

Mario Mairal Pisa

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Research interest: biodiversity, evolution, ecology, bio/phylogeography, island biology, conservation, systematics, plant population genetics, flora and fauna.

EDUCATION

- 2010 – 2015 **PhD in Biodiversity and Evolution.** Real Jardín Botánico de Madrid. University Rey Juan Carlos, *summa cum laude*, November 2015.
- 2009 – 2010 **MSc in Conservation Biology.** Specialisation in plant conservation biology. University Complutense, Madrid.
- 2003 – 2008 **BSc Biology.** Double specialties: **Botany and zoology.** University Complutense, Madrid.

RESEARCH & CONSERVATION EXPERIENCE

- 2018 – Nowadays **Postdoctoral fellow.** Stellenbosch University (SU) (Department of Botany and Zoology) and Johannesburg University. Hosted by: Johannes Le Roux, Bettine Van Vuuren and Cang Hui (Stellenbosch, South Africa).
- 2017 **Postdoctoral fellow.** Charles University (Department of Botany, Faculty of Science) and Institute of Botany of the Czech Academy of sciences. Zuzana Münzbergová's lab (Prague, Czech Republic).
- 2016 **Project manager** for recovery plans with threatened species, Cabildo de Gran Canaria (Canary Islands, Spain). May – Dec.
- 2016 **Conservation Assistant.** National avian Research Center (United Arab Emirates). Oct – Nov.
- 2010 – 2015 **Ph.D. in Biodiversity and Evolution.** Real Jardín Botánico de Madrid (Madrid, Spain).
- 2009 **Research Assistant.** Conservation and reintroduction of the European mink (*Mustela lutreola*) in Saarland, April – August (Germany).
- 2008 – 2009 **Research Assistant.** Technical monitoring of the endangered Krusty (*Vella pseudocytisus* subsp. *pau*), Aragón Government. University Complutense (Madrid, Spain).
- 2006 – 2008 **Guide-Field technician.** Management of National Parks, Spain.
- 2004 – 2006 **Lab technician and field assistant.** Botany and mycology. University Complutense, Madrid.

DISTINCTIONS, AWARDS & FELLOWSHIPS

- 2019 **National Conservation Award César Gómez Campo.** Awarded by SEBICOP (Spanish Society of Plant Conservation Biology) for the "best work of the 2017-2018 biennium".
- 2019 **Division for Research Development (DRD) Travel Grant.** Awarded by Stellenbosch University.
- 2019 **Postdoctoral Research Fellowship** at the Biocomplexity Project. Awarded by the Department of Botany and Zoology of Stellenbosch University.
- 2018 **Travel Award** to attend the 9th Biennial Conference of the International Biogeographic Society in January 2019. Awarded by the International Biogeographic Society.

- 2018 **Postdoctoral fellow** for the AFBA (A Functional Biogeography of the Antarctic) international research program, project part of the Antarctic Circumnavigation Expedition (ACE). Awarded by AFBA.
- 2017 **Postdoctoral position** in forest genetics, population biology, and ecology offered at the Institute of Forest Research at the University of Quebec (Rejected by 2017 position).
- 2010 – 2015 **Doctoral scholarship** FPI (Formación del Personal Investigador). Full-time.
- 27/09/2013 **Best student talk award** runner up, awarded for a very significant contribution in the field of Biological Systematics. II Iberian Congress of Biological Systematics, CISA.
- 17/10/2011 **Winner V Scientific Marathon** CSIC- Real Jardín Botánico.
- 2010 & 2013 **Communication Awards:** Best Environment blog 2010, and nomination for Best Science Blog 2013 for “El Ojo de Darwin” in “Awards 20 Blogs”, granted by the newspaper *20 minutos*.
- April – Aug. 2009 **International FARO scholarship** at Osnabrück University (Germany).
- 2006 – 2007 **SÉNECA Scholarship** to pursue a career year in another centre (Universidad de La Laguna- Canary Islands).

PUBLICATION LIST

Q1 peer-reviewed Journals

(* = corresponding author)

- John Chau, Céline Born, Melodie McGeoch, Dana Bergstrom, Justine Shaw, Aleks Terauds, **Mario Mairal**, Johannes Le Roux, Bettine van Vuuren. The influence of landscape, climate, and history on spatial genetic patterns in keystone plants (*Azorella*) on sub-Antarctic islands. *Molecular Ecology. Evolutionary Biology* **Q1** (6/49), **IF=6.131**. <https://doi.org/10.1111/mec.15147>
- Carlos García-Verdugo, Juli Caujapé-Castells, Juan C. Illera, **Mario Mairal**, Jairo Patiño, Alfredo Reyes-Betancourt, Stephan Scholz. Pleistocene extinctions as drivers of biogeographical patterns on the easternmost Canary Islands. *Journal of Biogeography* **46**: 845–859. Geography, physical **Q1** (7/49), **IF=4.15**. <https://onlinelibrary.wiley.com/doi/full/10.1111/jbi.13563>
- Carlos García-Verdugo, Juli Caujapé-Castells, **Mario Mairal**, Pedro Monroy. How repeatable is microevolution on islands? Patterns of dispersal and colonization-related plant traits in a phylogeographical context. *Annals of Botany*, **123**: 557-568. Plant Sciences **Q1** (22/211), **IF=4.04**. <https://academic.oup.com/aob/article/123/3/557/5150094>
- ***Mario Mairal**, Mária Šurinová, Silvia Castro, Zuzana Münzbergová. **2018**. Unmasking cryptic biodiversity in autopolyploids: origin and ongoing diversification of cytotypes in the *Aster amellus* aggregate. *Annals of Botany* **122**: 1047–1059. Plant Sciences **Q1** (22/211), **IF=4.04**. <https://academic.oup.com/aob/advance-article/doi/10.1093/aob/mcy149/5068832>
- ***Mario Mairal**, Juli Caujapé-Castells, Loïc Pellissier, Myriam Heuertz, Ruth Jaén-Molina, Nadir Álvarez, Isabel Sanmartín. **2018**. A tale of two forests: ongoing aridification drives population decline and genetic diversity loss at continental scale in Afro-Macaronesian evergreen-forest archipelago endemics. *Annals of Botany* **122**: 1005–1017. Plant Sciences **Q1** (22/211), **IF=4.04**. <https://academic.oup.com/aob/advance-article/doi/10.1093/aob/mcy107/5037756>
- Carlos García-Verdugo, **Mario Mairal**, Pedro Monroy, Maurizio Sajevo, Juli Caujapé-Castells. **2017**. The loss of dispersal on islands hypothesis revisited: Implementing phylogeography to investigate evolution of dispersal traits in *Periploca* (Apocynaceae). *Journal of Biogeography* **44**: 2595–2606. Geography, physical **Q1** (5/49), **IF = 4.154**. <https://onlinelibrary.wiley.com/doi/abs/10.1111/jbi.13050>
- ***Mario Mairal**, Isabel Sanmartín, Loïc Pellissier. **2017**. Lineage-specific climatic niche drives the tempo of vicariance in the Rand Flora. *Journal of Biogeography* **44**: 911–923. Geography, physical **Q1** (5/49), **IF = 4.154**. <https://onlinelibrary.wiley.com/doi/full/10.1111/jbi.12930>
- ***Mario Mairal**, Juan José Aldasoro, Isabel Sanmartín, Pablo Vargas, Marisa Alarcón. **2017**. Geographic barriers and Pleistocene climate change shaped patterns of genetic variation in the Eastern Afrotropical biodiversity hotspot. *Scientific Reports*, **7**. Multidisciplinary Sciences, **Q1** (7/61), **IF=5.228**. <https://www.nature.com/articles/srep45749>

- ***Mario Mairal**, Isabel Sanmartín, Juan José Aldasoro, Ioanna Manolopoulou, Victoria Culshaw, Marisa Alarcón. **2015**. Palaeo-islands as refugia and cradles of diversity in volcanic archipelagos: The case of the widespread endemic *Canarina Canariensis*. *Molecular Ecology* 24: 3944–3963. Evolutionary Biology, Q1 (5/46), **IF=6.494**. <https://onlinelibrary.wiley.com/doi/abs/10.1111/mec.13282>
- Lisa Pokorny, Ricarda Riina, **Mario Mairal**, Victoria Culshaw, Andrea Sánchez-Meseguer, Miguel Serrano, Rodrigo Carbajal, Santiago Ortiz, Myriam Heuertz, Isabel Sanmartín. **2015**. Living on the edge: timing of Rand Flora pattern disjunctions compatible with ongoing aridification in Africa. *Frontiers in Genetics* 6: 1–15. Genetics, Q1, **IF=4.08**. <https://www.frontiersin.org/articles/10.3389/fgene.2015.00154/full>
- ***Mario Mairal**, Lisa Pokorny, Juan José Aldasoro, Marisa Alarcón, Isabel Sanmartín. **2015**. Ancient vicariance and climate-driven extinction explain continental-wide disjunctions in Africa: the case of the Rand Flora genus *Canarina* (Campanulaceae). *Molecular Ecology* 24: 1335–1354. Evolutionary Biology, Q1 (5/46), **IF=6.494**. <https://onlinelibrary.wiley.com/doi/abs/10.1111/mec.131144>

Thesis:

- **Mario Mairal**. **2015**. Macroevolution and Microevolution in island systems: the Rand Flora pattern in the genus *Canarina*. DOI: 10.13140/RG.2.2.30108.28806/1

Scientific - technical publications:

- **Mario Mairal**. **2017**. Recovery plan report for the endangered species *Isoplexis chalcantha* and evaluation of the actions performed for *Helianthemum inaguae* y *H. bystropogophyllum*. Cabildo de Gran Canaria. DOI:10.13140/RG.2.2.20299.18726 http://descargas.grancanaria.com/jardincanario/documentosweb/public%20de%20banco%20de%20datos/Informe_plan_de_recuperaci%3n_de_la_cresta_de_gallo_de_Moya_y_evaluaci%3n_de_las_accione_s_realizadas_para_los_tumeros_de_Inagua.pdf
- Felipe Domínguez, **Mario Mairal**. **2009**. 'Recovery Plan of *Vella pseudocytisus* sbsp. *Pau* Gómez Campo. Report on the demographic monitoring and control, year 2009'. Ref. scientific and technical report, Aragón Government.

Other scientific journals:

- Isabel Sanmartín, Lisa Pokorny, **Mario Mairal**. **2016**. Origen evolutivo de una enigmática distribución geográfica: La "Rand Flora" Africana. *Investigación y ciencia (Scientific American)*.
- ***Mario Mairal**, Andrea Sánchez-Meseguer. **2012**. Resolviendo una incógnita biogeográfica, el caso de la Rand Flora Afro-mediterránea. *Chronica naturae* 2: 53–63. http://www.hombreyterritorio.org/chronica_naturae/num2/archivos/chronicanaturae2_53_2012.pdf

Book chapters:

- Johannes J. Le Roux^{*}, Susanna Clusella-Trullas, Sjikr Geerts, **Mario Mairal**, Thabiso Mokotjomela, David Richardson, Lisa Skein, John Wilson, Olaf Weyl. The role of biotic interactions during biological invasions: Insights from South Africa. Book chapter. Wiley ed. In press.
- Lisa Pokorny, Ricarda Riina, **Mario Mairal**, *et al.* Living on the edge. Published in: *Frontiers in Genetics*. In: Origin of tropical diversity: from clades to communities (Ed: J.E. Richardson & T. Pennington), pp 197-211. Lausanne: Frontiers Media. DOI: 10.3389/978-2-88945-050-3.
- Ana Rosa Burgaz, Guillermo Amo de Paz, Luz Mauro, **Mario Mairal**. **2006**. 'Contribution to the study of the genus *Cladonia* in the Iberian Peninsula. V. *Cladonia chorophaea* and related taxa' *Iberian Lichenological Flora*: CGL2004-04795-C04-01.

Submitted papers:

- ***Mario Mairal**, Mary Namaganda, Desalegn Chala, Abel Gizaw, Christian Brochmann, Pilar Catalán. Colonization and diversification of wind-dispersed grasses in Afroalpine sky-islands. Submitted to *Molecular Ecology*.
- ***Mario Mairal**. El largo declive de los bosques subtropicales africanos. *Conservación Vegetal*.

In preparation:

- **Mario Mairal**, *et al.* The origin of recent invasions in sub-Antarctic islands: the case of *Poa annua*.
- **Mario Mairal**, *et al.* The evolutionary potential of different traits in subtribe *Sonchinae*.
- Victoria Culshaw, **Mario Mairal**, Isabel Sanmartín. Disentangling Plio-Pleistocene African widest disjunctions combining new theoretical approaches in phylogeography: the case of *Camptoloma* (Scrophulariaceae).

RESEARCH & CONSERVATION PROJECTS

- 2018 – 2019 **Biocomplexity**: Understanding biological patterns in space and time. SANAP Programme (South African National Antarctic Programme). PI: Bettine van Vuuren 2018 – 2019.
- 2018 – 2019 **A Functional Biogeography of the Antarctic** international research program. PI: Steven L Chown.
- 2018– 2019 **WORLDCLIMB**: Patterns of the climbing impacts on cliff vegetation of the Mediterranean Biome: implementation of an innovative and comprehensive methodology in a worldwide geographical range. PI: Martí March-Salas. Grant EC-50532R-18
- 2017 **Consequences of polyploidization**: from single traits to population dynamics (Nº 13-32048S). PI: Zuzana Munzbergová.
- 2016 **Recovery plan for threatened plants of Gran Canaria**: *Isoplexis chalcantha*, *Helianthemum inaguae* and *Helianthemum bystropogophyllum*. PI: **Mario Mairal**.
- 2016 **Recovery plan for threatened plants of Gran Canaria**: *Pericallis hadrosoma*, *Solanum vesperilio doramae*, *Lotus kunkelii* y *Kunkeliella canariensis*. PI: Moisés Soto and **Mario Mairal**.
- 2016 **Study Project on the Houbara Bustard Populations** (*Chlamydotis undulata macqueenii*). United Arab Emirates. National Avian Research Centre.
- 2013 – 2016 The assembly of African floras from lineages to populations: effects of historical climate changes and species ecology (**AFFLORA**) (Nº: CGL2012-40129-C02-01). PI: Isabel Sanmartín
- 2010 – 2013 Tracing the **origin of the Afro-Mediterranean Rand Flora** with dating phylogenetic and biogeographic inference (Nº CGL2009-1332-C03-01). PI: Isabel Sanmartín.
- 2010 **Evolución, sistemática y biogeografía de *Campanula*** y relaciones filogenéticas en otros géneros afines de Campanuláceas (Nº CGL2006-09696). PI: Juan José Aldasoro.
- 2009 **Conservation and reintroduction of the European mink** (*Mustela lutreola*) in Germany (Saarland). Federal Biodiversity Program. PI: Elisabeth Peters and Ina Klaumann.
- 2009 **Monitoring and control of *Vella pseudocytisus* subsp. *Pau*** in 2009. Proposal: RB-92.114. Contract FGUCM: 179/2009. PI: Felipe Domínguez.
- 2005 – 2006 **Iberian Lichenological Flora** (Nº DGI, CGL2004-04795-C04-01/BOS). PI: Ana Rosa Burgaz.

ADDITIONAL LONG-TERM RESEARCH STAYS (> 1month)

- 05/04/18 – 8/05/18 **Marion island's Sub-Antarctic research base**. Researching biogeographic patterns and processes in the sub-Antarctic and the effects of biological invasions mediated by climate change.
- 04/10/16 – 13/12/16 **National Avian Research Centre** (United Arab Emirates). Guest researcher as conservation manager. Researching interactions plant – birds, counting and monitoring free-ranging wild birds.
- 01/06/16 – 03/10/16 **Jardín Botánico Viera y Clavijo**, Las Palmas de Gran Canaria (Spain). Project manager for recovery plans with threatened species.

- 01/05/14 – 29/08/14 **Lausanne University** (Switzerland) & **Freiburg University** (Switzerland). Guest researcher at Nadir Álvarez's Lab, Researching statistical phylogeography. Guest researcher at Loïc's Pellissier lab, researching ecological niche modelling. Guest researcher at Myriam Héuertz's lab, researching ABC simulations.
- 01/04/13 – 01/05/13 **Institut Botanic de Barcelona-CSIC** (Spain). Researching demographic population analysis with Marisa Alarcón: PhD co-supervisor and external partner in AFFLORA project.
- 27/01/12 – 26/06/12 & 01/09/12 – 22/12/12 **Jardín Botánico Viera y Clavijo**, Las Palmas de Gran Canaria (Spain). Guest researcher at Juli Caujapé's lab; developing microsatellites and sampling of Macaronesian flora.
- 15/05/09 – 03/08/09 **Osnabrück University**, Berschweiler (Germany). Technical conservation of the critically endangered European mink (*Mustela lutreola*).
- 01/10/07 – 30/07/08 **La Laguna University**, Tenerife (Spain). One-year scholarship degree on the specialty of biodiversity and conservation of island biotas.

TEACHING EXPERIENCE

LECTURER & DEMONSTRATOR

- 2018 – 2019 **Demonstrator of Botany and Zoology**. Stellenbosch University – Form and function of plants, Form and function of animals, Cytology, Evolution and Ecology (80h).
- 2017 **Molecular Phylogenetics** (30 h). Faculty of Sciences, Charles University (Prague).
- 2017 Co-supervised a master student and a PhD student at Charles University (Prague).

COURSES

- 2017 Island Phylogeography Course - Faculty of Sciences, Charles University. December 11th – 14th, 2017. **Mario Mairal**, course organiser and sole lecturer. Oriented to postdocs and university teachers. 20 hours. Course evaluation by the assistants: 4.9/5. (20h).
- 2007 – 2009 Botany, herpetology and management of National Parks. Organismo Autónomo de Parques Nacionales de España. (20 h).

INSTRUCTOR & EDUCATIONAL SERVICES

- 2019 Committee on education in the project '**Expanding the teaching of biogeography**' of the *International Biogeography Society*.
- 2018 **Teacher-Assistant Doctor Certificate**, accredited for lecturing at universities. Certified by the Government of Spain (ANECA).
- 2016 Ecology and botany of tropical forests. Dracaena Amazon Expeditions. (20h).
- 2007 – 2009 Botany, herpetology and management of National Parks. Organismo Autónomo de Parques Nacionales de España. (>200 h).

SELECTED RESEARCH PRESENTATIONS & INVITED TALKS

- 8–13 Jul.2019 **Island Biology 2019**, III International Conference. **Invited speaker** to the symposium "Evolutionary trends in island plants: is everything lost on islands?" Talk Title: What do wind-dispersed species tell us about loss of dispersal. Oral (**Mario Mairal**).
- 8–12 Jan. 2019 **International Biogeography Society**, 9th biennial conference. Málaga, Spain. **Mario Mairal**, Mary Namaganda, Christian Brochmann, Pilar Catalán. Colonization and diversification of wind-dispersed *Festuca* grasses in Afroalpine sky-islands. Oral (**Mario Mairal**).

- 13–15 Aug. 2018 **5TH Symposium ANTARCTIC SANAP**. Hermanus, South Africa. **Mario Mairal**, Bettine J. Van Vuuren, John Chau, Johannes Le Roux. The origin of recent biological invasions in sub-Antarctic islands: the case of *Poa annua*. Oral (**Mario Mairal**).
- 25–27 Sep. 2017 **Czech Ecological Conference 2017**. **Mario Mairal**, Mária Šurinová, Silvia Castro, Zuzana Münzbergová. Disentangling speciation between *Aster amellus* cytotypes. Poster (**Mario Mairal**).
- 23–29 July 2017 **XIX International Botanical Congress (IBC). 2017**. Shenzhen, China. Isabel Sanmartín, Tamara Villaverde, Lisa Pokorny, **Mario Mairal**, Sanna Olsson & Ricarda Riina. Exploring the evolutionary and ecological drivers behind intracontinental geographic disjunctions: the African Rand Flora. Abstract Book I. page 78: abstract T1-27-04. Oral (Isabel Sanmartín).
- 24–27 Mar. 2015 **Floramac 2015**. Las Palmas de Gran Canaria, Spain. **Mario Mairal**, Marisa Alarcón, Juan José Aldasoro, Lisa Pokorny, Isabel Sanmartín. A long history of climate-driven extinction has led Rand Flora lineages to find refugium in Macaronesia: a deeper look at the Tenerife paleo-islands. Oral (**Mario Mairal**).
- 28 Nov. 2014 **VIII RJB-CSIC Scientific Marathon**. Madrid, Spain. **Mario Mairal**, Juan José Aldasoro, Marisa Alarcón, Isabel Sanmartín. Macroevolution and microevolution in island systems: the Rand Flora pattern in the Afro-macaronesian genus *Canarina*. Oral (**Mario Mairal**).
- 20–24 June 2014 **Evolution**. North Carolina, USA. Lisa Pokorny, Ricarda Riina, **Mario Mairal**, Andrea Briega, Jon Cendoya, Isabel Sanmartín. The role of extinction in the assembly of large-scale biodiversity patterns. Oral (Lisa Pokorny).
- 27–29 Nov. 2013 **IV SESBE Meeting**. Barcelona, Spain. **Mario Mairal**, Lisa Pokorny, Ruth Jaén, Juli Caujapé, and Isabel Sanmartín. Disentangling the role of stepping-stone dispersal and large-scale extinction on wide ranging disjunctions: a case study on African *Canarina* flowers. Poster (**Mario Mairal**).
- 15 Nov. 2013 **VII RJB-CSIC Scientific Marathon**. Madrid, Spain. **Mario Mairal**, Juan José Aldasoro, Marisa Alarcón, Isabel Sanmartín. Historia de dos islas: extinción, dispersión y cambio climático en el género afro-macaronesico *Canarina*. Oral (**Mario Mairal**).
- 25–27 Sep. 2013 **II Iberian Congress of Biological Systematics (CISA 2013)**. Barcelona, Spain. **Mario Mairal**, Ruth Jaén, Juan José Aldasoro, Marisa Alarcón, Juli Caujapé, Isabel Sanmartín. Plant evolution in island systems: population study of oceanic islands and continental sky-islands in the genus *Canarina* (Campanulaceae). Oral (**Mario Mairal**).
- 31 Jan–1 F. 2013 **X Annual Ecoflor Meeting**. Sevilla, Spain. **Mario Mairal**, Juan José Aldasoro, Isabel Sanmartín, Pablo Vargas, Marisa Alarcón. Genetic structure of *Canarina eminii*, an epiphytic species of the East African Sky island forests. Oral (Marisa Alarcón).
- 9–13 Jan. 2013 **VI Biennial Meeting of the International Biogeography Society**. Miami, FL, USA. **Mario Mairal**, Lisa Pokorny, Ruth Jaén, Juli Caujapé, Isabel Sanmartín. Long-distance dispersal or large-scale extinction? Explaining the extreme Rand Flora disjunction in the bellflower genus *Canarina*. Poster (**Mario Mairal**).
- 28–30 Nov. 2012 **II UNESCO Chair Meeting for Plant Biodiversity Conservation in Macaronesia and Western Africa**. Las Palmas de Gran Canaria, Spain. **Mario Mairal**, Juli Caujapé, Ruth Jaén, Marisa Alarcón, Juan José Aldasoro, Isabel Sanmartín. Solving the mystery of the Rand Flora pattern: islands in the sky vs. oceanic islands. Oral (**Mario Mairal**).
- 5–8 Sept. 2012 **FloraMac 2012**. Funchal, Madeira, Portugal. **Mario Mairal**, Juan José Aldasoro, Marisa Alarcón, Isabel Sanmartín. Long-distance dispersal or large-scale extinction? Explaining the extreme Rand Flora disjunction in the bellflower genus *Canarina*. Poster (**Mario Mairal**).
- 17 Oct. 2011 **V RJB-CSIC Scientific Marathon**. Madrid, Spain. **Mario Mairal**, Juan José Aldasoro, Marisa Alarcón, Isabel Sanmartín. A biogeographical mystery: the disjunction of Afro-Macaronesian genus *Canarina* (Campanulaceae). Oral (**Mario Mairal**).
- 3–4 Feb. 2011 **VIII Annual Ecoflor Meeting**. Toledo, Spain. **Mario Mairal**, Isabel Sanmartín, Juan José Aldasoro, Marisa Alarcón. *Canarina* phylogeographic study, a genus of Afro-Macaronesian distribution. Oral (**Mario Mairal**).

7 Sept. 2006 **II Jornadas de Liqueología.** Bragança, Portugal. A.R. Burgaz, G. Amo, L. Mauro, M. Mairal. Contribución al estudio del género *Cladonia* en la Península Ibérica. V. *Cladonia clorophaea* y taxones afines. Oral (A. R. Burgaz).

SELECTED FIELD EXPEDITIONS

2018 **Sub-Antarctic research Expedition.** Marion Island take-over 2018.
2017 **Morocco** (field assistant), **Madagascar** (Expedition Leader (EL))
2016 Conservation manager for the **National Avian Research Centre** in 15 nature reserves in the United Arab Emirates.
2016 EL teaching workshops for naturalist guides in the **Neotropics** (Amazon Basin, Cloud forests, island systems): Ecuador, Galapagos Islands, Colombia, Panama and Costa Rica. *Dracaena Amazon Explorations.*
2010 – 2018 EL of numerous trips in **Macaronesian archipelagos:** Canary Islands, Cape Verde, Madeira, Moroccan Argan sector. Royal Botanic Garden (RJB) & Canarian Garden Viera & Clavijo.
2005 – 2018 EL & Field assistant of numerous trips in the **Pyrenees Mountains.** Univ. Complutense & RJB.
2014 Expedition Co-Leader, C.N.A.E. & RJB (**Switzerland Alps**).
2013 Expedition Co-Leader, C.N.A.E. & RJB (**Morocco**).
2013 Field assistant, RJB (Miami, **Everglades**).
2012 EL, RJB (**Peru**).
2004 – 2009 Mountain guide and educator in the **Spanish network of National Parks:** Doñana N.P., Ordesa N.P., Cabañeros N.P., Monfragüe N.P., Montes de Valsain and the Natural Park Andújar.
1997 – now. Extensive nature history travels throughout the **Western Palearctic.**

REFEREE & EVALUATING COMMITTEES

2019 **International PhD Evaluator** for Yurena Arjona's PhD.
2019 **Panel member of Msc defense** at Stellenbosch university.
2018– now. **Expert Evaluator** of the Spanish Research Agency (Agencia Estatal de Investigación; EVALUA).
2018 – now. **Member of the Editorial Review Board** of *Journal of Biogeography*.
2014– now. **Reviewer of 49 manuscripts for 21 JCR-indexed journals:** *Alpine Botany, Anales del Jardín Botánico de Madrid, Annals of Botany, Austral Ecology, Australian Systematic Botany, BMC Ecology, Botanical Journal of the Linnean Society, Critical Reviews in Plant Sciences, Ecology and Evolution, European Journal of Phycology, Genetica, Italian Journal of Zoology, Journal of Biogeography, New Phytologist, Molecular Ecology, Plant Biosystems, Plant Ecology and Evolution, Plant Systematics and Evolution, Peer Community in Evolutionary Biology, Plos One, Scientific Reports,*
Verified reviewer profile in: <https://publons.com/author/1216635/mario-mairal#profile>

PUBLIC OUTREACH AND EDUCATION

Media coverage

Europa Press La Vanguardia Investigación y Ciencia Birdlife International LIFE+GranCanaria
Quercus magazine Agencia SINC Canarias 7 newspaper Diario del
AltoaragónViajedeunnaturalista Blog El Ojo de Darwin Blog Gomeratoday Blog As.
Hombre y territorio

SELECTED COURSES

- Grant Writing Workshop. Stellenbosch University May 2019. 8 hours (h).
- R programming. Johns Hopkins University (online). April 2014. 40 h.
- Adobe Illustrator-Photoshop CS5 Online. September- November 2013. 40 h.
- Workshop on digital imaging to study biodiversity. GBIF (Global Biodiversity Information Facility). October 2013. 15 h.
- Course on Macro-photography in the countryside. Nikon School Madrid. 10-11 September 2013. 20 h.
- Iniciación a la fotografía digital de naturaleza. June 2013. 30 h.
- Workshop Ecological Niche Modelling. GBIF (Global Biodiversity Information Facility). Madrid. 28-31 May 2013. 23 h.

- Phylogenies and genealogies of DNA: reconstruction and its applications. IRBio-Institut Reserca of Biodiversitat. Barcelona. 3-13 July 2012. 70 h.
- Interacciones bióticas en montaña. Su papel en el mantenimiento de la biodiversidad frente a cambios globales. Julio 2011. 20 h.
- Botanical gardens as an educational resource. Real Jardín Botánico. Madrid. April 2008. 22 h.
- XIII Cursillo de flora y vegetación en el Pirineo – CSIC Jaca. Julio 2008. 50 h.
- I Curso de flora y vegetación de la sierra de Guadarrama. Julio 2008. 40 h.
- Iniciación al estudio de las aves Canarias. Noviembre 2006. 15 h.
- X Cursillo de flora y vegetación en el Pirineo – CSIC Jaca. Julio 2005. 50h.
- Técnicas de estudio en campo de gato montés y lobo Ibérico. Marzo 2004. 20 h.

LANGUAGES

- Spanish (mother tongue), English (Excellent level), French (basic).

PROFESSIONAL SERVICES & OTHER ACTIVITIES

- 2010–2019 I have deposited material from several scientific expeditions (> **4000 herbaria specimens**) in Spanish herbaria (Royal Botanical Garden of Madrid, Botanic Institute of Barcelona, Canary Garden Viera and Clavijo), as well as in international institutes (Lausanne University, Charles University, Sub-Antarctic Marion research base)
- 2017 Organiser and speaker in scientific seminars for population ecology at Charles University.
- 2010–2015 Organiser and speaker in scientific seminars for systematics and evolution in the Real Jardín Botánico, Department of Biodiversity and Conservation.

Member of:

- The International Biogeography Society
- Several conservation organisations: Cape Bird Club, SEBICoP (Spanish Society for Plant Conservation), SEO/BirdLife, Society for Biodiversity and Conservation - Gaia.

SELECTED COLLABORATORS (in alphabetical order)

- Dr. **Álvarez**, Nadir – Natural History Museum of Geneva (Geneva, Switzerland)
- Dr. **Brochmann**, Christian – Natural History Museum University of Oslo (Oslo, Norway)
- Dr. **Castro**, Sílvia – University of Coimbra (Coimbra, Portugal)
- Dr. **Catalán**, Pilar – University of Zaragoza (Huesca, Spain)
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Annex: science contributions, extended skills and aptitudes

Some of my most relevant **contributions to science** are: i) understanding the effects of extinction mediated by climate change in shaping biodiversity patterns at continental level; ii) assembling bio/phylogeographical patterns and processes in endangered biodiversity hotspots; iii) finding refugia and cradles for critically endangered diversity; iv) understanding catastrophic volcanic extinction, continental rifting and topographic complexity in the spatiotemporal evolution of populations; v) finding lineage-specific climatic niche driven by tempo of vicariance, and vi) developing ‘The Theory of Island Biogeography’ between oceanic and sky-islands.

Laboratory. Experience as Laboratory Manager of Molecular Ecology and Systematics, and DNA bank curation (Canarian Botanic Garden, Spain). Extensive experience with the main techniques used for molecular ecology and systematics, from the micro- to the macroevolutionary levels: DNA markers (nuclear, Chloroplastic and mitochondrial), fingerprinting markers (AFLPs and microsatellites), Next Generation Sequencing (Rad-Seq and Hyb-Seq). Flow cytometry handling.

Reconstruction of **phylogenetic relationships** bridging the inter-population and intra-population level—**gene trees and species trees**. Broad experience with methods of phylogenetic reconstruction (e.g. Parsimony, maximum likelihood), especially with Bayesian inference. Selection of evolutionary models and topologies test.

Population genetics. Highly experienced with descriptors of genetic structure in populations, quantification of genetic variability, ancestry correlated allele frequencies, structure and distribution of genetic variability in space. Strong skills with population demographic analyses (e.g. mismatch distributions, Bayesian Skyline Plot), including Approximate Bayesian Computing.

Phylogenetic dating analysis. I am especially interested in cutting-edge techniques related with dating both above-species and population-level sampling. I have developed a novel “nested” dating approach in BEAST, to deal with the existence of deep calibration points within a heterogeneous dataset. I handle both coalescent and speciation priors, and their choice with the most novel techniques (Path Sampling and Stepping Stone sampling methods).

Bio/Phylogeographical reconstruction. I handle a wide range of bio/phylogeographical approaches: i) comparative approach using classical Nested Clade Phylogenetic Analyses; ii) new upper approximation BPEC (Bayesian Phylogeographic and Environmental Clustering), iii) Spatial-diffusion approach for model rates of spread (Bayesian phylogeography method) and; iv) population genetics approaches and structured-coalescent methods to infer population-level information.

Species distribution and environmental niche modelling. I handle state-of-the-art approaches in species distribution modelling: *ensemble modelling* integrating results from multiple modelling techniques, including generalized linear models (GLM), generalized additive models (GAM), general boosting method (GBM), and random forest (RF) models.

Conservation and Protected Areas. Extensive work in protected areas management and collecting records for the Red Book of Endangered Species (IUCN Red List Criteria). Wide experience with animal (surgery and implantation (microchipping), radio-tracking and live-trapping, supplementary feeding, hacking techniques) and plant conservation (nursery cultivation and propagation, reintroduction, distribution and habitat census, longevity, dendrochronological studies and seed bank conservation).

Fieldwork. Experience conducting expeditions especially for plant sample collection in a wide range of habitats in five continents (Europe, Africa, Asia, South America, and Antarctic). Leader of several expeditions throughout island systems (Galapagos, Madagascar, Prince Edwards archipelago, Canary Islands, Madeira, Cape Verde). Work with specific emphasis on **African flora** (continental patterns and Rand Flora), collection of rare flora and relicts. Advanced knowledge of African, Atlantic, Arabian, Macaronesian, Malagasy, Mediterranean and sub-Antarctic flora and fauna.