 2003. Geographic differences in sexual ornaments: plumage coloration, not tail streamers, is a sexually selected trait in North American barn swallows. Joint meeting of the Association of Field Ornithology and Wilson Ornithological Society, Cornell University, Ithaca, NY.
- McGraw, K. J.**, M. Nogare., P. M. Nolan, F. S. Dobson, and P. Jouventin. 2003. New plumage pigments in parrots and penguins. Meeting of the American Ornithologists' Union, University of Illinois, Urbana-Champaign, IL.
- McGraw, K. J.** 2003. Melanins, minerals, and mate quality: a new hypothesis and an experimental test. Meeting of the Animal Behavior Society, Univ. of Idaho, Boise, ID.
- Safran, R. S., **K. J. McGraw**, and M. Evans. 2003. Geographic differences in sexual ornaments: plumage coloration, not tail streamers, is a sexually selected trait in North American barn swallows. Meeting of the American Ornithologists' Union, University of Illinois, Urbana-Champaign, IL.
- Hill, G. E., **K. J. McGraw**, A. M. Stoehr, and R. A. Duckworth. 2003. Why are drab male house finches socially dominant to bright males? Meeting of the American Ornithologists' Union, University of Illinois, Urbana-Champaign, IL.
- Hill, G. E. and **K. J. McGraw**. 2002. Correlated changes in female mate choice and male plumage coloration in cardueline finches. 9th International Symposium for Behavioral Ecology, University of Quebec at Montreal, Montreal, Quebec, Canada.
- McGraw, K. J.** 2002. All plumage colors are not created equal: a review of the signaling information contained within carotenoid-, melanin-, and structural-based ornamental colors in birds. 9th International Symposium for Behavioral Ecology, University of Quebec at Montreal, Montreal, Quebec, Canada.
- McGraw, K. J.**, E. Adkins-Regan, and R. S. Parker. 2002. The evolutionary significance of carotenoid pigmentation in bird eggs. 13th International Carotenoid Society Symposium. Honolulu, Hawaii.
- McGraw, K. J.**, E. A. Vonnegut, and J. Dale. 2001. Social environment during molt predicts the expression of melanin-based plumage pigmentation in male house sparrows (*Passer domesticus*). Meeting of the Animal Behavior Society, Oregon State University, Corvallis, OR.
- McGraw, K. J.**, E. A. Vonnegut, J. Dale, and M. E. Hauber. 2001. Do different plumage colors reveal different information?: how nutritional stress affects the expression of melanin- and structurally based ornamental coloration. Meeting of the American Ornithologists' Union, University of Washington, Seattle, WA.
- Hill, G. E. and **K. J. McGraw**. 2000. Co-evolution of female mate preferences and the color and pattern of male plumage coloration in cardueline finches. Meeting of the American Ornithologists' Union, St. Johns, Newfoundland, Canada.

- McGraw, K. J.** 2000. Variation in the information content of carotenoid- and melanin-based ornamental plumage: empirical tests in two cardueline finch species. Meeting of the Animal Behavior Society, Morehouse College, Atlanta, GA.
- Hill, G. E. and **K. J. McGraw.** 2000. Co-evolution of female mate preferences and the color and pattern of male plumage coloration in cardueline finches. Meeting of the Animal Behavior Society, Morehouse College, Atlanta, GA.
- Stoehr, A. M., P. M. Nolan, G. E. Hill, and **K. J. McGraw.** 2000. The effects of nest mites on the reproductive biology of the house finch. Meeting of the Animal Behavior Society, Morehouse College, Atlanta, GA.
- McGraw, K. J.** 2000. Differential costs and signal content of carotenoid- and melanin-based plumage coloration. Graduate Student Research Forum, Department of Ecology and Evolutionary Biology, Cornell University, Ithaca, NY.
- McGraw, K. J.** 1999. The significance of male plumage coloration in mediating reproductive success and social dominance among male house finches (*Carpodacus mexicanus*). Auburn University, Auburn, AL.
- McGraw, K. J.** 1999. Breeding-season dominance and plumage ornamentation in the house finch, Meeting of the Animal Behavior Society, Bucknell University, Lewisburg, PA.
- Stoehr, A. M., K. J. McGraw, P. M. Nolan, and G. E. Hill. 1999. Parental care and brood size in house finches. Meeting of the Animal Behavior Society, Bucknell University, Lewisburg, PA.
- McGraw, K. J.** 1999. Carotenoid-based ornamentation and status signaling in the house finch. Graduate Student Research Forum, Auburn University, Auburn, AL.

CONFERENCE POSTERS

- Taylor, L. A. and **K. J. McGraw.** 2008. Effects of diet manipulation on male ornamentation in a colorful jumping spider (Salticidae). Meeting of the International Society of Behavioral Ecology, Cornell University, Ithaca, NY.
- Clotfelter, E. and **K. J. McGraw.** 2008. Coloration-immune trade-offs in the dichromatic Midas cichlid. Meeting of the International Society of Behavioral Ecology, Cornell University, Ithaca, NY.
- Butler, M. W. and **K. J. McGraw.** 2008. The importance of developmental history on a sexually selected trait. Meeting of the International Society of Behavioral Ecology, Cornell University, Ithaca, NY.
- Navarro, C., T. Perez-Contreras, J. M. Aviles, **K. J. McGraw,** and J. J. Soler. 2008. Beak color reflectance circulating carotenoid levels in spotless starlings (*Sturnus unicolor*). Meeting of the International Society of Behavioral Ecology, Cornell University, Ithaca, NY.
- Meadows Rader, M., N. Morehouse, R. Rutowski, J. Douglas, and **K. J. McGraw.** 2008. Quantifying iridescent coloration: a new apparatus and comparison of techniques. Frontiers in Life Science conference on Iridescence, Arizona State University, Tempe, AZ.
- Taylor, L. A., **K. J. McGraw,** and D. Clark. 2008. Effects of diet on male coloration in a jumping spider (Salticidae). Frontiers in Life Science conference on Iridescence, Arizona State University, Tempe, AZ.
- Taylor, L. A., **K. J. McGraw,** and D. Clark. 2008. Male coloration and mating success in a jumping spider (Salticidae). Graduates in Earth, Life, and Social Sciences symposium, Arizona State University, Tempe, AZ.
- Juola, F. A., **K. J. McGraw,** and D. C. Dearborn. 2007. Carotenoids and throat pouch coloration in the great frigatebird (*Fregata minor*). Meeting of the Animal Behavior Society, Burlington, VT.
- Washington, L. L. and **K. J. McGraw.** 2007. Variability in carotenoid accumulation among

- molting house finches. Meeting of the Society for Integrative and Comparative Biology, Phoenix, AZ.
- Georges, J., P. Deviche, **K. J. McGraw**, and P. M. Nolan. 2007. Carotenoids, vocal performance, and the brain: an early-life nutritional and antioxidative mechanism underlying neural control of animal communication. Meeting of the Society for Integrative and Comparative Biology, Phoenix, AZ.
- Toomey, M. B., **K. J. McGraw**, P. M. Nolan, N. Morehouse, and P. Jouventin. 2006. The first description of fluorescent yellow pigments in penguin feathers. IV North American Ornithological Conference, Veracruz, Mexico.
- Schroeder, M. R., L. A. Smith, J. E. Sroka, **K. J. McGraw**, and E. Burt. 2006. Colorful parrot feathers inhibit bacterial degradation. IV North American Ornithological Conference, Veracruz, Mexico.
- Meadows, M. G., **K. J. McGraw**, M. B. Toomey, and L. A. Taylor. 2006. Condition-dependence of structural colors in birds: a meta-analysis. IV North American Ornithological Conference, Veracruz, Mexico (*Student Poster Presentation Award Winner, Runner-up*)
- Washington, L. and **McGraw, K. J.** 2006. Variability in carotenoid accumulation among molting house finches. School of Life Sciences Undergraduate Research Forum, Arizona State University, Tempe. AZ.
- Georges, J., P. Deviche, **K. J. McGraw**, P. Nolan, and L. Beard. 2006. Carotenoids, neurodevelopment, and vocal performance in the zebra finch (*Taeniopygia guttata*). School of Life Sciences Undergraduate Research Forum, Arizona State University, Tempe, AZ.
- Shawkey, M. D. and **K. J. McGraw**. 2004. Yellow colour production in budgerigars. Meeting of the American Ornithologists' Union, Université Laval, Québec, Canada.
- Hofmann, C., **McGraw, K. J.** and Omland, K. 2004. Orchard orioles: a tale of two pigments. 10th International Symposium for Behavioral Ecology, University of Jyväskylä, Finland.
- McGraw, K. J.** and E. Adkins-Regan. 2004. Testosterone modulates lipoprotein status to control sexual attractiveness in a colorful songbird. 8th International Symposium in Avian Endocrinology, Arizona State University, Tempe, AZ.
- Hörak, P., L. Saks, U. Karu, I. Ots, P. F. Surai, and **K. J. McGraw**. 2003. How coccidian parasites affect health and appearance of greenfinches (*Carduelis chloris*). 9th Congress of the European Society for Evolutionary Biology. University of Leeds, U.K.
- McGraw, K. J.** and G. E. Hill. 2000. Differential effects of parasitism on the expression of carotenoid- and melanin-based ornamental coloration. Meeting of the American Ornithologists' Union, St. Johns, Newfoundland, Canada.
- Nolan, P. M., **K. J. McGraw**, A. M. Stoehr, S. R. Roberts, G. E. Hill, and M. C. Wooten. 2000. Sex ratio fluctuations & facultative sex ratio adjustment following an epidemic. Meeting for the International Society for Behavioral Ecology, Zurich, Switzerland.
- McGraw, K. J.** and G. E. Hill. 1999. Differential effects of parasitism on the expression of carotenoid- and melanin-based ornamental coloration. Meeting of the American Ornithologists' Union, Cornell University, Ithaca, NY.
- Nolan, P. M., **K. J. McGraw**, A. M. Stoehr, A. A. Ford, G. E. Hill and M. C. Wooten. 1999. Facultative sex ratio adjustment following an epidemic. Meeting of the Animal Behavior Society, Bucknell University, Lewisburg, PA.
- McGraw, K. J.**, G. E. Hill, and A. J. Keyser. 1998. UV Reflectance of Colored Leg Bands Used in Avian Research. Meeting of the Animal Behavior Society, Southern Illinois University, Carbondale, IL.

SELECTED PRESS COVERAGE

- > 400 newspaper and online articles written publicizing 2008 Current Biology paper on testosterone and coloration in swallows; also four national radio interviews (San Francisco, New York, Houston, and Rockford, IL) and featured on CNN, Good Morning America, and The Science Times (NY Times) (06/08)
- Interviewed and featured on PBS Nature website as expert on animal mating (4/08), at <http://www.pbs.org/wnet/nature/females/monogamy.html>
- Televised news interview on human mating, KTVK Phoenix broadcast; featured online (5/07) at www.azfamily.com/news/local/stories/KTVKNews20070522_love.958ab1f4.html
- > 25 newspaper and online articles written publicizing 2007 Biology Letters paper on testosterone, health and color in finches (see personal website above for all article links)
- Photo gallery produced on ASU homepage highlighting our recent work on finch coloration in urban and rural settings (<http://www.asu.edu/vppa/photogallery/birds/1.htm>); "Research for the birds", 10/06
- > 50 newspaper and magazine articles + NPR interview covering 2005 Science paper on dynamic paternity allocation and sexual ornamentation in barn swallows
- > 25 newspaper and magazine articles + ASU interview covering 2005 Biology Letters paper on new pigments discovered in parrot feathers
- > 50 newspaper and magazine articles + 3 radio interviews and 1 television interview covering 2003 Ethology paper on geographic variation in human mate preferences
- National Geographic News, 12 Jan. 2002, Evolution on Fast Forward: Finches Adapt to Climates
- USA Today, 11 January 2002, "Female finches evolve to control sex of chicks"
- NPR Radio interview, 13 October 2000. McConnell, P., "Brighter is Better", *Calling All Pets*

JOURNAL EDITORSHIP DUTIES

- Reviewing Editor, *The Condor*, Cooper Ornithologists' Society (7/2008-present)
- Associate Editor, *The Auk*, American Ornithologists' Union (2008-present)
- Associate Editor, *Functional Ecology*, British Ecological Society (2005-present)
- Associate Editor, *Behavioral Ecology and Sociobiology* (2005-present)
- Board of Consulting Editors, *Animal Behaviour*, Animal Behavior Society (2005-2006)

MANUSCRIPT PEER REVIEW

- 2008: Proceedings of the Royal Society of London B (2), EcoHealth, Biological Journal of the Linnean Society, Journal of Experimental Biology, PLoS Biology (3), Behavioral Ecology, Functional Ecology (2), Auk, Condor, Journal of Avian Biology, Ibis, Ethology, Comparative Biochemistry and Physiology B, Naturwissenschaften (6), Ornitologia Neotropical
- 2007: Biology Letters, Proceedings of the Royal Society of London B (3), PLoS Biology, Journal of Experimental Biology (2), Ecology, Ecological Research, Oikos, Biochemistry, Hormones and Behavior, Auk (2), Functional Ecology (2), Behavioral Ecology (3), Physiological and Biochemical Zoology (3), Naturwissenschaften (2), Condor, Wilson Journal of Ornithology, Ethology (4), Biological Journal of the Linnean Society, Comparative Biochemistry and Physiology B
- 2006: Science, Proceedings of the National Academy of Sciences, Evolution, Proceedings of the Royal Society of London (4), PLoS Biology, Behavioral Ecology (3), Journal of Animal Ecology (2), Auk (2), Functional Ecology, Oecologia, Biological Journal of the Linnean Society, Canadian

- Journal of Zoology, Journal of Ornithology, Ibis (2), Naturwissenschaften (2), Journal of Comparative Physiology B (3), Comparative Biochemistry and Physiology B
- 2005: Trends in Ecology and Evolution, Animal Conservation, Behavioural Processes, Biological Journal of the Linnean Society, Proceedings of the Royal Society of London B (3), Evolution, Poultry Science (2), Naturwissenschaften (4), Journal of Fish Biology, Journal of Field Ornithology, Animal Behaviour (5), Behavioral Ecology (3), Physiological and Biochemical Zoology, Ethology (3), Biology Letters, Proceedings of the National Academy of Sciences USA, The Condor, Journal of Avian Biology (2), Ibis, Comparative Biochemistry and Physiology, Behavioral Ecology and Sociobiology (3), Functional Ecology, Oecologia
- 2004: Evolution, Behavioral Ecology and Sociobiology, Journal of Field Ornithology, Behavioral Ecology, Journal of Animal Ecology (2), Animal Behaviour (5), The Auk (3), Proceedings of the Royal Society of London, Canadian Journal of Zoology (2), Functional Ecology (2), Journal of Avian Biology (2), The Ibis (2), Journal of Zoology, Proceedings of the Indian National Science Academy
- 2003: Animal Behaviour (2), Condor, Naturwissenschaften, Journal of Avian Biology, Behavioral Ecology (4), Functional Ecology (2), The Auk (3), Ethology, Herpetological Review, Behavioral Ecology and Sociobiology (3), Proceedings of the Royal Society of London B, Journal of Biosciences, Comparative Biochemistry and Physiology B
- 2002: Behavioral Ecology, Proceedings of the Royal Society of London B, Physiological and Biochemical Zoology, Functional Ecology, The Auk, Behavioral Ecology and Sociobiology, Ethology
- 2001: Functional Ecology, Ethology (2), The Condor (2), Proceedings of the Royal Society of London B

BOOK PEER REVIEW

- 2008: *Analysis of Vertebrate Structure*, 6th edition (proposal, Hildebrand and Goslow, Wiley)
An Introduction to Animal Behaviour, 6th edition (proposal, Manning and Stamps-Dawkins, Cambridge University Press)
- 2007: *The Biology of Feathers* (proposal, Cambridge University)
 Chapter 8 of *Principles of Animal Behavior* (Dugatkin, W.W. Norton & Co.).
Vertebrate Zoology (7th edition, Pough et al., Benjamin Cummings)

GRANT PEER REVIEW

- 2008: National Science Foundation, Panel member, Physiological and Structural Systems**
- 2007: Netherlands Organization for Scientific Research
- 2006: Natural Sciences and Engineering Research Council of Canada
 Villanova University, Summer Research Fellowship for Faculty program
- 2005: National Science Foundation (Behavioral Systems cluster and Ecological Biology cluster)
- 2000-2003: Sigma Xi Grant Review Panel, Cornell University

INVITED SERVICE LECTURES

- McGraw, K. J.** 2008. Communication in color: the avian language of love. Northern Arizona Audubon Society, Flagstaff and Sedona chapters AZ.

- McGraw, K. J.** 2008. The human legacy and a bird's-eye-view of death: how long should we last? West Valley Unitarian Universalist church, Glendale, AZ.
- McGraw, K. J.** 2008. Desert colors as signals of environmental health: case studies on house finches, mallard ducks, and jumping spiders. McDowell Sonoran Conservancy, Phoenix, AZ.
- McGraw, K. J.** 2008. The evolution of religion: hidden costs and absent benefits in naturally and culturally selected contexts. West Valley Unitarian Universalist church, Glendale, AZ.
- McGraw, K. J.** 2008. Animal instincts: the science of human mating, dating, and copulating Arizona Science Center, Phoenix, AZ.
- McGraw, K. J.** 2007. Carotenoids and bird behavior. Scotts Wild Bird Food Inc., Marysville, OH.
- McGraw, K. J.** 2007. Parrot plumage colors: new pigments with new roles. Arizona Seed Cracker Association, Mesa, AZ.
- McGraw, K. J.** 2006. Parrot plumage colors: new pigments with new roles. Parrots of the Hills bird club, Fountain Hills, AZ.
- McGraw, K. J.** 2006. Communication in color: the avian language of love. Maricopa Audubon Society, Phoenix, AZ.
- McGraw, K. J.** 1998. "Backyard birding: colors of the outdoors". Brockport Middle School, Brockport, NY.

ADDITIONAL SERVICE & OUTREACH ACTIVITIES

UNIVERSITY

- Elected committee member, Undergraduate Program committee (OISB representative), School of Life Sciences, Arizona State University (2007-2010)
- Working group co-chair, Behavioral Biology graduate program, School of Life Sciences, ASU (2007-present)
- Invited speaker, SOLUR research class, School of Life Sciences, ASU (R. Rutowski), discussed scientific writing (Fall 2005 and 2007)
- Current member on Ph.D. committees of 10 students in the School of Life Sciences, ASU
- Judge, GELSS symposium, ASU (02/07)
- Science Studio and Ask-a-Biologist interviews, School of Life Sciences, ASU, 2007 (download and listen at school website above)
- Committee member, Undergraduate Curriculum Review committee, School of Life Sciences, ASU (2006)
- Committee chair, IGELS Concentration in Animal Behavior, School of Life Sciences, Arizona State University (2005-6)
- Committee member, Integrative Neuroscience faculty job search, ASU (2004-5)
- Coordinator, Animal Behavior 'Lunch Bunch' seminar series, ASU (2004-5)
- Departmental Student Discussion Group Coordinator, Cornell University (2000-2002)
- Science Olympiad, Judge, Auburn University, (1998, 1999)
- Departmental Seminar Social Organizer, Auburn University (1998)
- Departmental Student Discussion Group Coordinator, Auburn University (1998)
- MISTNET Coordinator (Avian Migration Information Systems Tracking NETwork), St. Lawrence University (1995-1996)

SOCIETY/CONFERENCES

- Symposium co-coordinator, "Integrative studies of animal color, color vision, and the light environment", Meeting of the Animal Behavior Society, Brazil (June 2009)
- Judge, Best Student Presentation, Meeting of the Society for Integrative and Comparative

Biology, Divisions of Animal Behavior and Ecology & Evolution, Phoenix, AZ (2007)
Coordinator, Student-Mentor Program and Jeopardy! student quiz, IV North American
Ornithological Conference, Veracruz, Mexico (2006)
Committee member, Special Committee on Young Investigators, American Ornithologists Union
(2005-present)
Special Awards Judge, Intel International Science and Engineering Fair, Phoenix, AZ (2005)
Judge, Outstanding Student Presentation Award, Division of Ecology and Evolution,
Meeting of the Society for Integrative and Comparative Biology (2005)
Conference session moderator, Animal Behavior Society (2003, 2005), Society for Integrative
and Comparative Biology (2005), ISBE (2008)

OTHER

Outside referee, Committee for Tenure and Promotion to Associate Professor, Idaho State
University (2004)
Assistant Men's Baseball Coach, Cornell University (2002-2003)

SOCIETY MEMBERSHIPS

Society for Integrative and Comparative Biology (September 2003-present)
International Society for Behavioral Ecology (January 2002-present)
International Carotenoid Society (January 2002-present)
Wilson Ornithological Society (January 2000-present)
American Ornithologists' Union (January 2000-present)
Cooper Ornithological Society (January 2000-present)
Sigma Xi (October 1999-present)
Association of Field Ornithologists, Inc. (April 1999-present)
Animal Behavior Society (April 1999-present)
American Association for the Advancement of Science (June 1998-June 1999)
