

SCOTT VERNON EDWARDS

Alexander Agassiz Professor of Organismic and Evolutionary Biology
Curator of Ornithology, Museum of Comparative Zoology

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PERSONAL

BORN: Honolulu, Hawaii, USA 7 July 1963; married, two children.

EDUCATION

1981 - 1986 B.A. (Biology) Harvard University, *magna cum laude*. Thesis: Mitochondrial DNA variation and the phylogeny of African Mole-Rats (Rodentia: Bathyergidae)

1986 - 1992 Ph.D. (Zoology/Museum of Vertebrate Zoology) University of California, Berkeley. Thesis: Mitochondrial DNA evolution in social babblers (Aves: *Pomatostomus*)

9/92 - 9/94 Alfred P. Sloan Postdoctoral Fellow in Molecular Evolution, Center for Mammalian Genetics, U. Florida, Gainesville (W. Potts & E. K. Wakeland labs; evolution of MHC genes in birds).

POSITIONS HELD

6/13 – 6/15. Division Director, Division of Biological Infrastructure (DBI), Biology Directorate, National Science Foundation (temporary position).

12/03 – pres. Alexander Agassiz Professor of Organismic and Evolutionary Biology & Curator of Ornithology, Museum of Comparative Zoology, Harvard University

9/03 – 12/03. Professor of Biology, University of Washington

1/03 – 12/03. Adjunct Associate Professor of Genome Sciences, University of Washington

1/00 – 12/03 Associate Professor of Zoology and Curator of Genetic Resources, Burke Museum

1/95 - 2000 Assistant Professor of Zoology and Curator of Genetic Resources, Burke Museum . Active research program in the Department of Zoology and Burke Museum; active teaching program (see below); in charge of growth and dissemination of large (~22,000 specimens) frozen tissue collection (mostly birds).

6/87 - 5/92 Graduate Student, University of California, Berkeley, Museum of Vertebrate Zoology; (Advisors: N. Johnson, M. Slatkin. lab research conducted in A. C. Wilson lab, Department of Biochemistry, Division of Molecular and Cellular Biology; mitochondrial DNA evolution and population biology of birds).

5/85 - 6/86 Undergraduate, Harvard Biological Laboratories, Harvard University (R. L. Honeycutt lab; mitochondrial DNA variation and phylogeny of African mole-rats [Bathyergidae]).

FELLOWSHIPS

Visiting Fellow, Institute for Applied Ecology, University of Canberra, Canberra, Australia (May 2012)

Harvard Club of Australia Visiting Fellow, Comparative Genomics Group (J. Marshall-Graves Lab), Research School of Biological Sciences Australian National University, Canberra, Australia (short sabbatical, 11-12/05)

3/02 – 6/02 Visiting Researcher, Avian Immunobiology Group (J. Kaufman Lab), Institute for Animal Health, Compton, U. K. [sabbatical leave from UW]

9/01 – 3/02 Visiting Fellow, Comparative Genomics Group (J. Marshall-Graves Lab), Research School of Biological Sciences Australian National University, Canberra, Australia [sabbatical leave from UW].

RECENT TEACHING, HARVARD UNIVERSITY

- Biology and Diversity of Birds (OEB 190): Spring 2005, 2007, 2009, 2012, 2016
- Freshman Seminar on the dinosaur/bird transition: Fall 2015
- Class field trips for OEB 190 to Panama (2012), Mexico (2009,2007), Costa Rica (2005, 2016) and locally
- Frontiers of Evolutionary Biology/Phylogenomics (OEB275r): Spring 2008, 2009, Fall 2009, 2011
- Molecular Ecology and Evolution (OEB 125): Fall 2004, 2006, 2008, Spring 2011
- Topics in Evolutionary Biology (OEB275r): Fall 2005, 2007, 2011, 2012, Spring 2006
- Graduate Curriculum Planning Course for “Genomics, Evolution and Infectious Disease” (w/P. Sabeti) (OEB282) Spring 2010
- Evolutionary Genomics and the Museum (OEB275rb), Spring 2013 (connected by video to 4 campuses, including U. New Mexico, UC Berkeley, and Occidental College).

HONORS

1986	Thomas T. Hoopes Prize for senior honors thesis, Harvard University
1992	Ernst Mayr Award for best student presentation, Society of Systematic Biologists
1992 -1994	Alfred P. Sloan Foundation Postdoctoral Fellowship in Molecular Studies of Evolution
1999,2006	Elected Member (1999) and Fellow (2006), American Ornithologists' Union
2009	Elected Fellow, American Academy of Arts and Sciences
2009	Elected Fellow, American Association for the Advancement of Science
2015	Elected Member, US National Academy of Sciences

SERVICE TO ACADEMIC SOCIETIES

2001 – 2003	Council Member, Society for the Study of Evolution
2001 – 2003	Council Member, Society of Systematic Biologists
2006	President, Society of Systematic Biologists
2004-2006	Council, American Genetic Association (publisher of <i>Journal of Heredity</i>)
2011	President, American Genetic Association
2012	President, Society for the Study of Evolution

SCIENTIFIC, PUBLIC, and EDUCATIONAL SERVICE

National/International Service

Faculty participant, Mentoring workshop for the BRAINS initiative (“Broadening the Representation of Academic Investigators in Neuroscience”), University of Washington, Bainbridge Island, Sept. 2014

NIH Study Section, Genetic Variation and Evolution (GVE), National Institute of General Medical Sciences, National Institutes of Health (October 2012 – present)

Alan T. Waterman Award Committee Member, National Science Foundation (2012-2013)

National Center for Biotechnology Information (NCBI) Board of Scientific Counselors, November 2012 – present)

Evaluation Committee, Museum für Naturkund, Berlin, Germany (10/12)

Board of Advisors, National Museum of Natural History, Smithsonian Institution (April 2011 – present)

External Advisory Board, National Center for Biological Sciences, Bangalore, India (January 2010)

Scientific Advisory Board, Flybase (2010 – present)

Member, Committee for Research and Exploration, National Geographic Society (2001 – 2009)

Member, Scientific Advisory Board, Max Planck Institute for Evolutionary Biology, Plön, Germany (2007 – pres.)

Board of Directors, Cornell Laboratory of Ornithology (2007 – 2013.)

Board of Directors, Massachusetts Audubon Society (2007 – pres.)

Committee Member, National Academy of Sciences Working Group on High-end Computing (2007)

Scientific Planning Committee, International Ornithological Congress (Brazil and Japan meetings, 2008 – present)

Scientific Advisory Board, National Evolutionary Synthesis Center (NESCent; 2004 – 2009)

National Human Genome Research Institute Comparative Genome Evolution Working Group (04-07).
Member, NSF Population and Evolutionary Processes Cluster Working Group on New Frontiers in Evolutionary Biology (3/05)

Evolutionary Synthesis Center (ESC) Workshop Participant, NSF (5/01)

Invited Faculty, Workshop in Molecular Evolution, Woods Hole, MA (1999-pres.)

Committee of Visitors for National Science Foundation Population Biology (8/00) and for Division of Environmental Biology (6/06)

Reviewer for Australian Research Council Grants, Marsden Fund Grants (New Zealand) and NSERC grants (Canada)

Contributor, Tree of Life Web Project (<http://www.tolweb.org/Passeriformes/15868>)

University Service

University of Washington

University of Washington Faculty Fellows Panel, 2000, 2002

Participant, Fred Hutchinson Cancer Research Center Science Education Program; Science helper in grade school teacher training for NSF-funded project “Hands on Science in Seattle Schools” (1995-1997)

Participant, U. Washington Howard Hughes High-School Program for Minority High School Science Students (1995-2003)

Harvard University

Faculty Council, Harvard University, 2004-2007; Summa degrees subcommittee

Faculty Representative, Administrative Board, Harvard University, 2006-2007

Curatorial consultant, Harvard Museum of Natural History exhibit “Nests and Eggs”

OEB Departmental Seminar organizer, 2004-2009

OEB Graduate Admissions Committee, 2006-2009

Committee on College Life (2007, 2008)

Committee on General Education (2007-2009)

Dean’s Priorities Committee (2008-2009).

International Travel Awards Committee (2012,2013)

Hoopers Prize Committee (senior theses: 2007-2011, 2013)

FAS Standing Committee on Public Service (2012 – pres.)

FAS Standing Committee on Professional Conduct (2013 – pres.)

EDITORIAL AND GRANT PANEL SERVICE

National Science Foundation Panel member: Dissertation Improvement Grants (12/93); Collections and Biotic Resources (3/97); Population Biology (10/98, 6/01,10/02); Symbiosis Defense & Self-Recognition (3/08)

Grant reviewer for science foundations in Australia, Canada, United Kingdom, Austria, Italy, Germany, France, Chile, New Zealand and Poland.

Associate Editor for: *Ecology & Evolution* (2011 – present); *PeerJ* (2012-present); *Frontiers in Phylogenetics, Phylogenomics, and Systematics* (2103- present); *Conservation Genetics* (2003 – 2006); *Molecular Biology and Evolution* (2003- 2010); *Systematic Biology* (1998 - 2001); *Journal of Molecular Evolution* (1998-2000); *Evolution* (1999-2002); *American Zoologist* (1999 - 2003)

Guest Editor for: *PNAS* (2010), *PLoS Genetics* (2013), *Journal for Ornithology* (2010-2011), *Systematic Biology* (2009)

Reviewer for *Science*, *Nature*, *Nature Communications*, *PNAS*, *PLoS Biology*, *Evolution*, *Molecular Biology and Evolution*, *Molecular Ecology*, *Behavioral Ecology and Sociobiology*, *Immunology Today*, *Immunogenetics*, *Molecular Phylogenetics and Evolution*, *Systematic Biology*, *Bioscience*, *Auk*, *Journal of Avian Biology*, and several others.

EXTERNAL THESIS EXAMINER/READER

Robert Kusmierski, PhD Thesis on "Molecular Phylogenies of Bowerbirds Inferred from Mitochondrial Cytochrome B and Nuclear Intron Sequences", La Trobe University, Melbourne, Australia 9/97

Michele D. Binder, MSc Thesis on "Isolation and Characterisation of a Novel Avian Sex-specific Gene", University of Melbourne, Melbourne, Australia, 2/98

Mustafa Abdul Rahman, PhD Thesis on "Biogeography of Avifauna and Patterns of Variation in Little Spiderhunter (*Aracnothera longirostra*) in Southeast Asia", University of Queensland, Brisbane, Australia, 3/01.

Åsa Langefors, Ph.D., "Genetic Variation in Mhc Class II B in Atlantic Salmon: Evolutionary and Ecological Perspectives". Lund University, Lund, Sweden, 9/99

Ulf Johansson, Ph.D., "Higher level molecular systematics of Passeriformes", Swedish Museum of Natural History, Stockholm" 11/02

Camille Bonneaud, Ph.D. "Immunogenetics and Ecology of the House Sparrow (*Passer domesticus*). CNRS, Paris 9/04

Robert Ekblom, Ph.D., "Immunoecology of the Great Snipe (*Gallinago media*): Mate Choice, MHC Variation, and Humoral Immunocompetence in a Lekking Bird". Uppsala University, Uppsala 11/04.

Laura Buggiotti, Ph.D. "Avian evolutionary genomics: studies of *Ficedula* flycatchers". University of Turku, Turku, Finland. 12/07.

Camilla Whittington, Ph.D. "Evolution of venom: gene discovery in the platypus". University of Sydney, Sydney, Australia. 3/11.

Anna Runemark, Ph.D., "Island biogeography and population divergence in the Skyros wall lizard", Lund University, Sweden. 5/12.

FIELDWORK HIGHLIGHTS

Eastern Mongolia, Museum of Comparative Zoology general collecting (June 2012)

Bon Portage Island, Nova Scotia; Chemical ecology and behavioral genetics of Leach's Storm Petrels (July 2009, 2010, 2011)

West Texas, general museum collecting and surveying for *Mycoplasma* in avian populations (6/11)

Massachusetts, Harvard Forest. Ornithological specimen collection with MCZ staff (08/08)

Kimberly/Top End, Northern Australia, Collection of museum specimens and tissues from Australian passerines (11/05)

General ornithological museum collecting, Washington State (1996-2003)

Tern Island, French Frigate Shoals, Northwest Hawaiian Islands: Collection of blood samples from seabird colonies with emphasis on albatrosses (5/01)

Northern Territory, Queensland, Western Australia. Collection of museum specimens and tissues from treecreepers (*Climacteris*) and other passerines (8-9/97)

Eastern Australia (Queensland, New South Wales). Collection of museum specimens and tissues from treecreepers (*Climacteris*) and other passerines (8-9/96, 2/02, 9/02, 11/05, 6/07)

Fly River region, Papua New Guinea: Collection of blood samples for dissertation research (4/90)

Australia: Continent-wide collection of tissue specimens for dissertation research (1987, 1990)

CONFERENCES/SYMPOSIA CHAIRED/ORGANIZED

SSE 2013 Symposium: "The Role of Field Expeditions in 21st Century Evolutionary Biology". Annual meeting of the Society for the Study of Evolution, Snowbird, Utah.

Vice Chair and Chair, Gordon Conference in Ecological and Evolutionary Functional Genomics, 2007 (Newport, Rhode Island) and 2009 (Tilton, New Hampshire), respectively.

Chair, Annual meeting of the American Genetic Association, "Genomics and Biodiversity". National Laboratory of Genomics for Biodiversity, Irapuato, Mexico (July 2011)

Co-organizer: Mathematical and Computational Approaches in High-Throughput Genomics, Workshop III: Evolutionary Genomics, UCLA, November 2011

GRANTS

Research Grants

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| 1986 -1990 | National Science Foundation Graduate Fellowship (~\$67,000) |
| 1989 | Frank M. Chapman Memorial Award (American Museum of Natural History) |
| 1989 | National Science Foundation Dissertation Improvement Grant (\$12,000) |
| 1987,1988 | Carl B. Koford and Louise Kellogg research awards (Museum of Vertebrate Zoology) |
| 1990 -1991 | Ford Foundation Dissertation Fellowship (\$18,000) |
| 1991 | National Science Foundation Graduate Student Travel Award (\$3,000) |
| 1989,1996 | National Geographic Research Grants (Molecular biogeography of Australian birds; \$7,000 in 1990; \$19,700 in 1995) |
| 1995 | National Science Foundation Grant (3 yrs.; Behavioral and parasitological correlates of MHC polymorphism in Blackbirds; DEB 9419738; \$251, 000) |
| 1995 | University of Washington Royalty Research Grant (2 yrs.; Large-scale sequencing and the evolutionary tree for birds; \$25,000) |
| 1997 | U. Washington Nathan Shock Center For Excellence in the Basic Biology of Aging (1 yr., Cloning <i>Mhc</i> genes in Budgerigars, an avian model for aging; \$42,000) |
| 1997-1998 | National Science Foundation Grant (1.5 yrs., Evolution of class II Mhc genes in birds; DEB 9707458; \$105,000) |
| 1998 | National Geographic Society Online, Featured Grantee (Sept – Nov. 1998) |
| 1999 | National Science Foundation Grant (3 yrs., Concerted evolution of class II Mhc genes in birds; DEB 9815800; \$265, 000) |
| 2000 | National Geographic Research Grant (\$13,301); Conservation genetics of black-footed albatrosses caught in North Pacific fisheries' nets |

- 2000-2003 Evolution of a Parasite and its Recently Colonized Host (NSF DEB (IRCEB)0077804 ; 4 yrs. G. Hill, PI; S. Roberts, S. Edwards, co-PIs; \$2,034,122; \$721,812 to S.V.E.).
- 2001 Minority Career Advancement Award for Sabbatical Supplement in Evolutionary and Ecological Genetics – (NSF DEB-0129487; 1 yr., \$54,743)
- 2001-2005 Multilocus Tests of Speciation Models and Comparative Phylogeography of Australian Birds (P. Beerli co-PI; 4 yrs., NSF DEB-0108249; \$375,000)
- 2002 -2004 BAC Libraries for the Reptilia, Including Birds: Genomic Resources for Comparative Biology (NSF IBN-0207870; Edwards, PI; C. Amemiya, J. R. Macey, co-PIs; 2 yrs.; \$1,095,030)
- 2003 – 2006 Accomplishment-based renewal: Hitchhiking and Molecular Evolution of the Major Histocompatibility Complex in Birds (NSF, DEB0315806, 3 yrs., \$345,000)
- 2008-2011 NSF DEB 0743616 "COLLABORATIVE RESEARCH: Estimating Species Trees from Multilocus DNA Sequence Data" (co-PI, Dennis Pearl) \$450,000
- 2009-2012 NSF - MCB - 0817687: COLLABORATIVE RESEARCH: Evolution of Sex Chromosomes in Turtles. (PI, Nicole Valenzuela, Iowa State University; Edwards, co-PI) \$205,000
- 2008-2010 NSF DEB-0815705 - Collaborative Research: Multilocus Comparative Phylogeography of Pine-Oak Woodland Birds in North America (PI, Garth Spellman, Black Hill State University; co-PIs, John Klicka, and Scott Edwards) \$143,000
- 2009-2012 NSF IOS-0922640 - Collaborative Research: Molecular mechanisms of scent mediated self / non-self recognition in a pelagic seabird (PI, Gabrielle Nevitt, UC Davis) \$270,000
- 2009-2012 NSF IOS - 0923088 - Collaborative Research: Plumage redness and good genes in the House Finch - (PI, Geoff Hill, Auburn University, \$300,000)
- 2012-2016 NSF IOS-1258784 - Collaborative Research: A New Model For Chemical Ecology: Integrating Chemistry, Genetics and Behavior to Understand the Role of Individual Scent in a Colonial Nesting Seabird (Lead PI, Gabrielle Nevitt, UC Davis) \$270,000
- 2014 - 2017 NSF EAR- 1355343 - Collaborative Research: Phylogenomics of palaeognathous birds and the genomic basis of flightlessness (Lead PI, \$600,000; Julia Clarke co-PI, \$375,000)

Mentored NSF Dissertation Improvement Grants Student

- 1999 Hopi Hoekstra Evolution and maintenance of XY females in natural populations of South American field mice (genus *Akodon*)
- 2003 Hollie Walsh Population Genetics of Black-footed Albatrosses using SNPs: Implications for Regional Differentiation, Mate Choice, and Species Conservation (NSF 0309076)
- 2009 June Lee Molecular Evolution of Reproductive Genes in Australian Fairy Wrens (Maluridae) (DEB 0909897)
- 2011 Maude Baldwin Function and Evolution of Sweet Taste Receptors in Birds (IOS 1111487)
- 2013 Shane Campbell-Staton Temperature-Dependent Biogeography and Limits of Thermal Tolerance in *Anolis carolinensis*

Museum collections grants

- 1999 NSF Collections Improvement Grant (1 yr., Improvement of Genetic Resources Collection at Burke Museum; DBI-9876809; \$78,760)
- 2006-2010 NSF Computerization of the Ornithology Collection, Museum of Comparative Zoology, Harvard University (DBI 0646400; 3 yrs., \$479,656)

Grants for student diversity, mentoring, conferences and workshops

- 1996 Research Corporation, Inc. -- M. J. Research Charitable Trust Grant (2 yrs., for training Seattle-area high school teacher in molecular techniques for eventual transfer to high school setting; \$14,000)
- 1997 U. Washington Faculty Undergraduate Mentoring Award (\$3,000)

1996-1997	NSF Research Opportunity Award (with Peter Wimberger as co-PI (supplement to DEB 9419738; \$18,000)
2001	NSF UMEB Supplement: Student Diversity at SSE 2001 (\$18,000)
2002 -2006	Undergraduate Diversity at the Society for the Study of Evolution and the Society of Systematic Biologists (NSF, DEB-0227714; UMEB Program, 4 yrs., \$60,000)
2008-2012	NSF DEB-0826811 (URM - Undergraduate Research & Mentoring): Undergraduate Diversity at SSE/SBB 2008-2012 (\$67,500)
2009	NSF DEB 0910551 - 2009 Evolutionary and Ecological Functional Genomics Gordon Research Conference
2010-2015	RCN-UBE: Advancing Integration of Museums into Undergraduate Programs (AIM-UP!). DEB 0956129; PI:Joseph Cook (\$485,648)
2011	NSF OISE 1118408 - US-Mexico workshop on evolutionary genomics of non-model species: next-gen sequencing, data management and hypothesis testing, Irapuato, Mexico, July 19-21, 2011 (co-PI; Stacey Lance, PI)
2014-2017	Collaborative Research: Phylogenomics of palaeognathous birds and the genomic basis of flightlessness; PI Edwards, Julia Clarke; co-PI Michele Clamp (DEB 1355343/1355292; \$950,000 total; \$600,000 to Harvard

PUBLICATIONS

BOOKS

Audubon: Early Drawings. 2008. Richard Rhodes, Scott Edwards and Leslie Morris. Harvard University Press. 288 pages. [Reviewed favorably in the *NY Times*, *Wall Street Journal*, *Science* and many other venues).

JOURNAL PUBLICATIONS [Total 158; h-index 56 [Google Scholar]; * = not peer-reviewed; † = undergraduate student]

- Honeycutt, R. L., S. V. Edwards†, K. Nelson, and E. Nevo. 1987. Mitochondrial DNA variation and the phylogeny of African mole-rats (Rodentia: Bathyergidae). *Systematic Zoology* 36: 280-292.
- Kocher, T.D, W. K. Thomas, A. Meyer, S. V. Edwards, S. Pääbo, F. X. Villablanca and A. C. Wilson. 1989. Dynamics of mitochondrial DNA evolution in animals: amplification and sequencing with conserved primers. *Proceedings of the National Academy of Sciences (USA)* 86: 6196-6200.
- Edwards, S.V., and A.C. Wilson. 1990. Phylogenetically informative length polymorphism and sequence variability in mitochondrial DNA of Australian songbirds (*Pomatostomus*). *Genetics* 126: 695-711.
- Edwards, S.V., P. Arctander, and A.C. Wilson. 1991. Mitochondrial resolution of a deep branch in the genealogical tree for perching birds. *Proceedings of the Royal Society of London series B* 243:99-107.
- *Honeycutt, R.L., M.W. Allard, S.V. Edwards and D.A. Schlitter. 1991. Systematics and evolution of the family Bathyergidae. Pages 45-65 in P.W. Sherman, J.U.M. Jarvis and R.D. Alexander, eds. *The Biology of the Naked Mole-Rat*. Princeton University Press, Princeton, New Jersey.
- Edwards, S. V. & Naeem, S. 1993. The phylogenetic component of cooperative breeding in perching birds. *The American Naturalist* 141: 754-789.
- Edwards, S. V. 1993. Long-distance gene flow in a cooperative breeder detected in genealogies of mitochondrial DNA sequences. *Proceedings of the Royal Society of London series B* 252: 177-185.
- Edwards, S. V. 1993. Mitochondrial gene genealogy and gene flow among island and mainland populations of a sedentary songbird, the grey-crowned babbler (*Pomatostomus temporalis*). *Evolution* 47: 1118-1137.
- Bellchambers, K., E. Adams, S. Edwards. 1994. Observations of some birds of coastal and lowland Western Province, Papua New Guinea. *Muruk* 6: 28-39.
- Edwards, S. V. & Naeem, S. 1994. Homology and comparative methods in the study of avian cooperative breeding. *The American Naturalist* 143: 723-733.
- Edwards, S. V., M. Grahn and W. K. Potts. 1995. Dynamics of *Mhc* evolution in birds and crocodilians:

- amplification with degenerate primers. *Molecular Ecology* 4: 719-729.
- Edwards, S.V., E. K. Wakeland and W. K. Potts. 1995. Contrasting histories of avian and mammalian MHC genes revealed by class II B genes of songbirds. *Proceedings of the National Academy of Sciences* 92: 12200-12204.
- Edwards, S. V. & M. Kot. 1995. Comparative methods at the species level: geographic variation in morphology and group size in grey-crowned babblers (*Pomatostomus temporalis*). *Evolution* 49: 1134-1146.
- Edwards, S. V., and W. K. Potts. 1996. Polymorphism of *Mhc* genes: implications for conservation genetics of vertebrates. Pp. 214-237 in *Molecular Genetic Approaches to Conservation* (T. B. Smith and R. K. Wayne, eds). Oxford University Press, Oxford.
- *Edwards, S. V. 1996. Short- and long-term evolution of *Mhc* class II B genes in birds: first glimpses. Pp. 169-178 in *Current Topics in Molecular Evolution* (M. Nei and N. Takahata, eds.). Penn State University Press, Institute of Molecular Evolutionary Genetics, Penn State University.
- Lum, P. Y., Edwards, S. V., and Wright, R. 1996. Molecular, functional and evolutionary characterization of the gene encoding HMG-CoA reductase in the fission yeast, *Schizosaccharomyces pombe*. *Yeast* 12: 1107-1124.
- Edwards, S. V., and P. Arctander. 1997. Congruence and phylogenetic re-analysis of perching bird cytochrome *b* sequences. *Molecular Phylogenetics and Evolution* 7: 266-271.
- *Edwards, S. V. 1997. Relevance of microevolutionary processes to higher level molecular systematics. Pp. 251-278 in *Avian Molecular Systematics and Evolution* (D. P. Mindell, ed.) Academic Press, New York.
- Edwards, S. V., K. Chesnut, K., Y. Satta, and E. K. Wakeland, 1997. Ancestral polymorphism of *Mhc* class II genes in mice: implications for balancing selection and the mammalian molecular clock. *Genetics* 148: 655-668.
- Edwards, S. V., Gasper, J., March, M. 1998. Genomics and polymorphism of *Agph-DAB1*, and *Mhc* class II B gene in Red-winged Blackbirds (*Agelaius phoeniceus*). *Molecular Biology and Evolution* 5: 236-250.
- Edwards, S. V., and P. Hedrick. 1998. Evolution and ecology of MHC molecules: from genomics to sexual selection. *Trends in Ecology and Evolution* 13: 305-311.
- *Edwards, S. V. 1998. Diversity of Birds. Pp. 358-369, in *Encyclopedia of Reproduction* (E. Knobil, J. D. Neill, Editors-in-Chief), Academic Press, San Diego, CA.
- Voelker, G. and S. V. Edwards. 1998. Can weighting improve bushy trees?: models of cytochrome *b* evolution and the molecular systematics of pipits and wagtails (Motacillidae). *Systematic Biology* 47: 589-603.
- *Edwards, S. V., C. Hess, J. Gasper, and D. Garrigan†. 1998. Toward an evolutionary genomics of the avian *Mhc*. *Immunological Reviews*, 167: 119-132.
- Garrigan, D †. and Edwards, S. V. (1999). Polymorphism across an intron exon boundary in an avian *Mhc* class II B gene. *Molecular Biology and Evolution* 16, 1599-1606.
- Hess, C. M., Gasper, J., Hoekstra, H., Hill, C. & Edwards, S. V. 2000 MHC class II pseudogene and genomic signature of a 32-kb cosmid in the House Finch (*Carpodacus mexicanus*). *Genome Research* 10: 13-23.
- Edwards, S. V. and Beerli, P. (2000). Perspective: Gene divergence, population divergence, and the variance in coalescence time in phylogeographic studies. *Evolution* 54, 1839-1854.
- Edwards, S. V., Gasper, J., Garrigan, D†., Martindale, D. A. and Koop, B. F. (2000). A 39-kb sequence around a blackbird *Mhc* class II B gene: ghost of selection past and songbird genome architecture. *Molecular Biology and Evolution* 17, 1384-1395.
- Edwards, S. V., Mónica C. Silva, Theresa Burg, Vicki Friesen and Kenneth I. Warheit. (2000). Molecular genetic markers in the analysis of seabird bycatch populations. In *Seabird Bycatch: Trends, Roadblocks and Solutions*. (ed. E. Melvin and J. Parrish), pp. 115-140: Alaska Seagrant Program.
- *Edwards, S. V., Nusser, J. and Gasper, J. (2000). Characterization and evolution of *Mhc* genes from non-model organisms, with examples from birds. In *Molecular Methods in Ecology* (ed. A. J. Baker), pp. 168-207. Cambridge: Blackwell Scientific.
- Hoekstra, H. E. and Edwards, S. V. (2000). Multiple origins of XY female mice (genus *Akodon*): phylogenetic and chromosomal evidence. *Proceedings of the Royal Society of London Series B Biological Sciences* 267, 1825-1831.
- Saunders, M.† and Edwards, S. V. (2000). Dynamics and phylogenetic implications of mtDNA control region

- in New World Jays (Aves: Corvidae). *Journal of Molecular Evolution* 51, 97-109.
- Gasper, J., Shiina, T., Inoko, H. and Edwards, S. V. (2001). Songbird genomics: analysis of 45-kb upstream of a polymorphic Mhc class II gene in Red-winged Blackbird (*Agelaius phoeniceus*). *Genomics* 75, 26-34. [cover article]
- Miura, G.† and Edwards, S. V. (2001). Cryptic differentiation and geographic variation in genetic diversity of Hall's Babbler (*Pomatostomus halli*). *Journal of Avian Biology* 32, 102-110.
- Hess, C. M. and Edwards, S. V. (2002). The evolution of major histocompatibility genes in birds. *Bioscience*. 52: 423-431.
- Edwards, S. V. and W. E. Boles. (2002). Out of Gondwana: the origin of passerine birds. *Trends in Ecology and Evolution* 17: 347-349.
- Birks, S. and Edwards, S. V. (2002). A phylogeny of megapodes (Aves: Megapodidae) based on nuclear and mitochondrial DNA sequences. *Molecular Phylogenetics and Evolution*. 23: 408-21
- Edwards, S. V., Fertil, B., Giron, A. and Deschavanne, P. J. (2002). A genomic schism in birds revealed by phylogenetic analysis of DNA strings. *Systematic Biology* 51: 599-613. [cover article]
- Zelano, B. and Edwards, S. V. (2002). An Mhc component to kin recognition and mate choice in birds: predictions, progress, and prospects. *American Naturalist*. 160: S225-S237.
- Waltari, E.† and Edwards, S. V. (2002). The evolutionary dynamics of intron size, genome size, and physiological correlates in archosaurs. *American Naturalist* 160: 539-552.
- Arbogast, B., Edwards, S. V., Wakeley, J. Beerli, P., and Slowinski, J. (2002). Estimating divergence times from molecular data on phylogenetic and population genetic time scales. *Annual Review of Ecology and Systematics* 33: 707-740.
- *Beerli, P., and Edwards, S. V. 2002. When did Neanderthals and modern humans diverge? *Evolutionary Anthropology* S1: 60-63.
- Brumfield, R. D. Nickerson, P. Beerli, and S. V. Edwards. (2002). The utility of single nucleotide polymorphisms in inferences of population history. *Trends in Ecology and Evolution*. 18: 249-256
- Wang, Z., Baker, A. J., Hill, G. E., Edwards, S. V. (2003). Reconciling actual and inferred population histories revealed by AFLP analysis in the House Finch. (*Carpodacus mexicanus*) *Evolution* 57: 2852-2864.
- *Edwards, S. V. (2003). Australo-Papuan Babblers. In *Encyclopedia of Birds* (Andromeda Oxford Ltd., Abingdon, U. K.)
- Edwards, S. V. and Dillon†, M. 2004. Hitchhiking and recombination in birds: evidence from Mhc-linked and unlinked loci in red-winged blackbirds (*Agelaius phoeniceus*). *Genetical Research* 84: 175-192.
- Edwards, S. V. 2005. Gene and Genome Evolution. Chapter 19, in *Evolution*, by Douglas Futuyma. Sinauer Associates, Sunderland, MA.
- Edwards, S. V., Kingan, S. B., Calkins, J. D., Balakrishnan, C. N., W. Bryan Jennings, Swanson, W. J. and Sorenson, M. D. (2005). Speciation in birds: genes, geography and sexual selection. *Proc. Natl. Acad. Sci. (USA)* 102: 6550-6557.
- Edwards, S. V., Jennings, W. B. and Shedlock, A. M. (2005). Phylogenetics of modern birds in the era of genomics. *Proceeding of the Royal Society of London series B* 272: 979-992.
- Jennings, W. B. and Edwards, S. V. 2005. Speciation history of Australian grass finches (*Poephila*) inferred from 30 gene trees. *Evolution* 59:2033-2047
- Edwards, S. V., S. Birks, R. T. Brumfield, and R. Hanner. (2005). Avian Genetic Resources Collections: Archives of Evolutionary and Environmental History. *Auk* 122:979-984.
- Walsh, H. E. and Edwards, S. V. (2005). Conservation genetics and Pacific fisheries bycatch: mitochondrial differentiation and population assignment in black-footed albatrosses (*Phoebastria nigripes*). *Conservation Genetics* 6:289-295.
- Chapus, C., C. Dufraigne, S. Edwards, A. Giron, B. Fertil, and P. Deschavanne. 2005. Exploration of phylogenetic data using a global sequence analysis method. *BMC Evolutionary Biology* 5:63.
- Wang, Z., K. Farmer, G. E. Hill, and S. V. Edwards. 2006. A cDNA macroarray approach to parasite-induced gene expression changes in a songbird host: genetic response of house finches to experimental infection by *Mycoplasma gallisepticum*. *Mol Ecol* 15:1263-1273.
- Aguilar, A., S. V. Edwards, T. B. Smith, and R. K. Wayne. 2006. Patterns of variation in MHC class II beta loci of the little greenbul (*Andropadus virens*) with comments on MHC evolution in birds. *Journal of Heredity* 97:133-142.

- Fleischer, R. C., J. J. Kirchman, J. P. Dumbacher, L. Bevier, C. Dove, N. C. Rotzel, S. V. Edwards, M. Lammertink, K. J. Miglia, W. S. Moore. 2006. Mid-Pleistocene divergence of Cuban and North American ivory-billed woodpeckers. *Biology Letters* 2: 466-469.
- Wang, Z., T. Miyake, S. V. Edwards and C. T. Amemiya. 2006. Tuatara (*Sphenodon*) genomics: BAC library construction, sequence survey and application to the *DMRT* gene family. *J. Heredity* 97: 541-548.
- Hess, C. M., Z. Wang, and S. V. Edwards. 2007. Evolutionary genetics of *Carpodacus mexicanus*, a recently colonized host of a bacterial pathogen, *Mycoplasma gallisepticum*. *Genetica* 129:217-225.
- Organ, C., A. Shedlock, A. Meade, M. Pagel, and S. V. Edwards. 2007. Origin of avian genome size and structure in theropod dinosaurs. *Nature* 446: 180-184
- Shedlock, A. M., C. W. Botka, S. Zhao, J. Shetty, T. Zhang, J. S. Liu, P. J. Deschavanne and S. V. Edwards. 2007. Phylogenomics of non-avian reptiles and the structure of the ancestral amniote genome. *Proc. Natl. Acad. Sci. (USA)* 104: 2767-2772.
- Edwards, S. V., L. Liu, D. K. Pearl. 2007. High resolution species trees without concatenation. *Proc. Natl. Acad. Sci. USA* 104: 5936-5941.
- Brumfield, R. T., and S. V. Edwards. 2007. Evolution into and out of the Andes: a Bayesian analysis of historical diversification in *Thamnophilus* antshrikes. *Evolution* 61:346-367.
- Alcaide, M., S. V. Edwards, and J. J. Negro. 2007. Characterization, polymorphism and evolution of MHC class II genes in birds of prey. *Journal of Molecular Evolution* 65: 541-554.
- Edwards, S. V. 2007. Genomics and ornithology. *Journal of Ornithology* (Suppl 1): S27-S33.
- Edwards, S. V. 2008. A smörgåsbord of markers for avian ecology and evolution. *Mol. Ecol.* 17: 945-946.
- Limaye, N., K. A. Belobrajdic, A. E. Wandstrat, F. Bonhomme, S. V. Edwards and E. K. Wakeland. 2008. Prevalence and evolutionary origins of autoimmune susceptibility alleles in natural mouse populations. *Genes and Immunity* 9: 61-68
- Causey, D., and S. V. Edwards. 2008. Ecology of avian influenza virus in birds. *Journal of Infectious Disease* 197 Suppl 1:S29-33.
- Janes, D. E., T. Ezaz, J. A. M. Graves and S. V. Edwards. 2008 Characterization, chromosomal location and genomic neighborhood of a ratite ortholog of a gene with gonadal expression in mammals. *Integrative and Comparative Biology* 48: 505 - 511.
- Organ, C. L., R. G. Moreno, and S. V. Edwards. 2008. Three tiers of genome evolution in reptiles. *Integrative and Comparative Biology* 48: 494 - 504.
- Shedlock, A. M., Janes, D., Edwards, S. V. 2008. Amniote phylogenomics: Testing hypotheses with large-scale sequence data from reptiles. Pp. 91-117 In *Phylogenomics* (W. Murphy, Ed.) Humana Press, Inc., Totowa, NJ.
- Brumfield, R., L. Liu, D. E. Lum†, and S. V. Edwards. 2008. Comparison of species tree methods for reconstructing the phylogeny of bearded manakins (Aves: Pipridae, *Manacus*) from multilocus sequence data. *Systematic Biology* 57: 719-731.
- Bonneaud, C., Burnside, J., and S. V. Edwards. 2008. High-speed developments in avian genomics. *Bioscience*. 58: 587-595.
- Liu, L., D. K. Pearl, R. T. Brumfield, S. V. Edwards. 2008. Estimating species trees using multiple-allele DNA sequence data. *Evolution*. 62: 2080-2091.
- Janes, D. E., T. Ezaz, J. A. M. Graves and S. V. Edwards. 2008. Recombination and nucleotide diversity in the pseudoautosomal region of minimally differentiated sex chromosomes in the Emu, *Dromaius novaehollandiae*. 100: 125-136.
- Thomson, R. C., A. M. Shedlock, S. V. Edwards, and H. B. Shaffer. 2008. Developing markers for multilocus phylogenetics in non-model organisms: a test case with turtles. *Molecular Phylogenetics and Evolution* 49: 514-525
- Lee, J. Y. and S. V. Edwards. 2008. Divergence across Australia's Carpentarian barrier: Statistical phylogeography of the Red-backed Fairy Wren (*Malurus melanocephalus*) *Evolution* 62: 3117-3134.
- Alcaide, M., S. V. Edwards, J. J. Negro, D. Serrano, and J. L. Tella. 2008. Extensive polymorphism and geographical variation at a positively selected MHC class II B gene of the lesser kestrel (*Falco naumanni*). *Molecular Ecology* 17: 2652-2665.
- Genome 10K Community of Scientists. 2008. Genome 10K: a proposal to obtain whole-genome sequence for 10,000 vertebrate species. *Journal of Heredity* 100:659-674.

- Kearns, A. M., L. Joseph, S. V. Edwards, and M. C. Double. 2009. Inferring the phylogeography and evolutionary history of the splendid fairy-wren *Malurus splendens* from mitochondrial DNA and spectrophotometry. *Journal of Avian Biology* 40:7-17.
- Shedlock, A. M., and S. V. Edwards. 2009. Amniotes (Amniota). Pp. 375-379 in S. Blair Hedges and Sudhir Kumar (Editors). Oxford U. Press.
- Edwards, S. V. 2009. Is a new and general theory of molecular systematics emerging? *Evolution* 63: 1-19.
- Balakrishnan, C. B. and S. V. Edwards. 2009. Nucleotide variation, linkage disequilibrium and founder-facilitated speciation in wild populations of the zebra finch *Taeniopygia guttata*. *Genetics* 181: 645-660.
- Brito, P. and Edwards, S. V. 2009. Multilocus phylogeography and phylogenetics using sequence-based markers. *Genetica* 135:439-455.
- Silva, M. C. and Edwards, S. V. 2009. Structure and evolution of a new avian MHC class II B gene in a sub-Antarctic seabird, the Thin-Billed Prion (Procellariiformes: *Pachyptila belcheri*). *Journal of Molecular Evolution* 68: 279-291.
- Alcaide M, Edwards SV, Cadahia SV and Negro J.J. 2009. MHC class I genes of birds of prey: isolation, polymorphism and diversifying selection. *Conservation Genetics* 10: 1349-1355.
- Liu, L., L. Yu, L. Kubatko, D. K. Pearl, and S. V. Edwards. 2009. Coalescent methods for estimating phylogenetic trees. *Molecular Phylogenetics and Evolution* 53:320-328.
- Edwards S., Bensch S. 2009. Looking forwards or looking backwards in avian phylogeography? A comment on Zink and Barrowclough 2008. *Molecular Ecology*, 18, 2930-2933.
- Liu, L. and Edwards, S. V. 2009. Phylogenetic analysis in the anomaly zone. *Systematic Biology* 58: 452-460.
- Liu, L., L. Yu, D. K. Pearl, and S. V. Edwards. 2009. Estimating species phylogenies using coalescence times among sequences. *Systematic Biology* 58: 468-477.
- Edwards, S. V. 2009. Natural selection and phylogenetic analysis. *Proceedings of the National Academy of Sciences USA* 106: 8799-8800.
- Janes, D. E., C. L. Organ, and S. V. Edwards. 2009. Variability in sex-determining mechanisms influences genome complexity in Reptilia. *Cytogenetics and Genome Research* 127:242-248.
- Chapus, C. and S. V. Edwards. 2009. Genome evolution in Reptilia: in silico chicken mapping of 12,000 BAC-end sequences from two reptiles and a basal bird. *BMC Genomics*. 10(Suppl 2):S8.
- O'Keefe, K. J., O. K. Silander, H. McCreery, D. M. Weinreich, K. M. Wright, L. Chao, S. V. Edwards, Remold, S.K. & Turner, P. E. 2010. Geographic differences in sexual reassortment in an RNA phage. *Evolution* 64: 3010-3023.
- Janes, D. E., C. L. Organ, M. K. Fujita, A. M. Shedlock, and S. V. Edwards. 2010. Genome Evolution in Reptilia, the Sister Group of Mammals. *Annual Review of Genomics and Human Genetics*. 11: 239-264
- Balakrishnan, C.N., R. Ekblom, M.Völker, H. Westerdahl, R. Godinez, H. Kotkiewicz, D. W. Burt, T. Graves, D. K. Griffin, W. C. Warren, S. V. Edwards. 2010. Gene duplication and fragmentation in the zebra finch major histocompatibility complex. *BMC Biology* 2010, 8:29.
- Castillo-Ramírez, S., L. Liu, D. Pearl, and S. V. Edwards. 2010. Bayesian estimation of species trees: a practical guide to optimal sampling and analysis. Pages 15-33 in *Estimating Species Trees: Practical and Theoretical Aspects* (L. L. Knowles, and L. S. Kubatko, eds.). Wiley-Blackwell, New Jersey.
- Liu, L., L. Yu, S. V. Edwards. (2010) A maximum pseudo-likelihood approach for estimating species trees under the coalescent model. *BMC Evolutionary Biology* 10:302. doi:10.1186/1471-2148-10-302.
- Künstner, A., Wolf, J.B.W., Backström, N., Whitney, O., Balakrishnan, C., Day, L., Edwards, S.V., Janes, D.E., Schlinger, B.A., Wilson, R.K., Jarvis, E.D., Warren, W.C. & Ellegren, H. (2010) Comparative genomics based on massive parallel transcriptome sequencing reveals patterns of substitution and selection across 10 bird species. *Molecular Ecology* 19 Suppl 1: 266-276
- Organ, C. L., M. Rasmussen, M. W. Baldwin, M. Kellis, and S. V. Edwards. 2010. Phylogenomic approach to the evolutionary dynamics of gene duplication in birds. Pp. 253-267 In *Evolution After Gene Duplication*. Eds. K. Dittmar and D. Liberles. Wiley & Sons.
- Balakrishnan, C.N., Lee J. Y. and Edwards, S. V. 2010. Phylogeography and phylogenetics in the nuclear age. Pp. 65-88 In: *In Searching for the Causes of Evolution: From Field Observations to Mechanisms*. (Eds., Peter and Rosemary Grant), Princeton University Press, Princeton, NJ.
- Janes, D.E., N. Valenzuela, T. Ezaz, C. Amemiya, and S.V. Edwards. 2011. Sex chromosome evolution in

- Amniotes: Applications for Bacterial Artificial Chromosome libraries. *Journal of Biomedicine and Biotechnology* 2011:132975.
- Alcaide, M. and S. V. Edwards. 2011. Molecular evolution of the Toll-like receptor multigene family in birds. *Molecular Biology and Evolution*. 28: 1703-1715.
- Janes, D.E., C. Chapus, Y. Gondo, D.F. Clayton, S. Sinha, C.A. Blatti, C.L. Organ, M.K. Fujita, C.N. Balakrishnan, and S.V. Edwards. 2011. Reptiles and mammals have differentially retained long conserved non-coding sequences from the amniote ancestor. *Genome Biology and Evolution* 3:102–113.
- Vo, A.-T. E.†, M. S. Bank, J. P. Shine, and S. V. Edwards. 2011. Temporal increase in organic mercury in an endangered pelagic seabird assessed via century-old museum specimens. *Proc. Natl. Acad. Sci. (USA)* 108: 7466-7471.
- Bonneaud, C. S. L. Balenger, A. F. Russell, J. Zhang, G. E. Hill, and S. V. Edwards. 2011. Rapid evolution of disease resistance is accompanied by functional changes in gene expression in a wild bird *Proc. Natl. Acad. Sci. (USA)* 108: 7866-7871.
- Organ, C. L., and S. V. Edwards. 2011. Major events in avian genome evolution. Pp. 325-337 in *Living Dinosaurs: The Evolutionary History of Modern Birds* (G. Dyke and G. Kaiser, eds). Wiley-Blackwell.
- Fujita, M., Edwards, S.V., Ponting, C. 2011. The *Anolis* lizard genome: an amniote genome without isochores. *Genome Biol. Evol.* 3:974–984.
- Rheindt, F. & S. V. Edwards. 2011. Genetic introgression: an integral but neglected component of speciation in birds. *Auk* 128: 620-632.
- Rheindt, F. E., T. Székely, S. V. Edwards, P. L. M. Lee, T. Burke, P. R. Kennerley, D. N. Bakewell et al. 2011. Conflict between genetic and phenotypic differentiation: the evolutionary history of a ‘lost and rediscovered’ shorebird. *PLoS One* 6:e26995.
- Castoe, T. A., A. M. Bronikowski, E. D. Brodie III, S. V. Edwards, M. E. Pfrender, M. D. Shapiro, D. D. Pollock, and W. C. Warren. 2011. A proposal to sequence the genome of a garter snake (*Thamnophis sirtalis*). *Standards in Genomic Sciences* 4:257.
- St John, J. A., E. L. Braun, S. R. Isberg, L. G. Miles, A. Y. Chong, J. Gongora, P. Dalzell, C. Moran, B. Bed'Hom, and A. Abzhanov. 2012. Sequencing three crocodylian genomes to illuminate the evolution of archosaurs and amniotes. *Genome Biology* 13:415.
- Delaney, N. F., S. Balenger, C. Bonneaud, C. J. Marx, G. E. Hill, N. Ferguson-Noel, P. Tsai, A. Rodrigo, and S. V. Edwards. 2012. Ultrafast evolution and loss of CRISPRs following a host shift in a novel wildlife pathogen, *Mycoplasma gallisepticum*. *PLoS Genetics* 8:e1002511.
- Lee, J. Y., L. Joseph, and S. V. Edwards. 2012. A Species Tree for the Australo-Papuan Fairy-wrens and Allies (Aves: Maluridae). *Systematic Biology* 61:253-271.
- Edwards, S. V., Cameron Devitt, S. & M. Fujita. 2012. “Phylogeography”. Pp. 557-565 in *Encyclopedia of Theoretical Ecology*. A. Hastings and L. Gross (eds.). University of California Press, Berkeley.
- Bonneaud, C. S. L. Balenger, G. E. Hill, and S. V. Edwards. 2012. Innate immunity and the evolution of resistance to an emerging infectious disease in a wild bird. *Molecular Ecology* 21: 2628-2639.
- Küpper, C., J. Augustin, S. Edwards, T. Székely, A. Kosztolányi, T. Burke, and D. E. Janes. 2012. Triploid plover female provides support for a role of the W chromosome in avian sex determination. *Biology Letters* 8:787-789.
- Anderson, C., L. Liu, D. Pearl, S. V. Edwards. 2012. Tangled trees: The challenge of inferring species trees from coalescent and non-coalescent genes. Pp. 3-28 in *Evolutionary Genomics: Statistical and Computational Methods, vol. 2* (M. Anisimova, Ed.) Springer (Humana)
- Edwards, S. V. 2012. Afterward: Genetics and the evolutionary history of avian brood parasitism [Response to chapter by Langmore and Spottiswoode]. Pp. 116-188 in *Host Manipulation By Parasites* (David P. Hughes, Jacques Brodeur & Frédéric Thomas (eds.). Oxford University Press.
- Campbell-Staton, S. C., R. M. Goodman, N. Backström, S. V. Edwards, J. B. Losos, J. J. Kolbe. 2012. Out of Florida: mtDNA reveals patterns of migration and Pleistocene range expansion of the Green Anole lizard (*Anolis carolinensis*). *Ecology and Evolution* 2: 2274-2284.
- Zhang, Q., S.V. Edwards. 2012. The evolution of intron size in amniotes: a role for powered flight? *Genome Biology and Evolution* 4:1033–1043.
- Song, S., Liang Liu, Scott V. Edwards, and Shaoyuan Wu. 2012. Resolving conflict in eutherian mammal

- phylogeny using phylogenomics and the multispecies coalescent model *Proc. Natl. Acad. Sci. (USA)*: 109: 14942-14947.
- Küpper, C., Scott V Edwards, András Kosztolányi, Monif Alrashidi, Terry Burke, Philipp Herrmann, Araceli Argüelles-Tico, Juan A Amat, Mohamed Amezian, Afonso Rocha, Hermann Hötter, Anton Ivanov, Joseph Chernicko, Tamás Székely. 2012. High gene flow on a continental scale in the polyandrous Kentish plover *Charadrius alexandrinus*. *Molecular Ecology* 21: 5864–5879.
- Raposo do Amaral, F., Scott V Edwards, Cristina Y Miyaki. 2012. Eight anonymous nuclear loci for the squamate antbird (*Myrmeciza squamosa*), cross-amplifiable in other species of typical antbirds (Aves, Thamnophilidae). *Conservation Genetics Resources* 4: 645-647.
- Backström, N., Zhang, Q., and Scott V. Edwards. 2012. Evidence for adaptive evolution and increased biased gene conversion in passerines from a house finch (*Carpodacus mexicanus*) spleen transcriptome. *Molecular Biology and Evolution* 30:1046–1050.
- Backström, N. Daria Shipilina, Mozes P. K. Blom, and Scott V. Edwards. 2012. Cis-regulatory sequence variation and association with *Mycoplasma* load in natural populations of the house finch (*Carpodacus mexicanus*). *Ecology and Evolution* 3: 655–666.
- Wu, S., W. Wu, F. Zhang, J. Ye, X. Ni, J. Sun, S. V. Edwards, J. Meng, and C. L. Organ. 2012. Molecular and Paleontological Evidence for a Post-Cretaceous Origin of Rodents. *PLoS One* 7:e46445.
- Janes, D., R. Elsey, E. Langan, N. Valenzuela, and S. Edwards. 2013. Sex-Biased Expression of Sex-Differentiating Genes FOXL2 and FGF9 in American Alligators, *Alligator mississippiensis*. *Sexual Development* 7:253-260.
- Kültz, D., D. F. Clayton, G. E. Robinson, C. Albertson, H. V. Carey, M. E. Cummings, K. Dewar, S. V. Edwards, H. A. Hofmann, L. J. Gross, J. G. Kingsolver, M. J. Meaney, B. A. Schlinger, A. W. Shingleton, M. B. Sokolowski, G. N. Somero, D. C. Stanzione, and A. E. Todgham. 2013. New Frontiers for Organismal Biology. *Bioscience* 63:464-471.
- Edwards, S. V. 2013. Next-generation QTL mapping: crowdsourcing SNPs, without pedigrees. *Molecular Ecology* 22:3885-3887.
- Dennehy, J. J., S. Duffy, K. J. O'Keefe, S. V. Edwards, and P. E. Turner. 2013. Frequent coinfection reduces RNA virus population genetic diversity. *Journal of Heredity* 104:704-712.
- Alcaide, M., Liu, M., Edwards, S. V. 2013. Major histocompatibility complex class I evolution in songbirds: universal primers, rapid evolution and base compositional shifts in exon 3. *PeerJ* 1:e86 <http://dx.doi.org/10.7717/peerj.86>
- Joseph, L. S. Edwards, A. McLean. 2013. The Maluridae: inferring avian biology and evolutionary history from DNA sequences. *Emu* 113: 195–207.
- Raposo do Amaral, Fábio, Patrick K. Albers, Scott V. Edwards and Cristina Y. Miyaki. 2013. Multilocus tests of Pleistocene refugia and ancient divergence in a pair of Atlantic Forest antbirds (*Myrmeciza*). *Molecular Ecology* 22, 3996–4013.
- Rheindt, F. E., Fujita, M. K., Wilton, P. R., Edwards, S. V. 2013. Introgression and Phenotypic Assimilation in *Zimmerius* Flycatchers (Tyrannidae): Population Genetic and Phylogenetic Inferences from Genome-Wide SNPs. *Systematic Biology* 63: 134–152.
- Ezaz, T., B. Azad, D. O'Meally, M. J. Young, K. Matsubara, M. J. Edwards, X. Zhang, C. E. Holleley, J. E. Deakin, J. A. Marshall Graves, A. Georges, S. V. Edwards, and S. D. Sarre. 2013. Sequence and gene content of a large fragment of a lizard sex chromosome and evaluation of candidate sex differentiating gene R-spondin 1. *BMC Genomics* 14:899.
- Zhang, Q., G.E. Hill, S. V. Edwards, and Backström, N 2014. A house finch (*Haemorhous mexicanus*) spleen transcriptome reveals intra- and interspecific patterns of gene expression, alternative splicing and genetic diversity in passerines. *BMC Genomics* 15: 305.
- Baldwin, M. W., Y. Toda, T. Nakagita, M. J. O'Connell, K. C. Klasing, T. Misaka, S. V. Edwards, and S. D. Liberles. 2014. Evolution of sweet taste perception in hummingbirds by transformation of the ancestral umami receptor. *Science* 345:929-933.
- Wu, S. Y., F. C. Zhang, S. V. Edwards, W. Y. Wu, J. Ye, S. D. Bi, X. J. Ni, C. Quan, J. Meng, and C. L. Organ. 2014. The Evolution of Bipedalism in Jerboas (Rodentia: Dipodoidea): Origin in Humid and Forested Environments. *Evolution* 68:2108-2118.
- Cook, J. A., S. V. Edwards, E. A. Lacey, R. P. Guralnick, P. S. Soltis, D. E. Soltis, C. K. Welch, K. C. Bell, K.

- E. Galbreath, C. Himes, J. M. Allen, T. A. Heath, A. C. Carnaval, K. L. Cooper, M. Liu, J. Hanken, and S. Ickert-Bond. 2014. Natural History Collections as Emerging Resources for Innovative Education. *Bioscience* 64:725-734.
- Riehl, C., Strong, M. J., & Edwards, S. V. 2014. Inferential reasoning and egg rejection in a cooperatively breeding cuckoo. *Animal Cognition* 18: 75-82.
- McGlothlin, J. W., J. P. Chuckalovcak, D. E. Janes, S. V. Edwards, C. R. Feldman, E. D. Brodie, M. E. Pfrender, and E. D. Brodie. 2014. Parallel Evolution of Tetrodotoxin Resistance in Three Voltage-Gated Sodium Channel Genes in the Garter Snake *Thamnophis sirtalis*. *Molecular Biology and Evolution* 31: 2836-2846.
- Lowe, C. B., J. A. Clarke, A. J. Baker, D. Haussler, and S. V. Edwards. 2014. Feather Development Genes and Associated Regulatory Innovation Predate the Origin of Dinosauria. *Mol. Biol. Evol.* 32:23-28.
- Janes, Daniel E., Christopher L. Organ, Rami Stiglec, Denis O'Meally, Stephen D. Sarre, Arthur Georges, Jennifer A.M. Graves, Nicole Valenzuela, Robert A. Literman, Kim Rutherford, Neil Gemmell, John B. Iverson, Jeffrey W. Tamplin, Scott V. Edwards, and Tariq Ezaz. 2014. Molecular evolution of *Dmrt1* accompanies change of sex-determining mechanisms in Reptilia. *Biology Letters* 10: 10.1098/rsbl.2014.0809
- Dierickx, Elisa G., Allison J. Shultz, Fumio Sato, Takashi Hiraoka, Scott V. Edwards. 2015. Morphological and genomic comparisons of Hawaiian and Japanese black-footed albatrosses *Phoebastria nigripes* using double digest RADseq: implications for conservation. *Evolutionary Applications* 8: 662-678.
- Badenhorst, D., Hillier, L. W., Literman, R., Montiel, E. E., Radhakrishnan, S., Shen, Y., Minx, P., Janes, D. E., Warren, W. C., Edwards, S. V. Valenzuela, N. 2015. Physical Mapping and Refinement of the Painted Turtle Genome (*Chrysemys picta*) Inform Amniote Genome Evolution and Challenge Turtle-Bird Chromosomal Conservation. *Genome Biology and Evolution* 7: 2038–2050.
- Balenger, S. L., Bonneaud, C., Sefick, S. a., Edwards, S. V., & Hill, G. E. (2015). Plumage color and pathogen-induced gene expression in a wild bird. *Behavioral Ecology*, 26: 1100–1110.
- Miller, H. C., O'Meally, D., Ezaz, T., Amemiya, C., Marshall-Graves, J. A., & Edwards, S. 2015. Major Histocompatibility Complex Genes Map to Two Chromosomes in an Evolutionarily Ancient Reptile, the Tuatara *Sphenodon punctatus*. *G3: Genes, Genomes, Genetics* 5:1439–51.
- Liu, L., Z. Xi, S. Wu, C. C. Davis, and S. V. Edwards. 2015. Estimating phylogenetic trees from genome-scale data. *Annals of the NY Academy of Sciences* 1360: 36-53.
- Edwards, S. V, A. Shultz and S. C. Campbell-Staton. 2015. Next-generation sequencing and the expanding domain of phylogeography. *Folia Zoologica* 64: 187–206.
- Edwards, S. V., Xi, Z., Janke, A., Faircloth, B. C., McCormack, J. E., Glenn, T. C., ... Davis, C. C. 2015. Implementing and testing the multispecies coalescent model: a valuable paradigm for phylogenomics. *Molecular Phylogenetics and Evolution* 94: 447–462.
- Edwards, S. 2016. Inferring Species Trees. In: Kliman, R.M. (ed.), *Encyclopedia of Evolutionary Biology*. vol. 4, pp. 236–244. Oxford: Academic Press.
- Edwards S V., Potter S, Schmitt CJ, Bragg JG, Moritz C. 2016. Reticulation, divergence, and the phylogeography–phylogenetics continuum. *PNAS* 113: 8025-8032. doi:10.1073/pnas.1601066113.

PAPERS FROM LARGE CONSORTIA AND GENOME PROJECTS

- Warren, W. et al. 2010. The genome of a songbird. *Nature* 464: 757-762.
- Alfoldi, J et al. 2011. The genome of *Anolis carolinensis*, the green anole lizard, and a comparative analysis with birds and mammals. *Nature* 477: 587-591.
- Shaffer, H. B., P. Minx, D. Warren, A. Shedlock, R. Thomson, N. Valenzuela, J. Abramyan, C. Amemiya, D. Badenhorst, K. Biggar, G. Borchert, C. Botka, R. Bowden, E. Braun, A. Bronikowski, B. Bruneau, L. Buck, B. Capel, T. Castoe, M. Czerwinski, K. Delehaunty, S. Edwards, C. Fronick, M. Fujita, L. Fulton, T. Graves, R. Green, W. Haerty, R. Hariharan, O. Hernandez et al. 2013. The western painted turtle genome, a model for the evolution of extreme physiological adaptations in a slowly evolving lineage. *Genome Biology* 14:R28.
- Jarvis, E. D., et al. 2014. Whole-genome analyses resolve early branches in the tree of life of modern birds. *Science*. 346: 1320-1331.

- Green, R. E., et al. 2014. Three crocodylian genomes reveal ancestral patterns of evolution among archosaurs. *Science*. 346: 1254449.
- Zhang, G. J., et al. 2014. Comparative genomics reveals insights into avian genome evolution and adaptation. *Science*. 346: 1311-1320.

MANUSCRIPTS IN PRESS

- Campbell-Staton, S.C., Edwards, S. V. & Losos, J.B., 2016. Climate-mediated adaptation after mainland colonization of an ancestrally subtropical island lizard, *Anolis carolinensis*. *J. Evol. Biol.* Available at: <http://doi.wiley.com/10.1111/jeb.12935>.
- Edwards, S. V. 2016. Phylogenomic subsampling: a brief review. *Zoologica Scripta*.

MANUSCRIPTS IN REVIEW

- Edwards, S.V., R. Hopkins, J. Mallet. 2016. Speciation. In *The Theory of Evolution*, eds. Sam Scheiner and David Mindell, forthcoming.

MANUSCRIPTS IN PREPARATION

- Edwards, S. V., A. Cloutier, A. J. Baker, J. A. Clarke, C. B. Lowe. 2016. Conserved non-exonic elements: A novel class of marker for phylogenomics. *Systematic Biology*.
- Edwards, S. V., P. Beerli, C. Welch, N. Rotzel. Statistical phylogeography of Australian treecreepers (*Climacteris*).
- Lee, J. Y. and S. V. Edwards. Phylogenetic evidence of selection at reproductive genes in promiscuous songbirds.

BOOK REVIEWS

- Edwards, S. V. 1998. Review of *Molecular Evolution and Adaptive Radiation* (eds. T. Givnish and K. Sytsma). *American Zoologist* 38: 986-988.
- Edwards, S. V. 2001. Immunology: how it all began (review of *Origin and Evolution of the Vertebrate Immune System*, L. DuPasquier and G. W. Litman, eds). *Trends in Immunology* 22: 59.
- Edwards, S. V. 2008. Bird speciation: selection and the origin of species (review of *Speciation in Birds* by Trevor Price). *Evolution* 62: 991-995.
- Edwards, S. V. 2011. A Bird's Eye View of Animal Evolution (review of *Animal evolution: Fossils, Genomes, and Trees*. Maximilian J. Telford and D. T. J. Littlewood. Oxford University Press, 2009. *Quarterly Review of Biology* 61: 331-333.

CORRESPONDENCE

- Mayer, Gregory C., Jerry A Coyne, Jonathan B Losos, Johannes Foufopoulos, Neil Shubin, Douglas J Futuyma, Benjamin C Campbell, Scott V Edwards. 2013. Museums' Role: Increasing Knowledge. *Science* 339: 1148-1149.
- Wu, S., S. Song, L. Liu, S.V. Edwards. 2013. Reply to Gatesy and Springer: The multispecies coalescent model can effectively handle recombination and gene tree heterogeneity. *Proceedings of the National Academy of Sciences* 110: E1180-E1180.
- Liu, L. and Edwards, S.V., 2015. Comment on "Statistical binning enables an accurate coalescent-based estimation of the avian tree". *Science* 350: 171; DOI: 10.1126/science.aaa7343

RECENT INVITED LECTURESHIPS & PLENARY LECTURES

Symposium on phylogenomics sponsored by the journal *Zoologica Scripta*: "Unifying genome history and function in avian phylogenetics", Oslo, Norway, Nov. 4, 2015

Several lectures as workshop faculty for “Avian Biology Workshop”, Shillong, Meghalaya, India, 27 September – 3 October 2015.

Two-week New Zealand Lecture Tour hosted by the Allan Wilson Centre: “Bird Evolution: From Dinosaurs to DNA”. Multiple locations in New Zealand. August 6-22, 2015.

Lecture: “Using phylogenomics to understand genome history, function and evolution in birds”, for symposium at Sun Yat Sen University, Guangzhou, China on “Evolution and Protection of Biodiversity 2015”, 15-20 July 2015.

Plenary Lecture: “From feathers to flightlessness: using comparative and population genomics to study the genetic basis of phenotypic evolution”. Reunión Argentina de Biología Evolutiva, Cordoba, Argentina. July 6 2015.

Invited symposium talk: “From seabirds to songbirds: the phylogeography of avian resilience and invasion in Hawaii and beyond” Association of Tropical Biology and Conservation, Honolulu, HI, July 2015.

Invited faculty for 4-day workshop on species trees and phylogenetic estimation, the Scandinavian Research School in Systematics and the University of Gothenburg, Sweden. Nov. 2014.

“Building genealogies of species using the multispecies coalescent model”. Conference on Biomathematics and Ecology: Research and Education (BEER). Oct. 2014, Harvey Mudd College, CA.

“Population genomics and transcriptomics of adaptation of House Finches (*Haemorhous mexicanus*) to a rapidly evolving bacterial pathogen”. Invited talk, CNRS Symposium on Infectious Diseases as Drivers of Evolution: The Challenges Ahead”, Roscoff, France, Sept. 6-10, 2014.

“Conserved non-exonic elements as markers of phylogenomic history and regulatory innovation in birds” Invited symposium talk at 26th International Ornithological Congress, Tokyo, Japan, Aug. 18-25 2014.

“Opportunities and Challenges for Funding and Sustaining Natural History Collections”. iDigBio Symposium on Natural Collections in the 21st Century, University of Florida (April 2014)

“Rumors, myths and subtleties in the analysis of species trees”. Invited keynote address for iEvoBio symposium, Raleigh, NC, June 23, 2014.

“Genomes, Feathers and Flight: Biodiversity and Evolution through the Lens of Genomics”. Lecture for Symposium on EO Wilson Biodiversity Symposium, University of Alabama, April 2014.

“Genomes, feathers and flight: comparative genomics of birds and other reptiles”. February 10, 2014. Darwin Day Speaker, University of Virginia.

“Phylogenetics and the Coalescent Process”. Seminar at Workshop on Evolutionary Genomics, Universidad Austral de Chile, Valdivia, Chile (January 2014).

“Phylogenetics and Comparative Genomics”. Seminar at Workshop on Evolutionary Genomics, Fudan University, Shanghai, China (July 2013).

“Genomes, feathers and flight: comparative genomics of birds and other reptiles”. University of Mexico Research Day Speaker. April 2013

“Genomes, feathers and flight: comparative genomics of birds and other reptiles”. 2013 Roger Carpenter

Lecturer in Comparative Biology at San Diego State University (May 2013)

“From reptiles to dinosaurs to birds: a view from the genome”. Virginia Commonwealth University Darwin Day Speaker, March 2013

“Genomic, geographic and temporal tracking of a rapidly evolving host-pathogen interaction”, 10th Symposium on Ecological Genomics, Kansas State University, Kansas City, MO (October 2012),

Plenary lecture: “Resolving the Tree of Life through Phylogenomics and the Multispecies Coalescent Model”, 2nd symposium on Evolutionary Genomics and Bioinformatics (symposium in honor of the 7th birthday of Wen-Hsiung Li), Kaohsiung, Taiwan (October 2012)

Plenary lecture: “Molecular Ecology in the 21st Century: Genomic Foundations of an Integrative Science”. German Zoological Society annual meeting, Konstanz, Germany (September 2012)

Public lecture: “Molecular Ecology in the 21st Century: Genomic Foundations of an Integrative Science”, University of Canberra, Canberra, Australia (May 2012)

3rd Biological Evolution Workshop, Porto Alegre, Brazil. “Major Events in the Evolution of the Avian Genome.” (November 2011)

2nd Latin American School for Evolution, Valdivia, Chile. “Principles of Genome Evolution as revealed by Comparative Genomics of Birds and Reptiles” (November 2011)

Sewall Wright Annual Graduate Student Speaker, University of Chicago, Department of Ecology and Evolution. “The phylogeography-phylogenetics continuum”. (May 2011)

Symposium for the Opening Ceremony of the Paleontological Museum of Liaoning (PMOL), Shenyang Normal University, Shenyang, China. “Genomics and paleontology: opportunities for integration”. (May 2011)

George C. Williams Memorial Lecture Graduate Student Invitee, Department of Ecology and Evolution, State University of New York, Stony Brook “Genomics of Host-Pathogen Evolution: A Tale of Birds and Bacteria” and “Population genetics and phylogenetics: where is the common ground?” (May 2011)

“From Dinosaurs to Birds”, The HistoryMakers, a celebration of African-Americans in Science, Detroit Science Museum, February 2011 <http://www.idvl.org/thehistorymakers/>

“Symposium lecture: “Genomics of host-parasite co-evolution in House Finches and *Mycoplasma*” Darwin Now Symposium, Alexandria, Egypt (Nov. 2009)

Invited lecture, “Beyond Darwin’s Dreams: Genomics of Host Parasite Co-Evolution”, Darwin Symposium, Smith College, Massachusetts (Oct. 2009).

Invited lecture, “Species Trees: The Latest Twist on Darwin’s Tree of Life”, Darwin Symposium, Punta del Este, Uruguay (Sept. 2009).

Invited lecture, “Genomics of Host Parasite Co-Evolution”, Darwin’s Evolution Symposium, Stockholm Museum/University of Stockholm, May 2009.

Harvard Museum of Natural History: “The Ecology and Evolution of Nests and Eggs” (5/07), Special Lecture opening “Nests and Eggs” exhibit.

Plenary Lecture, European Society of Evolutionary Biology, (8/07) "Navigating the forest of gene trees, from phylogeography to phylogenomics".

Plenary Lecture, XXIV International Ornithological Congress, Hamburg, Germany: "Genomics and Ornithology" (8/06)

Songbird Genome Mapping Workshop, Sigtuna, Sweden: "Genomic parameters of relevance to QTL mapping in songbirds" (9/06)

Class of 1960 Annual lecture, Williams College, Williamstown, MA "Multilocus approaches to phylogeography and disease ecology" (11/06)

James P. Holland Memorial Lecture, Indiana University, Bloomington, IN: "From Archaeopteryx to Modern Birds: A DNA Trail" (2003)

PRESS WRITE-UPS/TV APPEARANCES

"Singing a Genetic Tune" by Eric Sorensen, Seattle Times. July 2000.

"NSF's Ark Draws Alligators, Algae and Wasps", by Jennifer Couzins. Science 297: 1638-39 (6 Sept. 2002).

"Avian Expert Joins Biology Department" by Risheng Xu, Harvard Crimson, Feb. 4, 2004.

"Collection takes flight: Edwards studies birds with genetic databases, not binoculars" by Steve Bradt, Harvard University Gazette, May 27, 2004. (<http://www.hno.harvard.edu/gazette/2004/05.27/03-edwards.html>)

"Unlocking the DNA Secrets of Birds" by Carolyn Johnson, Boston Globe, Feb. 15, 2005.

"Exhibit explores ivory-billed mystery: HMNH highlights Harvard collection, current debate" by Alvin Powell, Harvard Gazette, June 1, 2006. (<http://www.news.harvard.edu/gazette/2006/06.01/11-ivorybill.html>)

Numerous press articles and digital media covering our 2007 paper in *Nature*, including Zimmer, C. "Evolution - Jurassic genome" Science 315: 1358-1359.

Textbook appearance, "Interview" and "Inquiry Box" in section on "Mechanisms of Evolution", Biology, (8th ed.) N. A. Campbell and J. B. Reece (and others). Pearson-Benjamin Cummings, Boston (2008).

Generalist speaker, "EVOLVE", The History Channel (13 Episodes), aired Summer 2009.

Principal, "Beast Legends", 6-part miniseries on the zoological origins of mythological beasts (Yap Films, aired Canadian History Channel and US SyFy Channel, Fall 2010)

"Old specimens, fresh answers" May 12, 2011, by Alvin Powell. Harvard University Gazette. <http://news.harvard.edu/gazette/story/2011/05/old-specimens-fresh-answers/>

Numerous press articles and digital media covering our 2011 paper (Vo et al.) in *PNAS* on mercury levels in Hawaiian albatross, including Mercury rising. Nature News, April 18, 2011. By Nadia Drake. http://www.nature.com/news/2011/110418/full/news.2011.243.html?s=news_rss; numerous additional web articles on Vo et al. 2011 from BBC News, e! Science News, and other venues.

"Melding the Web and the tactile: Harvard, other schools create a virtual classroom that uses museum

collections.” Harvard Gazette, April 29, 2013. By Alvin Powell.

On camera-narrator and consultant, “Mysteries of the Museum” episode on Meinertzhagen and the case of the Fraudulent Forest Owllet”. Filmed Nov. 2014 for Travel Channel, upcoming (2015).

CURRENT LAB PERSONNEL

Undergraduates (Total 3): Julia Yu, Harvard '16; Lily Lu '19; Max Gersh '16. *Graduate students* (Total 3) Jonathan Schmitt (2015-pres.); Phil Grayson (2013 – pres.), Allison Schultz (2011 – pres.). *Postdoctoral Fellows/Research Scientists* (Total 6): Cassie Stoddard (Harvard Junior Fellow), Simon Sin, Tim Sackton, Katie Stryjewski (incoming, June 2016), Gustavo Bravo (incoming, fall 2016); Betul Kacar (independent research program on experimental evolution). *Visiting Scholars and Students*: Elisa Dierickx (Graduate student, University of Cambridge)

PAST LAB PERSONNEL

Undergraduates (Total 11+): Amanda Lu, Zach Herring, Liz Schold, Bianca Lec, Grant Miura, Eric Waltari, Dan Garrigan, Matt Saunders, Nancy Chen, Elaine Vo, David Lum (and several others). *Graduate Students* (Total 13): Chris Hess, Hollie Walsh, Bethanne Zelano, Corey Welch, Hopi Hoekstra, John Nusser (MSc), Monica C. Silva, Gary Voelker (co-advised), Ricardo Godinez, June Yong Lee, Shaoyuan Wu, Shane Campbell-Staton (co-advised w/Jonathan Losos), Maude Baldwin. *Postdoctoral Fellows/Research Associates* (Total 23): Sharon Birks, Robb Brumfield, Zhenshan Wang, Bryan Jennings, Kara O’Keefe (co-advised with Paul Turner, Yale University), Charles Chapus, Patricia Brito, Christopher Balakrishnan, Anna Dubiec, Camille Bonneaud, Liang Liu, Christopher Organ, Susan Cameron, Miguel Alcaide, Andrew Shedlock, Daniel Janes, Christian Anderson, Niclas Backström, Mark Liu, Clemens Küpper, Frank Rheindt, Matt Fujita, Christie Riehl (Harvard Junior Fellow); *Visiting Students and Scholars* (Total 8): Mary O’Connell (Dublin City University, Ireland), Tobias Lenz (MPI Evolutionary Biology, Germany), Irene Salicini (Spain), Bei An (China), Patrick Albers (Germany), Moos Blom (Germany), Longying Wen (China), Gisele Dantas (Brazil). *Technicians* (Total 5): Joe Gasper, Nancy Rotzel, Ingrid Soltero, Flavia Chen, Liz Schold.