CURRICULUM VITAE

1. Erika Jeannine Edwards

Richard and Edna Salomon Assistant Professor of Ecology and Evolutionary Biology
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2. Home address

Providence, RI 02906

3. Education

2000-2005	PhD in Ecology and Evolutionary Biology, Yale University, Dissertation title: *Pereskia (Cactaceae) and the origin of the cactus life form*.
1993-1998	B.S. in Earth Systems, Stanford University

4. Professional appointments

2011 to present	Richard and Edna Salomon Assistant Professor of Ecology and Evolutionary Biology, Brown University
2008 to present	Director, Olney Herbarium, Brown University
2007 to 2011	Assistant Professor of Biology, Brown University
2005-2007	Post-doctoral research associate, Geography Department, University of California at Santa Barbara

5. Completed publications

c. Refereed journal articles

Sage RF, PA Christin, **EJ Edwards**. 2011. C4 plant lineages of planet Earth. Special issue of ***Journal of Experimental Botany*** 62: 3155-3169.

Christin, PA, CP Osborne, RF Sage, M Arakaki, **EJ Edwards**. 2011. C4 eudicots are not younger than C4 monocots. Special issue of ***Journal of Experimental Botany*** 62: 3171-3181.

Arakaki M, PA Christin, A Lendel, R Nyffeler, U Eggli, RM Ogburn, E Spriggs*, M Moore, **EJ Edwards**. 2011. Recent and contemporaneous radiations of the world's succulent plant lineages. ***Proceedings of the National Academy of Sciences USA*** 108: 8379-8384.

Christin PA, T Sage, **EJ Edwards**, RM Ogburn, R Khoshravish, RF Sage. 2011. Complex evolutionary transitions and the significance of C3-C4 intermediate forms of photosynthesis in Molluginaceae. ***Evolution*** 65: 643-660.

Ogburn RM and **EJ Edwards**. 2010. The ecological water use strategies of succulent plants. Invited review, ***Advances in Botanical Research*** 55: 179-255.

Edwards EJ*, CP Osborne*, CAE Stromberg*, SA Smith and the C4 Grasses Consortium. 2010. The origins of C4 grasslands: integrating evolutionary and ecosystem science. ***Science*** 328: 587-591. **indicates equal authorship*

Edwards EJ and SA Smith. 2010. Phylogenetic analyses reveal the shady history of C4 grasses. ***Proceedings of the National Academy of Sciences USA*** 107: 2532-2537.

Haberle RC, A Dang, T Lee, C Penaflor, H Cortes-Burns, A Oestreich, L Raubeson, N Cellinese, **EJ Edwards**, ST Kim, WMM Eddie, and RK Jansen. 2009. Taxonomic and biogeographic implications of a phylogenetic analysis of the Campanulaceae based on three chloroplast genes. ***Taxon*** 58: 715-734.

Cellinese N, SA Smith, **EJ Edwards**, ST Kim, RC Haberle, and MJ Donoghue. 2009. Historical biogeography of the endemic Campanulaceae of Crete. ***Journal of Biogeography*** 36: 1253-1269.

Ogburn RM and **EJ Edwards**. 2009. Anatomical variation in the closest relatives of cacti: trait lability and evolutionary innovation. ***American Journal of Botany*** 96: 1-20. (cover article)

Butterworth CA and **EJ Edwards**. 2008. Investigating *Pereskia* and the earliest divergences in Cactaceae. Invited paper, ***Haseltonia*** 14: 46-53.

Nyffeler R, U Eggli, RM Ogburn, and **EJ Edwards**. 2008. Variations on a theme: repeated evolution of succulent life forms in the Portulacineae. Invited paper, ***Haseltonia*** 14: 26-36.

Edwards EJ and CJ Still. 2008. Climate, phylogeny, and the ecological distribution of C4 grasses. ***Ecology Letters*** 11: 266-276.

Edwards EJ, CJ Still and MJ Donoghue. 2007. The relevance of phylogeny to studies of global change. ***Trends in Ecology and Evolution*** 22: 243-249.

Edwards EJ. 2006. The correlated evolution of stem and leaf hydraulic traits in *Pereskia* (Cactaceae). ***New Phytologist*** 172: 479-489.

Edwards EJ and MJ Donoghue. 2006. *Pereskia* and the origin of the cactus life form. ***American Naturalist*** 167: 777-793.

Edwards EJ and M Diaz. 2006. Ecological physiology of *Pereskia guamacho*, a cactus with leaves. ***Plant Cell and Environment*** 29: 247-256 (cover article).

Edwards EJ, R Nyffeler, and MJ Donoghue. 2005. Basal cactus phylogeny: implications of *Pereskia* paraphyly for the transition to the cactus life form. ***American Journal of Botany*** 92: 1177-1188.

Riedel SM, HE Epstein, DA Walker, DL Richardson, MP Calef, **EJ Edwards**, and A Moody. 2005. Spatial and temporal heterogeneity of vegetation properties among four tundra plant communities at Ivotuk, Alaska, USA. ***Arctic, Antarctic, and Alpine Research*** 37: 25-33.

Brodribb TJ, NM Holbrook, **EJ Edwards**, and MV Gutierrez. 2003. Relations between stomatal closure, leaf turgor and xylem vulnerability in eight tropical dry forest trees. ***Plant Cell and Environment*** 26: 443-450.

Walker DA, HE Epstein, JG Jia, A Balsar, CD Copass, **EJ Edwards**, WA Gould, J Hollingsworth, J Knudson, HA Maier, A Moody, and MK Reynolds. 2003. Phytomass, LAI and NDVI in northern Alaska: relationships to summer warmth, soil pH, plant functional types, and extrapolation to the circumpolar Arctic. ***Journal of Geophysical Research*** 108 (D2): 8169 doi:10.1029/2001JD000986.

Bell CD, **EJ Edwards**, ST Kim, and MJ Donoghue. 2001. Dipsacales phylogeny based on chloroplast DNA sequences. ***Harvard Papers in Botany*** 6: 481-499.

d. Refereed book chapters

Davis C, **EJ Edwards**, and MJ Donoghue. 2010. A clade's eye view of global climate change. In Bell, M. A., D. J. Futuyma, W. F. Eanes, and J. S. Levinton (eds.) *Evolution since Darwin: the First 150 Years*, Sinauer Associates, Sunderland, MA.

e. Book reviews

Edwards, EJ. 2009. The Great Cacti: Ethnobotany and Biogeography, by David Yetman. ***Quarterly Review of Biology*** 84: 108-109.

f. Selected contributed abstracts

2011 "Of marginal interest: changes in leaf shape during evolutionary shifts between temperate and tropical habitats in *Viburnum* (Adoxaceae). Evolution meetings, Norman OK

2009 "C4 the straw man? Evolution of cold tolerance better explains global distribution of C3/C4 grasslands" Botanical Society of American conference, Snowbird UT

2005 "How the cactus lost its leaves: studies of character evolution can reveal the origins of biological diversity" Diversitas Open Science Conference, Oaxaca, Mexico

2004 "Basal phylogenetic relationships in Cactaceae, and implications for early cactus evolution" Botanical Society of America, Snowbird UT

2004 "Water relations of *Pereskia guamacho*, a cactus with leaves" Botanical Society of America conference, Snowbird UT

2003 "What can *Pereskia* really tell us about early cactus evolution?" Botanical Society of America conference, Mobile AL

2000 "Climate, Vegetation, Soil, and Spectral Reflectance Patterns Across Zonal Vegetation Boundaries in Arctic Alaska" AGU Meetings, San Francisco, CA

g. Invited lectures

<u>Symposiums</u>

2013 'The evolution of plant effects on carbon and nutrient cycling', INTECOL 2013, London, UK
2012 'Evolution of Physiological Processes', Society for Experimental Biology, Salzburg, Austria
2011 'Crassulacean Acid Metabolism: Evolutionary origins, ecological plasticity, and bioenergy potential', International Botanical Congress, Melbourne, Australia
2010 2010 Symposium on C4 Plant Biology, Shanghai Institutes for Biological Sciences, Shanghai, China
2009 'Evolution: the past, present and future of biodiversity', 2nd Diversitas Open Science Conference, Capetown, South Africa
2009 'Genetics and Genomics of Environmental Change', American Genetics Association Annual Symposium, Providence, RI
2009 'Phylogeny and Ecology' Early Career Scientist Symposium, University of Michigan, Ann Arbor, MI
2008 'Systematics and Evolution of Cactaceae', IOS-SLCCS-Brazilian Botanical Congress, Natal, Brazil
2008 'Phylogeny informs biology: seeing the forest from the trees', Harvard Plant Biology Initiative Annual Symposium, Cambridge, MA
2007 'Impact of Plant Phylogenies on Tropical Ecology and Evolutionary Studies', Association of Tropical Biology and Conservation conference, Morelia, Mexico
2007 'Integration of Spatial and Ecological Data in Evolutionary Studies', Botanical Society of America conference, Chicago, IL
2005 'Biology of Dryland Plants', Botanical Society of America conference, Austin, TX

Departmental Seminars

2012 Dept Plant Biology, Cornell University, Ithaca, NY
2012 Harvard University Herbaria Seminar Series, Cambridge, MA
2012 Dept Ecology and Evolutionary Biology, Yale University, New Haven, CT
2011 Dept Biology, University of Rhode Island, Kingston, RI
2011 Dept Ecology and Evolutionary Biology, University of Tennessee, Knoxville TN
2010 Dept Biology, Duke University, Durham, NC (elected speaker by graduate students)
2010 Dept Biology, Duke University, Durham, NC (elected speaker by graduate students)
2009 Marine Biological Laboratories, Woods Hole, MA
2009 Dept Ecology and Evolutionary Biology, Western Washington University, Pullman, WA
2009 Dept Ecology and Evolutionary Biology, SUNY at Stony Brook, NY
2009 Dept Biology, St. Marys University, Halifax, Nova Scotia
2008 Dept Ecology and Evolutionary Biology, University of Connecticut, Storrs, CT
2008 Dept Botany, University of Capetown, South Africa
2006 Dept Ecology and Evolutionary Biology, Brown University, Providence RI
2006 Dept Ecology and Evolutionary Biology, Brown University, Providence RI
2006 Dept Botany, University of Hawaii, Honolulu HI
2005 Noel Kempff Mercado Museum of Natural History, Santa Cruz, Bolivia, (in Spanish)
2005 National Herbarium of Bolivia, La Paz, Bolivia (in Spanish)
2004 Jardin Botanico Nacional, Santo Domingo, Dominican Republic (in Spanish)
2002 Universidad Exerimental Francisco de Miranda, Coro, Venezuela (in Spanish)

h. Work in press:

Taylor,S, P Franks, S Hulme, E Spriggs*, PA Christin, **EJ Edwards**, I Woodward, CP Osborne. Photosynthetic pathway and ecological adaptation explain stomatal trait diversity amongst grasses. In press, ***New Phytologist***.

Liu, H. **EJ Edwards**, R Freckleton, CP Osborne. Phylogenetic niche conservatism in C4 grasses. In press, ***Oecologia.***

Grass Phylogeny Working Group II (***EJ Edwards*** *corresponding author*). New grass phylogeny resolves deep evolutionary relationships and discovers C4 origins. In press, ***New Phytologist***.

i. Work in review:

Christin, PA, **EJ Edwards**, S Boxall, G Besnard, EA Kellogg, J Hartwell, CP Osborne. Adaptation of photosynthesis through recurrent lateral gene transfer. In revision, ***Nature Genetics***.

Edwards EJ and RM Ogburn. Angiosperm responses to a low CO_2 world: CAM and C4 photosynthesis as parallel evolutionary trajectories. In review, special issue of ***International Journal of Plant Sciences***.

j. Work in preparation:

RM Ogburn and **EJ Edwards**. A rapid, physiologically meaningful measure of succulence for comparative studies. In prep, ***Plant, Cell and Environment.***

S Schmerler*, MJ Donoghue, K Schmandt**, D Chatelet, J Beaulieu, **EJ Edwards**. Consistent evolutionary shifts in leaf form during temperate/tropical transitions in *Viburnum*. In prep, ***Ecology Letters***.

Edwards EJ, K Schmandt**, S Schmerler*, A Williard*, D Chatelet, W Clement, L Sack, MJ Donoghue. Disruption of the 'leaf economics spectrum': leaf lifespan is dictated by branching architecture in *Viburnum*. In prep, ***New Phytologis***t.

*Brown University undergraduate or ** Brown University alumnus

6. Research Grants

a. Current grants

2011-2013 Marie Curie Outgoing International Fellowship: Evolvability and drivers of photosynthetic transitions in flowering plants. Co-PI; Acting as outgoing host for lead PI Dr. Pascal-Antoine Christin. €261,334.20.

2010-2013 Phylogeny and the evolution of succulence in the Portulacineae (Caryophyllales). NSF DEB: Phylogenetic Systematics. $534,949.

2009-2012 Collaborative Research: The Evolution of Leaf Form in *Viburnum* (Adoxaceae). NSF IOS: Organism-Environment Interactions. Lead PI (with two co-PI). $606,347 (of $937,721 total)

b. Pending grants

2012-2016 Collaborative Research: Digitization TCN: Mobilizing New England vascular plant specimen data to track environmental changes. NSF: DBI: Advancing Digitization of Biological Collections. Co-PI (of 7 total). $147,557 (of ~$2,250,000 total)

2012 Uncovering biases in gene recruitment during the evolution of C_4 and CAM photosynthesis in flowering plants. Brown University Salomon Faculty Research Award, $15,000.

c. Completed grants

2009-2010 The dawn of a new era: deciphering the past climatic and ecological changes using integrated DNA and lipid biomarker fingerprints. Brown University SEED Fund. Co-PI; Lead PI Yongsong Huang, $100,000.

7. Service

To the University

2010 panel member, Sarah Doyle Women's Center
2010 Graduate Admissions Committee, EEB Dept.
2009-current Graduate Curriculum Committee, EEB Dept.
2009-current Writing Advisory Board, Brown Univ.
2009 First-Readings Seminar Leader

To the Profession

Elected Offices
Council member, Society of Systematic Biologists, 2011-2013

Invited Workshop/Working Group Participant
2011-2012 Origins of C4 grasslands: a new synthesis of phylogeny, ecology, and paleobiology, NESCent Working Group
2011-2012 Tempo and mode of plant functional evolution, NESCent Working Group
2010 Phylogenetic Ecology, NCEAS Workshop
2010 NSF- Dimensions of Biodiversity Charette, NESCent Workshop
2008 Ecophylogenetics, NCEAS Working Group
2002 Integration of Long Distance Transport Processes in Plants, Harvard Forest

Workshops/working groups organized
2010-2011 NESCent Working Group: Grass Phylogeny Working Group II: Inferring the complex history of C4 photosynthesis in grasses. Lead PI (with two co-PI).

2009 NESCent Catalysis Meeting: Toward a New Synthesis of the Evolutionary History and Ecology of C4 Grasses. 3 day meeting bringing together PI's from U.S., Canada, South Africa, U.K., and Switzerland. Lead PI (with two co-PI).

Ad-hoc Reviewer
National Science Foundation (IOS: Organism-Environment Interactions) (3)
National Science Foundation (DEB: Phylogenetic systematics)
American Journal of Botany (5); *Bradleya*; *Ecology Letters* (3); *Evolution* (2); *Functional Ecology*; *Geology; Haseltonia*; *International Journal of Plant Sciences*; *Journal of Biogeography*; *Molecular Ecology Resources, Molecular Phylogenetics and Evolution* (2)*, Nature-Communications* (3); *Nature-Geosciences*; *New Phytologist* (4); *Plant Cell and Environment*; *Proceedings of the National Academy of Sciences* (2); *Science (3)*; *Tree Physiology*

Panel Service
National Science Foundation, October 2010

Other
2011-2012 Scientific Advisory Committee, International Organization for Succulent Plant Study
2010-2011 Scientific Advisory Board, Grass Portal Development Team (www.grassportal.org)

8. Academic honors, fellowships, honorary societies, awards

2008 NSF ADVANCE Career Development Award, Brown University, $17,506.
2006 John Spangler Nicholas Prize, Yale University, $500.
2005 Ph.D. Awarded with Distinction, Yale University
2005 Maynard Moseley Award, Botanical Society of America
2005 Vernon I. Cheadle Student Travel Grant, Botanical Society of America, $500.
2004 MORPH Graduate Student Travel Grant, $300.
2003 EEB Department Chair Award, Yale University, $1500.
2002 YIBS Center for Field Ecology Graduate Research Award, Yale University, $2925.
2002 Deland Award for Student Research, Harvard University, $4250.
2000-2005 National Science Foundation Graduate Research Fellowship

9. Teaching

2007-2008
Biology 1950: Independent Study (supervising Cassidy Metcalf, class of 2008)

2008-2009
Biology 0430: Diversity and Adaptation of Land Plants (sole instructor, enrollment 24)
Biology 1500: Plant Ecology (sole instructor, enrollment 14)

2009-2010
Biology 0430: The Evolution of Plant Diversity (sole instructor, enrollment 26)
GISP 0017: Introductory Mycology: Applications and Ecology of Fungi (faculty sponsor, enrollment 8).
Biology 1950 (fall 09): Independent Study (Samuel Schmerler, class of 2011)
Biology 1950 (spring 10): Independent Study (Samuel Schmerler, class of 2011)

2010-2011
Biology 1950 (fall 10): Independent Study (Samuel Schmerler, class of 2011, Elizabeth Spriggs, class of 2011)
LDAR 22ST: X-mutations of an infrastructural city. Guest lecturer/advisor in RISD Landscape Architecture course
Biology 1950 (spring 11): Independent Study (Samuel Schmerler, class of 2011, Elizabeth Spriggs, class of 2011)
Biology 1500: Plant Physiological Ecology (sole instructor, enrollment 16)

2011-2012
Biology 0430: The Evolution of Plant Diversity (sole instructor, enrollment 25)
Biology 2980: Graduate Seminar in Tropical Ecology (many instructors, enrollment 9)
Biology 1950 (fall 11): Independent Study (Alejandro Brambila, class of 2012; Asya Rahlin, class of 2012)

Advising

Advised post-doctoral researchers: Monica Arakaki, 2009-present; Pascal-Antoine Christin, 2010-present; David Chatelet 2010-present; Radika Bhaskar, 2011-present.

Advised graduate students: R. Matthew Ogburn, 2007- present; Laura Garrison, 2010-present.

Graduate student committee member: Caroline Harper (Brown EEB, 2009-present); Li Gao (Brown Geology, 2010-present); Beth Forrestal (Yale University, 2009-present).

Advised undergraduate students: Cassidy Metcalf, 2007-2008; Elizabeth Spriggs, 2008 – 2011; Samuel Schmerler, 2009 – 2011, Anastasia Rahlin, 2010-present, Alejandro Brambila, 2011-present.

Thesis Reader: Adisorn Chang, 2008; Kaya Schmandt 2008; Emily Josephs 2008; Christopher Sinatra 2010, Andre Burnier 2011.

Updated October 2011.