

Parte A. DATOS PERSONALES

Fecha del CVA	13/02/23
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Nombre y apellidos	Robert John Wilson		
NIE	X4929722V	Edad	51
Núm. identificación del investigador	Researcher ID	I-8726-2014	
	Código Orcid	0000-0003-4477-7068	

A.1. Situación profesional actual

Organismo	MUSEO NACIONAL DE CIENCIAS NATURALES (MNCN-CSIC)		
Dpto./Centro	DEPARTAMENTO DE BIOGEOGRAFÍA Y CAMBIO GLOBAL		
Dirección	CALLE JOSÉ GUTIÉRREZ ABASCAL, 2; 28006 MADRID		
Teléfono	622400744	correo electrónico	rjwilson@mncn.csic.es
Categoría profesional	CIENTÍFICO TITULAR	Fecha inicio	01/08/2018
Espec. cód. UNESCO	2401.06 – Ecología Animal 2413.03 – Ecología de Los Insectos 2502.04 – Microclimatología 2505.01 – Biogeografía 3105.12 - Ordenación y Conservación de la Fauna Silvestre		
Palabras clave	Biodiversity, climate change, conservation, distributions, insects, Lepidoptera, metapopulation, microclimate, scientific collections		

A.2. Formación académica (título, institución, fecha)

Licenciatura/Grado/Doctorado	Universidad	Año
BA Hons - First Class, Biological Sciences	University of Oxford (Reino Unido)	1994
PhD, Ecology	University of Leeds (Reino Unido)	2000
PGCert, Academic Practice	University of Exeter (Reino Unido)	2010

Part B. CV SUMMARY (max. 5000 characters, including spaces)

I research global change effects on biodiversity, and have participated in 20 competitively funded projects, publishing 79 ISI Web of Science articles (6383 citations, h-index 36) including 64 in Q1 journals.

I began my research career with a PhD and two post-docs (1995-2003; Univ Leeds) on ecological processes at northern range margins in Lepidoptera (Thomas et al *Nature* 2001). Research on butterfly atlas data showed spatial signatures of colonization and extinction in species distributions (Wilson et al *Nature* 2004), and I continued this research line in my first permanent job (2007-18; Univ Exeter) with funding to test how climate change and microclimate influence species range expansion (Bennie et al *Ecol Lett* 2013).

During a Ramón y Cajal fellowship at Univ Rey Juan Carlos (2003-07) I began work on mountain gradients as models for effects of climate change. My research showed that butterfly species ranges contracted at low-elevation limits after 35 years of warming (Wilson et al *Ecol Lett* 2005). Uphill shifts by species drove changes in richness and composition (Wilson et al *Global Change Biol* 2007). This system has shown how biotic and abiotic factors govern range limits (Merrill et al *J Anim Ecol* 2006; Gutiérrez et al *Global Ecol Biogeogr* 2016), and the effects of climate on abundance and phenology (Stewart et al *Ecology* 2020; Gutiérrez & Wilson *J Anim Ecol* 2021). I have also collaborated on global change effects on the altitude ranges of Alpine orchids (Geppert et al *Nature Comms* 2020).

I became a permanent scientist at Museo Nacional de Ciencias Naturales (MNCN-CSIC) in 2018. Here I am assessing ecological vulnerability to climate change and the scope to adapt conservation. I obtained the project *Identifying climate change refugia using Iberian mountain butterflies* (RTI2018-096739-B-C21; MCIU/AEI/UE, 2019-2022) to test climate

change and distribution shifts in four mountain ranges using new and historical field data. We have shown that regions of high topographic variation have buffered changes in butterfly communities against recent warming (Mingarro et al *Insect Conserv Divers* 2021). In the same system I am now researching the capacity of range shifts by multiple species to cause biodiversity tipping points, with the project *Detecting Abrupt Responses to climate change using the butterflies of Mountain elevation gradients* (PID2021-126293OB-I00; MCIU/AEI/UE, 2022-2025), and as a project partner for the UK grant *Predicting sudden and widespread biodiversity loss on a rapidly warming planet - when and where does biology change things?* (NE/W006618/1; NERC, 2022-2025). Allied work with Ilya Maclean and Jon Bennie at Univ Exeter shows that microclimatic variation caused by topography can buffer species in England against extirpation risk (Suggitt et al *Nature Climate Change* 2018).

I am interested in how natural history collections can help detect and understand the effects of global change on insects. I am PI with Markus Bastir (MNCN-CSIC) on the project *Digitization to adapt an entomology collection to the environmental challenges of the 21st century* (TED2021-130795B-I00, MCIU/AEI/UE, Proyectos Orientados a la Transición Ecológica y a la Transición Digital, 2022-2024). My interest in effects of global change on conservation led to a report on threats to invertebrates for the Bern Convention Group of Experts on Biodiversity & Climate Change (2012), and to a review of insect responses to global change (Wilson & Fox *Ecol Entomol* 2021). In 2009-12, I directed meta-analyses of evidence for extinction risk from climate change, finding that observed increases in extinction risk were as fast as those predicted by bioclimate models (Maclean & Wilson *Proc Natl Acad Sci* 2011). My broader research in insect conservation has addressed the validity of the IUCN Red List for insect assessment (Fox et al *J Insect Conserv* 2019) and the implications of open access data for citizen scientists (Fox et al *Biodiv Conserv* 2020).

I combine research with academic roles in teaching, training and administration. At the MNCN-CSIC I am Deputy Director of Scientific and Professional Training since 2021. In this role I am developing initiatives to promote research and wellbeing among >100 pre- and post-doctoral researchers. I am Editor-in-Chief of the journal *Ecological Entomology* since 2022 (Associate Editor since 2018), and Associate Editor for *Proc R Soc B* since 2014. I have supervised 7 PhDs to completion, the theses leading to 22 journal articles with the student as first author, and I currently supervise two PhDs. At Exeter (2007-18) I taught modules in ecology, conservation and environmental change, and was chair of the Biosciences Equality, Diversity and Inclusivity committee (2014-2018), monitoring and implementing actions to improve gender equality, and achieving an Athena SWAN Bronze award in 2017.

Parte C. MÉRITOS MÁS RELEVANTES

C.1. Publicaciones

1. Jones, R., Bourn, N.A.D., Maclean, I.M.D., **Wilson, R.J.** (2023) Landscape-scale dynamics of a threatened species respond to local-scale conservation management. *Oikos* 2023, e09334.
2. Gómez-Vadillo, M., Mingarro, M., Ursul, G., **Wilson, R.J.** (2022) Assessing climate change exposure for the adaptation of conservation management: the importance of scale in mountain landscapes. *Land* 11, 2052.
3. Stewart, J.E., Maclean, I.M.D., Trujillo, G., Bridle, J., **Wilson, R.J.** (2022) Climate driven variation in biotic interactions provides a narrow and variable window of opportunity for an insect herbivore at its ecological margin. *Philosophical Transactions of the Royal Society B* 377, 20210021.
4. Mingarro, M., Cancela, J.P., Burón-Ugarte, A., García-Barros, E., Munguira, M.L., Romo, H., **Wilson, R.J.** (2021) Butterfly communities track climatic variation over space but not time in the Iberian Peninsula. *Insect Conservation and Diversity* 14, 647-660.

5. Stewart, J.E., Maclean, I.M.D., Edney, A.J., Bridle, J., **Wilson, R.J.** (2021) Microclimate and resource quality determine resource use in a range-expanding herbivore. ***Biology Letters*** 17, 20210175.
6. Gutiérrez, D., **Wilson, R.J.** (2021) Intra-and interspecific variation in the responses of insect phenology to climate. ***Journal of Animal Ecology*** 90, 248-259.
7. **Wilson, R.J.**, Fox, R. (2021) Insect responses to global change offer signposts for biodiversity and conservation. ***Ecological Entomology*** 46, 699-717.
8. Geppert, C., Perazza, G., **Wilson, R.J.**, Bertolli, A., Prosser, F., Melchiori, G., Marini, L. (2020) Consistent population declines but idiosyncratic range shifts in Alpine orchids under global change. ***Nature Communications*** 11, 5835.
9. Stewart, J.E., Gutiérrez Illán, J., Richards, S.A., Gutiérrez, D., **Wilson, R.J.** (2020) Linking inter-annual variation in environment, phenology, and abundance for a montane butterfly community. ***Ecology*** 101, e02906.
10. Suggitt, A.J., **Wilson, R.J.**, Isaac, N.J.B., Beale, C.M., Auffret, A.G., August, T., Bennie, J.J., Crick, H.Q.P., Duffield, S., Fox, R., Hopkins, J.J., Macgregor, N.A., Morecroft, M.D., Walker, K.J., Maclean, I.M.D. (2018) Extinction risk from climate change is reduced by microclimatic buffering. ***Nature Climate Change*** 8, 713–717.

C.2. Proyectos

1. TED2021-130795B-I00 - *La Digitalización para Adaptar una Colección de Entomología a los Retos ambientales del Siglo 21* (DACER21); Proyectos Orientados A La Transición Ecológica y a La Transición Digital 2021. **Wilson, R.J.** & Bastir, M. 12/22-11/24. Investigador Principal - €269,100.00.
2. PID2021-126293OB-I00 - *La Detección de Respuestas Abruptas al cambio climático utilizando Mariposas en gradientes de elevación de montañas* (DRAMA); Proyectos de Generación de Conocimiento 2021 Modalidad: Investigación Orientada Tipo B. **Wilson, R.J.** 09/22-08/25. Investigador Principal - €145,200.00.
3. NE/W006618/1 - *Predicting sudden and widespread biodiversity loss on a rapidly warming planet - when and where does biology change things?* Natural Environment Research Council (NERC UK) Research Grant. Pigot, A.L., Bridle, J.R., Gregory, R.I. (University College London, UK), Maclean, I.M.D., Merow, C. & **Wilson, R.J.** Project Partner. £791,400.00.
4. RTI2018-096739-B-C21 - *Identifying climate change refugia using Iberian mountain butterflies* (ICRUMB); Programa Estatal de I+D+i Orientada a los Retos de la Sociedad. Wilson, R.J. 01/19-09/22. Investigador Principal - €121,000.00.

C.3. Contratos, méritos tecnológicos o de transferencia

Actividad Editorial

1. *Ecological Entomology: Editor in Chief*, 06/22 - presente; *Associate Editor*, 01/18-05/22.
2. *Proceedings of the Royal Society B: Associate Editor*, 01/14 - presente.

Contribuciones a congresos

1. *Ponencia oral: The role of topography in buffering the responses of mountain butterflies to climatic variation.* Ento22 Royal Entomological Society meeting, University of Lincoln (Reino Unido), 09/22.
2. *Ponencia oral: How topographic variation buffers the effects of climate change on mountain butterfly communities.* "Ecology Across Borders" meeting of the British Ecological Society and Société Française d'Écologie et d'Évolution, Liverpool (Reino Unido), 12/21.

3. *Ponencia plenaria invitada: Detecting refugia from climate change based on colonization, local extinction and changes to community composition.* Frontiers in E3 7th Annual Meeting, Centre for Ecology, Evolution and Environmental Changes cE3c, Lisboa (Portugal), 10/21.
4. *Ponencia plenaria invitada: Making mountains out of molehills: how microclimate, colonization and local extinction influence biodiversity in a changing climate.* IV Jornadas Científicas del Museo Nacional de Ciencias Naturales, MNCN-CSIC (Madrid), 02/20.
5. *Ponencia oral: Effects of colonization, extinction and detectability on the elevation ranges of mountain butterflies.* British Ecological Society Annual Meeting, Belfast (Reino Unido), 12/19.

Actividades de divulgación

1. Ponencias invitadas de divulgación:

- i. *Influencia del microclima en la respuesta de las mariposas al cambio climático.* 1º Encuentro BMS España, CENEAM (Valsaín), 11/22.
- ii. *Butterflies, microclimate and climate change.* Butterfly Conservation Europe / eBMS Butterfly Talks, 03/22.
- iii. *Lepidópteros diurnos: aprendiendo sobre el cambio global con las mariposas. Aplicación del conocimiento a la conservación de los lepidópteros.* IX seminario de seguimiento a largo plazo en la red de Parques Nacionales, CENEAM (Valsaín), 09/19.

2. Capítulo de libro de divulgación:

Wilson, R.J., Mingarro, M., Ursul, G., Cancela, J.P., París, M. (2021) Las mariposas como indicadores del cambio global. Pp. 316-321. En: Cánovas Fernández, C. (Coord.) *Museo Nacional De Ciencias Naturales - Nuestra Investigación Al Alcance De Tu Mano*. CSIC, Madrid.

3. Participación en programas de televisión de divulgación:

- i. RTVE 24 Horas – Objetivo Planeta – “Sin insectos no hay vida” - 19/01/2023
<https://www.rtve.es/play/videos/objetivo-planeta/>
- ii. RTVE Play – Jara y Sedal – “Naturaleza y Cambio Climático” – 28/02/2020
<https://www.rtve.es/play/videos/jara-y-sedal/>

C.4 Actividad formadora.

1. Lectura de tesis doctorales dirigidas desde 2018:

- i. Fox, R. ***Citizen science and Lepidoptera biodiversity change in Great Britain.*** Defence: 27/04/2020. Co-Director: I.M.D. Maclean. Artículos publicados: Fox et al. *J Insect Conservation* 23: 269-278; *Biodiversity & Conservation* 28: 3321-3341.
- ii. Stewart, J.E. ***Linking phenology to population dynamics and distribution change in a changing climate.*** Univ. Exeter (UK) Defence: 28/04/2020. Co-Directores: I.M.D. Maclean, J.R. Bridle. Artículos publicados: Stewart et al. 2022 *Phil Trans R Soc B* 377, 20210021; 2021 *Biol Lett* 17, 20210175; *Ecology* 2020 101, e02906.
- iii. Gubert, L. ***Hibernation ecology and population biology of the hazel dormouse.*** Univ. Exeter (UK) Defence: 07/10/22. Co-Directores: J. Bennie, F. Mathews, R. McDonald, P. Chanin. Artículo publicado: Gubert et al. *J Zoology* 316, 81-91.

2. Tesis doctorales en marcha:

- i. Jones, R. *Effects of habitat and climate change on conservation of the Lulworth Skipper butterfly.* Univ. Exeter (UK), 2017-2024. Co-Directores: N. Bourn, I. Maclean. Artículo publicado: Jones et al. 2023 *Oikos* 2023, e09334.
- ii. Ursul, G. *Identifying climate change refugia using Iberian mountain butterflies.* Museo Nacional de Ciencias Naturales / Univ. Autónoma de Madrid, 2020-2024. Co-Directora: H. 3. Vice-Director de Formación Científica y Profesional, Museo Nacional de Ciencias Naturales (MNCN-CSIC), 08/2021 hasta el presente.