

# Regan Early

## Curriculum Vitae

Lecturer in Conservation Biology, Centre for Ecology and Conservation  
University of Exeter, Penryn Campus, Cornwall, TR10 9FE, UK

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### EDUCATION

PhD, University of York, UK. In collaboration with the Countryside Council for Wales 2003 - 2007

Thesis title: "Conservation at the Landscape Scale; the Marsh Fritillary and other British Butterflies"

Undergraduate degree: Oxford University, UK 1999 - 2002  
Bachelor of Arts in Biological Sciences (2i)

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### PROFESSIONAL EXPERIENCE

Postdoctoral Fellow, Cátedra Rui Nabeiro - Biodiversidade, Universidade de Évora, Portugal / Museo Nacional de Ciencias Naturales, Madrid, Spain. 2010 - 2014

Postdoctoral Research Associate, Ecology and Evolutionary Biology, Brown University. 2008 - 2010

Project title: "Improving the accuracy of range-shift predictions under climate change."

Independent Researcher, Universidad Rey Juan Carlos, Madrid. 2007

Project title: "Exploring the mechanisms of range limitation in a declining butterfly: implications for future distributions under climate change"

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### PUBLICATIONS

#### Peer-reviewed Journals

Estrada, A., Morales-Castilla, I., Caplat, P., Early, R. "Usefulness of species traits in predicting range shifts". In press *Trends in Ecology and Evolution*

Ivory, S., Early, R., Sax, D.F. Russell, J. "Niche expansion and temperature sensitivity of tropical African montane forests". In press *Global Ecology and Biogeography*

Estrada, A., Meireles, C., Morales-Castilla I., Poschlod, P., Vieites, D, Araújo, M.B., Early, R. Species' intrinsic traits inform their range limitations and vulnerability under environmental change. 2014 *Global Ecology and Biogeography*. **24**(7): 849-858

Bradley, B.A., Early, R., Sorte, C.J.B. "Space to invade? Comparative range infilling and potential range of invasive and native plants". 2014 *Global Ecology and Biogeography*. **24**(3): 348-359

R. Early, Sax, D. "Climatic niche shifts between species native and naturalised ranges raise concern for ecological forecasts during invasions and climate change". 2014 *Global Ecology and Biogeography* **23** (12): 1356-1365

- Bradshaw, C.J.A., Brook, B.W., Fordham, D.A., Herrando-Pérez, S., Cassey, P., Early, R., Sekercioglu, C.H., Araújo, M.B.A. 2014. "Range-restricted and sparsely distributed birds demonstrate highest temporal range-size lability". *Proceedings of the Royal Society of London B*. **281**(1786)
- Ibáñez, I., Diez, J.M., Miller, L.P., Olden, J.D., Sorte, C.J.B., Blumenthal, D.M., Bradley, B.A., D'Antonio, C.M., Dukes, J.S., Early, R., Grosholz, E.D., Lawler, J.L. 2014 "Integrated Assessment of Biological Invasions" *Ecological Applications* **24**: 25-37
- Sax, D. F., Early, R., Bellemare, J. "Niche syndromes, extinctions and management under climate change." 2013. *Trends in Ecology and Evolution* **28**: 517-523.
- Dawson, M.N., Algar, A.C., Antonelli, A., Dávalos, L.M., Davis, E., Early, R., Guisan, A., Jansson, R., Lessard, J.-P., Marske, K.A., McGuire, J., Stigall, A.L., Swenson, N.G., Niklaus E., N.E. and Gavin, D.G. 2013 "A horizon scan of Biogeography". *Frontiers of Biogeography* **5**(2)
- Schwartz, M.W., Hellmann, J.J., McLachlan, J.M., Sax D.F., Borevitz, J.O., Brennan, J., Camacho, A.E., Ceballos, G., Clark, J.R., Doremus, H., Early, R., Etterson, J.R., Fielder, D., Gill, J.L., Gonzalez, P., Green, N., Hannah, L., Jamieson, D.W., Javeline, D., Minter, B.A., Odenbaugh, J., Polasky, S., Richardson, D.M., Root, T.L., Safford, H.D., Sala, O., Schneider, S.H., Thompson, A.R., Williams, J.W., Vellend, M., Vitt, P., Zellmer, S. 2012. "Managed Relocation: integrating the scientific, regulatory and ethical challenges". *Bioscience* **62**(8): 732-743
- Diez, J.M., D'Antonio, C.M., Dukes, J.S., Grosholz, E.D., Olden, J.D., Sorte, C.J.B., Blumenthal, D.M., Bradley, B.A., Early, R., Ibáñez, I., Jones, S.J., Lawler, J.L., Miller, L.P. "Will Extreme Climatic Events Facilitate Biological Invasions?". 2012. *Frontiers in Ecology and Evolution* **10**(5): 249-257.
- Bradley, B., Blumenthal D.M., Early, R., Grosholz, E.D., Lawler, J.L., Miller, L.P., Sorte, C.J.B., D'Antonio, C.M., Diez, J.M., Dukes, J.S., Ibanez, I., Olden, J.D. 2012. "Global change, global trade and the next wave of plant invasions". *Frontiers in Ecology and Evolution* **10**(1): 20-28.
- Early, R. & Sax, D. 2011. "Climate-path analysis reveals potential limitations on species range shifts". *Ecology Letters* **14**: 1125-1133. **(Recommended by the Faculty of 1000, <http://F1000.com/13357032>)**
- Guo, Q., Sax, D., Qian, H. & Early, R. 2011. "Latitudinal shifts of introduced species: possible causes and implications". *Biological Invasions*. **14**: 547-556
- Richardson, D.M., Hellmann, J.J., McLachlan, J., Sax, D.F., Schwartz, M.W., Brennan, J., Gonzalez, P., Root, T., Sala, O., Schneider, S.H., Ashe, D., Camacho, A., Rappaport, J., Clark, Early, R., Etterson, J., Fielder, D., Gill, J., Minter, B.A., Polasky, S., Safford, H., Thompson, A., & Vellend, M. 2009. "Multidimensional evaluation of managed relocation". *Proceedings of the National Academy of Sciences of the United States of America*. **106**(24): 9721-9724
- Early, R., Anderson, B. & Thomas, C.D. 2008. "Using habitat distribution models to evaluate large-scale landscape priorities for spatially dynamic species". *Journal of Applied Ecology* **45**(1): 228-238.
- Bulman, C.R., Wilson, R., Holt, A.R., Galvez Bravo, L., Early, R.I., Warren, M.S. & Thomas, C.D. 2007. "Minimum viable metapopulation size, extinction debt and the conservation of a declining species". *Ecological Applications* **17**(5): 1460-1473.

Early, R. & Thomas, C.D. 2006. "Multi-species conservation planning: identifying landscapes for the conservation of viable populations using local and continental species priorities". *Journal of Applied Ecology*. **44**(2): 253-262.

Moilanen, A., Franco, A.M.A., Early, R.I., Fox, R., Wintle, B.A. & Thomas, C.D. 2005. "Prioritizing multiple-use landscapes for conservation: Methods for large multi-species planning problems". *Proceedings of the Royal Society of London B*. **272**(1575): 1885–1891.

### **In Submission**

Lehsten, V., Early, R., Caplat, P., Harmand, P., Lindström, J., Smith, H.G. "Improved uncertainty analysis reveals shortcomings in climate impacts assessments". *Nature Climate Change*

Bertelsmeier, C., Araújo, M.B., Brook, B.W., Neto D., Early, R., Ollier S., Fordham, D.A. "Forecasting species' range dynamics from climate change: How complex do models need to be?" *Global Change Biology*

Martínez-Padilla, J., Estrada, A., Early, R. Garcia-Gonzalez, F. "Evolvability meets biogeography: multi-species analyses reveal greatest evolutionary potential at intermediate levels of environmental favourability" *PNAS*

Early, R., Bradley, B.A., Dukes, J.S., Lawler, J.J., Olden, J.D., Blumenthal, D.M., D'Antonio, C.M., Gonzalez, P.G., Grosholz, E.D., Ibañez, I., Miller, L.P., Sorte, C.J.B., Tatem, A.J. Invited resubmission. "Invasive species in the 21<sup>st</sup> Century: Global threats and national response capacities". *Nature Communications*

Montesinos-Navarro, A., Estrada, A., Font, X., Matias, M.G., Meireles, C., Mendoza, M., Honrado, J.P., Prasad, H.D., Vicente, J.R., Early, R. Submitted. "Improving species distribution models using information on community structure". *Global Change Biology*

### **Conservation Recommendations**

Sax, D., Early, R. & Guo, Q. 2010. "Assessing risks of plant invasions in the eastern United States: a biogeographic perspective" Technical Report to the US Forest Service.

### **Book Reviews**

Early, R. 2014. "Distribution Ecology – Any Way Forward?" *Frontiers of Biogeography* **6**(2): 94-96.

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### **GRANTS IN SUPPORT OF RESEARCH AND DEVELOPMENT**

Lead PI of QuerCom: "Environmental controls of community structure and ecosystem function: an assessment with cork oak (*Quercus suber*) communities in the Iberian Peninsula" (Fundação para a Ciência e a Tecnologia, Portugal). January 2014 – December 2014 (€50,000)

Lead PI of EC21C: "European Conservation for the 21<sup>st</sup> Century" (BiodivERsA pan-European project). Grant provides funding for five research partners, including €100,000 under my personal management. January 2013 – December 2015 (€1.2 million)

Individual Post-Doctoral Grant (Fundação para a Ciência e a Tecnologia, Portugal): "Species range shifts under 21<sup>st</sup> century climate change: limitations and conservation strategies". Grant renewable for six years. September 2010 onwards

Brown Environmental Change Initiative, working group grant: "How does phenology determine species ranges and what are the implications for future ranges under climate change?"	January 2009 (€4300)
International Biogeography Society Travel Grant, for attendance at the IBS 2009 annual meeting.	2008 (€520)
British Ecology Society, Small Ecological Project Grant: "Exploring the mechanisms of range limitation in a declining butterfly: implications for future distributions under climate change"	2007 (€2500)
Hong Kong Sustainable Development International Youth Summit: grant covered all costs of attendance at the 2001 meeting.	2001

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## TEACHING

Field Courses (two weeks each annually): Costa Rica (level 2 undergraduate), Grand Challenges (level 2 undergraduate), Kenya (MSc level). University of Exeter, Penryn Campus.	Jan 2014-
Module Coordinator: Biodiversity and Conservation (level 2 undergraduate). University of Exeter, Penryn Campus.	Jan 2015-
Guest Lecturer: "Biological Invasions under Climate Change" for Doñana Biological Reserve international course ("Ecological consequences of climate change: integrating research approaches").	October 2013
Guest Lecturer: "Introduction to BIOMOD using R" for Doñana Biological Reserve international course ("Ecological consequences of climate change: integrating research approaches").	October 2012
Course development and delivery: "Concepts and techniques in species distribution modelling". A 24 hour Masters-level module. Universidade de Évora	December 2011
Guest Lecturer, Universidade de Évora Biology PhD Program "Controversies in invasion ecology"	April 2011
Guest Lecturer, Universidade de Évora: "Phytosociological techniques in global ecology and biogeography"	April 2011
Guest Lecturer, Brown University EEB: "Metapopulation biology and large-scale conservation strategies", for Conservation Biology senior class.	September 2009
Guest Lecturer, Brown University ECI: "Climate change and biodiversity", for Watson International program for mid-career African scientists.	September 2009

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## SUPERVISORY AND MENTORING EXPERIENCE

PhD student Henry Hakkinen, University of Exeter funded by the NERC GW4+ DTP. Project title: "Unexplained limits on species distributions. What do they mean for conservation?"	October 2015-
PhD student Beth Robinson, University of Exeter (co-supervised with Prof. Kevin Gaston). Project title: "Human-wildlife conflict and the spread of Japanese Knotweed in the UK"	Jan 2014-

PhD student Jen Lewis, University of Exeter funded by NERC Industrial Case studentship with CEFAS (co-supervised with Dr Frank Van Veen). Project title: "Spatial dynamics of range-expanding Gilt-Head Bream in UK inshore waters"	October 2015-
Masters By Research student Tom Carlin, University of Exeter. Project title: "Climate opportunists: a threat to UK biodiversity and ecosystems?"	October 2015-
Post-doc supervisor. Alicia Montesinos, post-doc in the project 'QuerCom'. University of Évora, Portugal.	April 2014 – May 2015
Post-doc supervisor. Alba Estrada, post-doc in the Biodiversa project 'European Conservation for the 21 <sup>st</sup> Century'. University of Évora, Portugal.	May 2013 – May 2015
Technician supervisor. Catarina Meireles, technician in the Biodiversa project 'European Conservation for the 21 <sup>st</sup> Century'. University of Évora, Portugal.	January 2013 onwards
Undergraduate Student Supervisor, Brown University. Heidi Nutters, graduate research assistant. Natalie Jablonski, Sophomore research assistant. Dena Adler, Sophomore research assistant.	2007 - 2008
Selection and management of a research team consisting of eight assistants to collect and analyse data archived in libraries, herbaria and web sources. Brown University.	2007 - 2008
Undergraduate Group Project Mentor. University of York. "Learning Behaviour in Invertebrates".	2005 - 2007
Chief Scientist on wilderness expeditions for teenage students to the Amazon and the Yukon Territory. British Schools Exploring Society.	2006 - 2007

## OUTREACH AND MEDIA

"The Great Climate Change Race", a board game for 11-14 years olds I developed as a resource for teachers to illustrate the effects of climate change on wildlife

I regularly discuss my research with the public, particularly young people, through events such as [Café Scientifique](#), [public science festivals](#), and school visits.

I appeared as a panelist on Radio 4's [Shared Planet](#), discussing the connection between humans and the natural world

My research has been covered by the mainstream and scientific media, including

- [The Independent](#), [BBC](#)
- [Scientific American](#), [Nature Research Highlights](#)
- [The Conversation](#)

## PROFESSIONAL ACTIVITIES

### Invited Scientific and Policy-orientated Working Groups

"Plant invasions and ornamental horticulture: synthesizing the role of deliberate introductions as invasion hubs in an era of global change." A Working Group of "Alien Challenge", an EU COST Action

2015-

(TD1209).

“Agreed standards for biodiversity models” Working Group 3 of HarmBio (Harmonizing Global Biodiversity Modelling), an EC COST project	2012-
“Tracking the biotic response to global climate change through genomic analysis” at NESCent (Project Leaders: Alan Bergland, Dmitri Petrov, Paul Schmidt)	2012
“Climate change and invasive species: are non-natives poised for greater success in future climatic conditions?” at NCEAS (Project Leaders: Cascade Sorte, Jeff Dukes, and Joshua Lawler)	2011-2012
“Assisted Migration: Evaluating a New Strategy for Species Conservation”. (Project Leaders: Jessica Hellmann, Jason McLachlan, Dov Sax, Mark Schwartz)	2008 - 2009
“Phenology and Climate Change”, an Environmental Change Working Group at Brown University (Project Leaders: Jim Tang, Johanna Schmitt)	2008 - 2009
UK Biodiversity Action Plan steering committee for the Marsh Fritillary (Project Leaders: Butterfly Conservation, English Nature, Countryside Council for Wales, Scottish Natural heritage)	2003 - 2006
“Dispersal and Conservation”. Centre for Ecology and Hydrology workshop. (Project Leader: Justin Travis)	2004

#### **Professional Affiliations**

American Association for the Advancement of Science, British Ecological Society, Ecological Society of America, International Biogeography Society.

#### **Reviews and Peer Assessment**

Editorial Board: Ecology Letters 2015 onwards

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#### **INVITED SEMINARS**

University of York, UK.	February 2016
University of Plymouth, UK. Biological and Marine Sciences seminar series.	October 2015
Plenary speaker EMAPi (Ecology and Management of Alien Plants Invasions) annual conference, Hawai'i, USA.	September 2015
University of Liverpool, UK. Institute for Integrative Biology seminar series.	February 2014
Department of Physics, Chemistry and Biology, Linkoping University, Sweden.	November 2013
CIBIO, Porto, Portugal.	April 2013
Museo Nacional de Ciencias Naturales, Madrid, Spain.	March 2013
University of Wisconsin, Madison, USA. Annual Tuartha lecture, Yi Fu Tuan lecture series.	May 2012
University of Wisconsin, Madison, USA. Seminar at the Climate, People, and the Environment Program at the Nelson Institute for environmental studies.	May 2012
Imperial College, Silwood Park, UK. Ecology and Evolution Seminar Series	February 2011

Symposium: Managed Relocation (aka Assisted Migration): An Interdisciplinary Evaluation of a Newly Proposed Conservation Strategy. ESA Annual Meeting, USA.	August 2009
ECI Phenology and Climate Change Workshop, Brown University, USA.	March 2009
Department of Ecology and Evolutionary Biology, Brown University, USA.	September 2007
Special BES / IEEM Management Symposium on Ecological Impact Assessments: Science and Best Practice, UK.	July 2006
Dispersal workshop. Centre for Ecology and Hydrology, Banchory, UK	May 2004

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#### **ADDITIONAL SKILLS AND QUALIFICATIONS**

**Languages:** Spanish (C1)

Open Water Scuba Diving Instructor (BS-AC)

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