



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2015

Turno de acceso general

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Título:

Integrating quantitative and multidisciplinary approaches to improve biodiversity conservation and management: Large carnivores in the Anthropocene

Resumen de la Memoria:

Five years after defending my PhD, I have established myself as an independent researcher with a strong focus on biodiversity conservation in human-dominated landscapes. I use mainly mammalian carnivores as study models because these species, particularly large carnivores, are among the most controversial and challenging group of species to conserve, manage and coexist with, in our crowded and modern planet. Their conservation and management not only requires a good understanding of their ecology, behaviour or evolution, but also of the human psychological, social, political and economic processes connected to these contentious species. My interests in conservation science emerged early from my education, which consisted in ecological and applied degrees. I first graduated in 2004 as Animal Biologist (University of Santiago de Compostela). In 2006, I completed my MSc Thesis in Ecology and Conservation Biology focused on the persistence of large carnivores in human-dominated landscapes (University of Sevilla). Four years later (2010), I completed my PhD Thesis in Ecology and Conservation Biology focused on the in situ recovery of food-limited endangered populations of large carnivores (University of Sevilla; Cum Laude). During my postdoctoral contracts (Swedish University of Agricultural Sciences, Sweden, 2012-2014; Oviedo University, current position), I have been focused on the development of quantitative and multidisciplinary approaches to a better understanding on the effects of anthropogenic disturbance on large predators, the adaptations of both humans and carnivores to the coexistence, and its consequences, as well as the mechanisms and tools to promote coexistence from a multidisciplinary perspective. Being interested in finding ways to balance human development and biodiversity conservation goals, ultimately, I aim to generate scientific knowledge to inform managers, policy-makers and other stakeholders. My research interests focused on integrating quantitative and multidisciplinary approaches to improve biodiversity conservation and management, using large carnivores in the Anthropocene as case study, can be classified into the following three lines: i) Large carnivores in human-dominated landscapes: Adaptations and consequences, ii) Multidisciplinary and evidence-based management and conservation approaches: Large carnivores and human-wildlife interactions, and iii) Community and ecosystem-level interactions: Carnivorous mammals. Finally, I am involved in translating science into policy and decision-making, both at the national and international levels, as well as in advisory activities for different authorities in the management and conservation of large predators.

Resumen del Currículum Vitae:

I am a conservation scientist interested in the integration of quantitative and multidisciplinary approaches to achieve solutions to conservation, management and ecological problems. I got my degree in biology at Univ. of Santiago de Compostela in 2004 and obtained my MSc and PhD (Cum Laude) degrees at Univ. of Sevilla in 2006 and 2010, respectively. After PhD completion, I moved to Sweden as a postdoctoral researcher at the Swedish University of Agricultural Sciences (2012-2014). Afterwards, I got a 3-yr Juan de la Cierva contract in 2014 at the Research Unit of Biodiversity (UO-CSIC-PA), Oviedo University, which is my current position. My research has been published in multidisciplinary and top journals in my field such as Science(5), PLOS ONE(8), Scientific Reports(1), Conservation Letters(2), Conservation Biology(3), Biological Conservation(2), Journal of Animal Ecology(2) or Biological Reviews(1). I have published 55 peer-reviewed papers (53 SCI papers) (in 60% of them I acted as first, second, senior or corresponding author; >10 articles currently in minor, major or under revision). Mean ISI impact factor: 6.5 (articles with ISI>2= 80%; >3= 63%). Articles Q1= 78%. H-index:18. Citations:777. Average number of papers/year (2008-2015)= 6.4 (mode= 6, range 4-12; 9 pubs/yr including scientific/technical reports). I am the senior/corresponding author in 63% of my publications in the last year and papers in publication process. These figures are positive outlier for someone at the age of 34 who has completed his PhD 5 years ago. My multidisciplinary approach has allowed multiple internationally collaborations, being co-authored by >150 researchers from 30 countries, which also require a huge investment, being always very active in all my publications, participating in the discussions of ideas, analyzing the data or writing the manuscripts. I have contributed with 53 presentations in congress, 6 popular science articles, 5 books/book-chapters and 17 talks by invitation. I am involved in translating science into policy and decision-making, both at national and international level (advisory activities, contracts, IUCN, dialogue law-ecology) (24 sci/tecl reports to decision-makers). I have been involved in advisory activities for different authorities in the management and conservation of large predators. I have been able to attract funding for R&D projects, participating in 26 R&D projects and 22 research contracts (5 as PI, 5 as co-PI; since 2005 I have raised more than 2 million EU considering only projects acting as PI/co-PI/team researcher), with a high degree of internationalization and funded from multiple sources (regional, national, EU, international institutions & Foundations). I have reviewed manuscripts for 13 journals. I give a particular attention to communicating research, interacting frequently with the media, being my work highlighted internationally (BBC, The Guardian, NG, El País). So far, I have been member of 5 research teams and 3 scientific advisory committees including the Canid Specialist Group and the Wolf Working Group of the IUCN/SSC. I have experience in post-graduate supervision having participated in the teaching/training/supervision of 5 PhD students (3 as main supervisor), 11 MSc students and 4



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Licentiate dissertations. I have also participated in several courses and giving lectures at University level (12).



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Título:

"Carrion ecology": foundations, applications and ecological synthesis

Resumen de la Memoria:

RESEARCH CAREER: I studied a Bachelor degree in Biology (UGR, Spain, 1996-2001), in which I got an average mark of Outstanding (3.25, max. 4; specialising in Zoology: 4, max. 4). I obtained my PhD (UGR) in December 2007 with a mark of Outstanding Cum Laude. Since 2001, I also held positions of responsibility in the public administration of wildlife management (Andalusia, S Spain), where I worked continuously for nearly 9 years and I successfully managed large budgets and working teams. In 2010, I spent 2 months as an honorary postdoctoral researcher at the UGR. Then I moved to South Africa thanks to a 2-year postdoctoral fellowship from the Spanish Ministry of Education. I was placed in the Centre for African Ecology (Univ. of the Witwatersrand, Johannesburg). In 2011, I was granted with a 1-month stay at the EBD-CSIC in association with that project. In 2013 I enjoyed a 1-month stay at the Univ. Rey Juan Carlos. From Jun. 2013 to Sep. 2015 I was a part time (75%) scientific researcher at the UMH. At the end of 2014, I had a 1-month stay at the INC-PAS (Poland; granted by the UMH) and a 2-weeks stay at the IGB (Germany). In Sep. 2015, I had a 1-month stay at the Univ. of Berkeley (USA; granted by the UMH). Since Oct. 2015, I am a Severo Ochoa Excellence Program postdoctoral fellow at the EBD-CSIC. I am PI of an international research project (funded by IGB, Germany). At the end of 2015, I organized a 5-weeks scientific expedition to Namibia within that project. Also, I participate in 1 international (European Commission) and 6 national (Spanish Ministries concerned with science and ERDF funds) research projects. I am the supervisor of 2 PhD Thesis, 8 Master Theses and 4 Final Degree Projects. I've taught 139h at the university. In 2012 I was positively evaluated for Assistant Professor by the Spanish Accreditation System for Professor, and I am Research Associate of the Univ. of Wits (South Africa) since 2012, and a Guest Scientist at the IGB (Germany) since 2015.

RESEARCH LINES: My current research scheme, which has benefited from my strong background in predator ecology and conservation, focuses on establishing the empirical and conceptual foundations of carrion ecology (scavenging ecology plus non-trophic functions of carrion), an emergent and promising ecological discipline with wide applications to evolutionary biology, biodiversity conservation and human well-being. While I don't neglect my previous scientific interests, my research on carrion ecology, in which I've consolidated a pioneering and leading international role (e.g., I've co-authored half of total existing reviews on scavenging ecology), has proved particularly fruitful and attests my increasing capacity to innovate in science. This line also benefits from my international network of collaborators, which includes researchers from the main scavenging groups. My research is genuinely collaborative, multidisciplinary and interdisciplinary. My varied analytical skills range from mixed models using R to agent-based modelling using NOVA platform.

Resumen del Currículum Vitae:

I've published 51 peer-reviewed scientific articles, 41 of them in SCI journals such as Biol. Rev. (IF: 9.670; ranked 1st among 85 journals in Biology), Front. Ecol. Environ. (IF: 7.441; ranked 5th among 223 journals in Environ. Sciences) and Ecol. Monogr. (IF: 6.980; ranked 8th among 145 journals in Ecology). 26 of my SCI articles are in journals ranked within the first quartile of their areas (24 with IF>3). The average impact factor of my SCI papers is 3.18, and they accumulate over 667 citations. I am the first author in 17 of them, I share first authorship in another 2, and I am the corresponding author in 3 more papers. My H-index is 14, and mi i10-index is 19. I am also sole author of a scientific book (written in English and for an international audience), editor of another two books, author of 22 chapters (in 4 of them I was invited by the editors) in 11 books, and contributed in 18 popular publications. I've presented 47 works in scientific conferences (18 at international level). I've already supervised one PhD thesis (UGR, 2009; mark: Cum Laude), and I am supervising one more PhD thesis (UMH). I've supervised or I am supervising 8 master theses (UM, UGR, UCM, UAM, UAB) and 4 final degree projects (URJC, UMH, UAM), and I've been a member of 3 PhD thesis committees (UB, 2008; UM, 2014; Univ. of Glasgow, UK, 2015). I am consolidating an important experience in teaching (both theory and practicals) at the university level (either degree or master; total hours: 139; UMH, UGR, URJC, UM, UNIA). I've been positively evaluated for Assistant Professor (Profesor Ayudante Doctor) by the Spanish Accreditation System for Professor (ANECA, since 2012), and appointed as Research Associate in the Universities of the Witwatersrand (South Africa, since 2012) and Miguel Hernández (Spain, 2012-2013), as well as a Guest Scientist at the IGB (Germany, since 2015). I organized one scientific seminar, and given 5 national and international invited lectures and 8 talks in scientific seminars. I was a member of the Editorial Board of a national peer-reviewed scientific journal (2002-2008), and I am a regular reviewer (38 ms) for 20 leader SCI journals in Ecology, Conservation Biology, Zoology and Ornithology (J. Appl. Ecol., Ecol. Appl., Biol. Conserv., Oikos, PLoS One, Oecologia, J. Zool., Ibis, etc.), as well as for 3 international and national peer-reviewed journals (5 ms). Also, I've actively contributed to launch, promote and support several national and international scientific and biodiversity conservation NGOs. I am the PI of an international research project funded by the IGB (Germany), coordinating 5 researchers and a budget of 13,000€. In addition, I actively participate in numerous research R&D&I projects funded by national (e.g., Spanish Ministries concerned with science and ERDF funds; projects CGL2006-



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10689; CGL2008-00928/BOS; CGL2010-17056; CGL2012-40013-C02-02; CGL2012-33536; CGL2013-41565-P) and international (e.g., European Commission; project 330466) public bodies (total budget: 688,778.40€). Currently, I am actively collaborating with researchers in Spain (EBD-CSIC, UMH, UB, UGR, URJC, IREC-CSIC, UPO, UM, UdL, UMA), USA (Univ. of Berkeley, Univ. of Hawai'i), South Africa (Univ. of the Witwatersrand), Brazil (Univ. of São Paulo), Poland (Polish Academy of Sciences), Switzerland (Univ. of Bern) and Germany (IGB) in different projects.



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Título:

Ecology, behaviour and conservation of marine predators: from species to ecosystems

Resumen de la Memoria:

My research focuses on ecology, behaviour and conservation of marine predators, with an especial interest in their ecological roles in marine ecosystems, their trophic relationships at the food-web level and the main ecological and evolutionary factors affecting behavioural, community patterns and spatial distribution, and inter- and intra-specific relationships. I work at different levels of ecological complexity (from individuals to communities), with different study models (seabirds, elasmobranchs, fin-fish and cephalopods) and contrasting biogeographical areas (temperate, tropical and polar environments). Methodologically, I combine interdisciplinary methodologies such as stable isotopic values, bio-logging methods, spatial niche models, ecophysiological analysis, ecosystem modelling and ecological indicators, and statistical techniques. In addition to the ecological and biological relevance of my research, my work also provides valuable information for an ecosystem-based management of marine resources and the conservation of threatened species. Specific research lines include (1) Importance of environmental factors and human activities on the distribution, spatial ecology and community composition of marine organisms, (2) Life-history, phenotypic variation and behavioural ecology of marine predators, (3) Ecological mechanisms underpinning the coexistence of sympatric predators, (4) Ecological and trophic roles within ecosystems of abundant, rare and endangered marine predators, (5) Structure of marine food webs and functional prey-predators relationships.

Resumen del Currículum Vitae:

I got my degree in Environmental Sciences (2002) at University of Miguel Hernández (Elche, Spain), with a mention award. From 2003 2008 I conducted my MSc (2005) and PhD (2008) on foraging ecology of pelagic seabirds at the Universitat de Barcelona (Barcelona, Spain) with a FPI-fellowship. During my PhD, I diversified my expertise in four international research centres (France, Germany, Australia). My thesis received the maximum academic distinction and the ♦European PhD♦ mention. Having finished my Ph.D., I worked as post-doctoral researcher (first post-doc) during 2-years at the Estación Biológica de Doñana CSIC (Sevilla, Spain). There, I employed stable isotopes to investigate at-sea movements of seabirds and trophic relationships in marine food-webs. Then, during my second post-doc at the British Antarctic Survey NERC (Cambridge, UK) I developed a project that aims to study the structure and functioning of an Antarctic krill-dependent community. In 2010, I began a 3-year post-doctoral contract for junior researchers (Juan de la Cierva Programme, Spain) at the Institute of Marine Science CSIC (Barcelona, Spain). During this third post-doc I continued my research on the behavioural patterns of seabirds in different ecosystems and I also gained expertise in the study of the ecological role of marine predators by combining ecological modelling, trophic markers and tracking instruments. In 2013 I was contracted as a researcher (fourth post-doc) in a project funded within the 7th Framework Programme of the European Commission. Apart from continuing with the main projects and PhD-student supervision initiated during the Juan de la Cierva contract, I investigated the main ecological relationships between marine biota, environmental features and human stressors, using spatial statistical modelling, food-web models and isotopic markers. In 2014-2015 I was contracted (fifth post-doc) in a European project (ESFRI-LifeWatch) in the Estación Biológica de Doñana CSIC (Sevilla, Spain). Since the end of 2015 I am working (sixth post-doc) with a contract framed within the Marie Skłodowska-Curie actions and at the Centre d'Ecologie Fonctionnelle et Evolutive, CNRS (Montpellier, France). In my actual position I am developing a project (I am the PI) that investigates the main ecological mechanisms and consequences of spatial movements of marine predators adapted to human-transformed environments. I have participated in 23 research projects (8 international and 15 national) and I have been PI or co-PI in 3 of them. I have authored 47 SCI (75% published in Q1 journals; being the first author in 21 and second author in 18 of them). All my publications accumulated ~718 citations (h-index=17). I also disseminated my research to the general public in 13 popular science papers. I am supervising 2 PhD-students and I have supervised 8 MSc theses. I have served as reviewer in more than 40 SCI-journals.



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Título:

The evolution of phenotypic integration and plasticity

Resumen de la Memoria:

Throughout my research career as an evolutionary ecologist, I have developed my current expertise and research lines in the evolution of phenotypic integration and plasticity. During my doctoral research (University of Glasgow, funded by competitively awarded scholarships from the UK, 2002-2005) and the first postdoctoral research (UNAM, Mexico, funded by the Consejo Nacional de Ciencia y Tecnología of Mexico, 2006-2008), I studied environmental and intrinsic factors underlying life-histories and behaviour patterns of animals by using both field experiments and long-term population data. In my current institution, Universidade de Vigo, I have successfully broadened my research topic from seabird ecology to evolutionary biology (funded by Parga Pondal fellowship from the Xunta de Galicia, etc.). A part of my works in the mainstream research line has been focused on studying genetic architecture of functionally related traits. The evolutionary dynamics of phenotypes is often complex to understand particularly when there is covariation among functionally related traits (phenotypic integration). In a series of studies, I have examined how evolutionary conflicts resulted from selection acting on genetically correlated phenotypes are resolved by applying advanced quantitative genetic models to both experimental and long-term population data. Another mainstream of my research line is genotype-by-environment interaction. In the recent and ongoing projects led by myself, I have proposed new experimental frameworks and tested whether correlated phenotypes are plastic to manipulated environmental conditions and whether this plasticity has quantitative and molecular genetic basis. I am particularly proud of having established a new research laboratory in the current institution to study the three-spined stickleback, a world-wide model species, and obtained a competitively awarded I+D+I project as the principal investigator (PI). My current works in this fish lab tackle important questions about the evolution of phenotypic integration and plasticity and also involve collaborations with my past research group in Glasgow (Neil Metcalfe, leaders of a ERC project) and supervision of a doctoral research (FPI studentship) and several undergraduate projects.

Resumen del Currículum Vitae:

Education and formation: After receiving my BSc Biology in Seoul, I moved to the University of Glasgow for my PhD study, which was funded by competitively awarded scholarships from the UK and supervised by Prof. Pat Monaghan. After the PhD, I was awarded a two-year postdoctoral fellowship from the Universidad Nacional Autónoma de México (UNAM, 2006-8). In Mexico, I independently led my research project on dispersal and life-history of a colonial seabird. In 2008, I started to work in my current institution, the Universidade de Vigo. As a Parga Pondal research fellow funded by the Xunta de Galicia, I successfully broadened my research line from seabird ecology to evolutionary biology (the evolution of phenotypic integration and plasticity).

Research projects: I am the Principal Investigator (PI) of an ongoing I+D+I project (2015-2018) about phenotypic plasticity in response to climate change. I have also played a principal role in the acquisition and implement of other research projects (7 in Spain and 1 in Mexico). In particular, a consolidation grant from the Xunta de Galicia (2013-2015) provided an important support for me to establish a new fish laboratory and consolidate my independent research group at the Universidade de Vigo.

Scientific production: I have published 31 papers in SCI journals, all of which are ranked within the 25% highest impact journals in their disciplines (Evolution, Ecology, J Anim Ecol, Heredity, Horm Behav, J Evol Biol, Biol Lett, Anim Behav, Behav Ecol, etc.). I played a leading role in most works either as the first or only author in 23 papers (74%) or as the second or the last author in 7. I presented a number of oral presentations in international conferences (organized by British Ecological Society, Behavioural Ecology Society, International Seabird Group, etc.) and gave talks as an invited speaker in University of Glasgow, CSIC (IMEDEA), Universidad de Oviedo, Universidade de Vigo (Dept. Genetics).

Teaching and research supervision: I have given lectures in undergraduate and postgraduate courses (222 h), and (co)supervised 6 BSc dissertations, 1 MSc thesis and 1 ongoing-PhD thesis.

Other achievements: I am an editorial board member of Ardeola and Korean J Ornithol, and a reviewer of a number of SCI journals, including Am Nat, Anim Behav, Behav Ecol, Biol Lett, Heredity, J Evol Biol, Oecologia. I was a regular science columnist for a Korean newspaper during 2012-2013. I was awarded a David Searle Prize for scientific writing during my PhD.



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Título:

Integrative and Comparative Ecotoxicology

Resumen de la Memoria:

My research activities have primarily focused on the study of effects of environmental pollution on wildlife, with special attention to amphibians, a group particularly threatened at the global level. As long as my research career progressed, I spread my focus to other vertebrate groups (i.e. birds, mammals and reptiles) to have a comparative approach, but most importantly, towards the study of the integration of different mechanisms of action of pollutants, in order to have a complete, multi-disciplinary picture of the relationships between environmental pollution and wildlife. Thus, my studies have evolved from simple approaches addressing pollution effects at the organismal level, to a tiered approach integrating physiological and organismal effects, together with simulated field scenarios and assessment of environmental risks of pollution on vertebrates. This I have done by gaining new training in each of the five academic institutions from four different countries where I have worked. On the way, I have also benefitted from inter-sectorial interactions with environmental regulators, hunters, naturalists and chemical industries. My planned line of development consists in the use of comparative and integrative ecotoxicological studies to resolve the major limitations of current procedures of environmental risk assessment (ERA) of chemicals on vertebrates. That is, from the comparative view, the design of replacement and reduction models to make ERA efficiently protective to all taxa without increasing vertebrate testing, and from the integrative view, the elucidation of mechanistic and lagged effects of pollutants on wildlife and their implementation in ERA procedures from which they are currently absent.

Resumen del Currículum Vitae:

B.Sc. Biology, University of Salamanca, 2000. M.Sc. Zoology, University of Salamanca, 2002, Ph.D. University of Salamanca, 2008. Currently researcher at the University of Castilla-La Mancha as part of the own program of access to the Science, Research and Innovation system. Previously, I had postdoctoral appointments at the Universities of Wisconsin-Madison, Castilla-La Mancha, Aveiro and Koblenz-Landau, the latter with an IEF-Marie Curie fellowship of the EU's 7th Framework Program. I have established collaborations with colleagues from national (University Complutense de Madrid, University of Barcelona, National Museum of Natural Sciences, Doñana Biological Station) and international institutions (USGS Patuxent Wildlife Research Center, London's Imperial College). Besides the Marie Curie, I have been granted with a predoctoral fellowship of the FPU program (2002-2005), a postdoctoral mobility award of the José Castillejo program (2008-2009), and a contract of the Juan de la Cierva program (2010-2013), all three financed by the Spanish Ministry of Education. I am principal investigator of an ongoing project funded by the European Food and Safety Authority (EFSA) and was also principal investigator of a research project awarded by University of Salamanca. I have participated in another eight projects financed in public calls (three of them international) and in five research agreements with public and private agents, most of them focused on the study of environmental pollutants on wildlife. I have published 48 papers in peer-reviewed journals (35 in SCI journals, 16 as first author) in some of the top-ranked journals in the area of environmental sciences including Conservation Biology, Environment International or Environmental Science and Technology. My SCI papers have an average impact factor of 3.1, have received 423 cites and give an h index=12. More than two thirds of these papers are within the 25% highest impact journals in their areas. I have authored four chapters in books of international diffusion (two of them as single author), another one in a national book, two species in the Enciclopedia Virtual de los Vertebrados Españoles, and three entire books in the field of biology and conservation of amphibians and reptiles. I have presented my results in 71 communications (three times as invited speaker) at 37 national and international conferences. I have advised undergraduate and graduate students at four universities in Spain, USA and Germany. I have co-advised one Ph.D. and four M.Sc. theses, and I am currently advising another Ph.D. and two M.Sc. theses. I have taught theoretical and practical courses within the disciplines of zoology and toxicology in the Universities of Salamanca and Castilla-La Mancha, and collaborate in a post-graduate program at the University of Aveiro. I have acted as reviewer for 22 different journals including Global Change Biology or Environmental Science and Technology, and for the Argentinian research agency. I am member of the EFSA working group elaborating the scientific opinion about EU pesticide risk assessment of amphibians and reptiles and participate in an international committee for accreditation of environmental risk assessors. I am the co-editor of Basic and Applied Herpetology, the journal of the Spanish Herpetological Society, and associate editor of Ecotoxicology



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Título:

Understanding biodiversity: the role of biotic interactions for species coexistence, biodiversity patterns and ecosystem functioning

Resumen de la Memoria:

My scientific career started with my self-developed PhD project on the role of plant-plant interactions for the species distribution in alpine snowbed communities. After this early experience in proposal writing and funding acquisition the Swiss National Science Foundation granted me two consecutive postdoctoral fellowships. I conducted two years of postdoctoral research in Spain and the UK respectively, where I mainly performed my own independent research. During my first postdoc at the Estación Experimental de Zonas Áridas - CSIC (Spain) I studied how plant-plant interactions affect biodiversity patterns in stressful alpine ecosystems. During my second postdoc at the James Hutton Institute (UK) I established experimental communities with species of agricultural interest (i.e. crops and weeds) in productive ecosystems, and extended the previous research to include plant-soil interactions and to link biotic interactions through their effects on biodiversity to ecosystem functioning. In my current position as Independent Group Leader at the University of Zurich (with a PhD student and a research assistant) I include evolutionary processes, plant-insect interactions and ecological network approaches into my research. Consequently, the research line initiated with my PhD was consolidated and extended over the last seven years. My main research line on biodiversity now addresses biotic interactions as drivers of community assembly, biodiversity patterns, and finally ecosystem functioning and services. I quantify biodiversity at different levels, from genetic diversity over functional and species diversity up to phylogenetic diversity, and hold an evolutionary perspective on all my research. This holistic approach to biodiversity (i.e. from processes to patterns and consequences) makes my research not only relevant for ecology but also provides unique opportunities for application. With the combination of research in extreme environments and in agriculture I can directly transfer knowledge from ecology to agriculture (i.e. from basic research to application) and vice versa, making my research innovative and topical.

Resumen del Currículum Vitae:

My scientific career started with an own designed and managed PhD project (2004-2008) on the role of plant-plant interactions for the species distribution in alpine snowbed communities (University of Bern, Switzerland). During this time (2002-2009) I worked part-time as assistant and lecturer at the University of Teacher Education Bern (Switzerland), teaching 21 semester courses, practica and excursions on biology and co-supervising 6 Master theses. With my early experience, and specialised training, in proposal writing and funding acquisition I successfully applied for two consecutive postdoctoral fellowships by the Swiss National Science Foundation. In total, I conducted over 4 years of international postdoctoral research: 3 years as PI with own funding and one year in a contract. During this time, I established my research line in plant ecology, with biodiversity as the main research interest and with particular focus on the role of plant-plant interactions as process determining biodiversity and ecosystem functioning, and I co-supervised a PhD student (University of Almería, Spain). At the Estación Experimental de Zonas Áridas - CSIC (Spain; 2010-2012) I conducted predominantly observational studies in alpine ecosystems, whereas at the James Hutton Institute (UK; 2012-2014) I used experimental approaches in agricultural systems. This combination of research in alpine and agricultural ecosystems turned out to be an exciting avenue for my future research, as it allows making choices of ecosystems based on their suitability to observe and/or manipulate specific aspects of biodiversity and investigate their impact.

In my current position as Independent Group Leader at the University of Zurich (Ambizione award; 2014-2017) I follow my research line and extend it by including evolution. Together with my PhD student and my research assistant we experimentally investigate evolutionary consequences of plant-plant interactions and how they affect community assembly, biodiversity and ecosystem functioning in alpine and agricultural ecosystems.

In 5 research projects I worked as PI [€ 720'000] and in 2 projects as team member. My research resulted in 29 peer-reviewed publications, with 21 papers published in the last three years. I published 13 papers as first author and 4 papers as senior (last) author. Over 75% of my publications are in journals belonging to the top 25% in ecology, plant sciences, forestry or agronomy. Three papers are among the 1% of the most highly cited papers in ecology over the last years, whereas others are among the most highly cited papers in their journals (WOS). I also published dissemination articles, had a stand at a public scientific exhibition (Scientifica 2015) and co-authored two teaching aids on biodiversity (one is published in two different editions) for primary, secondary and high school teachers. I presented my work 36 times at national and international congresses and symposia, with 8 talks in 6 different countries as invited speaker. I am Associate Editor for the Journal of Plant Ecology and member of the BES Review College. I reviewed 75 articles for 32 different journals (incl. many top journals in ecology and plant sciences), research projects for the national funding agencies of France, the Netherlands and South Africa, and 2 PhD theses as tribunal member.



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Título:

Respuestas y adaptaciones de la diversidad a las perturbaciones y al cambio climático

Resumen de la Memoria:

I am a terrestrial ecologist aiming to understand the patterns and responses of biodiversity along disturbance and environmental gradients and the mechanisms underlying them at local, regional and global scales; my final challenge is to understand biodiversity responses and adaptations to climate change. My research combines taxonomic, functional and phylogenetic approaches, although in the last years is mostly focused on functional diversity by means of studying response (morphological, life-history, behavioural and physiological) and effect (ecosystem functions) traits. I use ants as my main study organisms, and my studies are mainly performed at the community level in Mediterranean and tropical ecosystems. I graduated in Biology (2001), and received my MSc degree in Biology (2004), and my Ph.D in Ecology (2006) from the Autonomous University of Barcelona (UAB). My Ph.D. focused on post-fire regeneration patterns of plant and animal (specifically ant) communities and the interactions between the two groups in Mediterranean ecosystems. After completing my PhD, I held various postdoctoral positions in Spain (CREAF and UAB, 2006-2011), Australia (CSIRO Darwin, 2008 and 2009), Germany (Technical University of Darmstadt, 2012-2013) and Brazil (Federal University of Pernambuco, 2014-present). I have taught in graduate and postgraduate courses in Spain and Brazil. I also have experience mentoring undergraduate, master and doctorate students. I have made important scientific contributions in the fields of community resilience to disturbance and climate change, functional ecology, animal-plant interactions and to the ecological niche theory. I am now leading two competitive projects that address the effect of the interaction between chronic anthropogenic disturbance and climate change (specifically the reduction in rainfall) on ant biodiversity, ecosystem services provided by ants and their vulnerability to future disturbances related to climate change in the Caatinga (Brazil). I am an active member of a global collaborative project that involves more than 30 researchers worldwide and address large-scale questions in ecology.

Resumen del Currículum Vitae:

Mi investigación se centra en entender los patrones y respuestas de la biodiversidad a lo largo de gradientes ambientales y los mecanismos que los explican a escalas local, regional y global; la finalidad es entender las respuestas y adaptaciones al cambio climático desde un punto de vista de conservación. Para ello, utilizo aproximaciones taxonómicas, funcionales y filogenéticas. Realizo mi investigación básicamente a nivel de comunidad, y mi principal organismo de estudio son las hormigas. Actualmente (desde junio de 2014), soy investigador postdoctoral sénior en la Universidade Federal de Pernambuco (Brasil), analizando los efectos de la interacción entre la perturbación crónica antrópica y el cambio climático sobre la diversidad de hormigas, los servicios ecosistémicos asociados y su vulnerabilidad a futuras perturbaciones en la Caatinga.

Publicaciones de impacto. He publicado 39 artículos en revistas SCI, muchas de ellas de primera línea en ecología. De éstos, 26 artículos están publicados en revistas situadas en el primer cuartil, y soy el primer autor en 21.

Otras publicaciones. He publicado 14 publicaciones no indexadas, donde destacan varios capítulos de libro y artículos en revistas de ámbito local.

Participación y dirección de proyectos. He participado en 12 proyectos competitivos, 2 de ellos a nivel internacional, así como en 10 proyectos no competitivos. Soy el investigador principal (IP) de dos de los proyectos competitivos (FACEPE APQ 06012.05/15, RFG 17372-1), y de uno de los no competitivos.

Participación en congresos. Acredito 20 comunicaciones (12 de ellas orales) en congresos, de los cuales 10 son internacionales. Destacan dos comunicaciones orales como ponente invitado en un congreso internacional.

Dirección de tesis. He codirigido una tesis doctoral (Lidia Quevedo, 2014, UAB), y actualmente estoy codirigiendo otra (Sergio Osorio, UAB). También he codirigido una tesina (Alba Lázaro, 2011, UAB).

Docencia. Acumulo más de 550 horas de docencia. He dado clases tanto prácticas como teóricas, en cursos de grado o licenciatura (3 programas diferentes) y posgrado de la Unidad de Ecología de la UAB, y en cursos de posgrado del Departamento de Botánica de la UFPE (Brasil). Obtuve el certificado FDES (Programa de Formación Docente en Educación Superior, 2012) por la UAB, y estoy acreditado como Profesor Ayudante Doctor en el área de Ciencias Experimentales por la ANECA (2010).

Estancias en centros de investigación extranjeros. He realizado 4 estancias en centros extranjeros. Dos de estas son de corta duración (4 y 2,5 meses) y realizadas en el mismo centro de Australia (CSIRO Darwin) en dos años diferentes (2008 y 2009). Posteriormente realicé una estancia de larga duración (20 meses) en Alemania (2012-2013), y actualmente llevo más de 1 año y medio en Brasil (desde mayo de 2014), dentro del marco de una beca postdoctoral de 2 años.

Becas. He ganado 6 becas, concedidas por las administraciones públicas de Cataluña, España y Brasil. Cuatro de estas becas fueron para ocupar plazas de investigador postdoctoral, una predoctoral y otra de colaboración con un grupo de investigación.

Colaboraciones internacionales. He establecido importantes colaboraciones internacionales fruto de mis estancias postdoctorales en España, Australia, Alemania y Brasil. Soy miembro activo de una gran red de colaboración internacional (Global Ant Database) que incluye



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ADMINISTRATIVA

AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2015

Turno de acceso general

investigadores de renombre a nivel mundial en mi campo de exp



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2015

Turno de acceso general

Nombre: AGUILAR DE SOTO, NATACHA
Referencia: RYC-2015-19087
Área Científica: Biología Vegetal, Animal y Ecología
Correo Electrónico: naguilard@ull.es

Título:

Deep water ecology and underwater bioacoustics.

Resumen de la Memoria:

There are two main interconnected avenues in my research: i) deep-ocean ecology/deep-diving cetaceans and ii) underwater bioacoustics/acoustic pollution. I) The ecological structuring of deep waters, the largest ecosystem of the planet, is still poorly understood. Deep-diving cetaceans play an important role as top-predators transporting nutrients from deep waters to the surface. In 2006 I formalized a research program with international projection (main collaborators/funding from EEUU, UK, Denmark) at the University of La Laguna, to investigate the ecological role of, and niche diversification among, deep-diving cetaceans. Now we jointly hold the largest dataset of acoustic & movement biologging data of pilot, beaked and sperm whales, enabling powerful comparative analyses of their behavioural and foraging ecology. During this time I have acquired ample expertise analysing datasets of tag-data: hydrophones, accelerometers and magnetometers in the tags provide fine-scale quantitative information on whale movements, prey search and capture attempts at different depths, respiration rate basing field metabolic rate estimations, etc. Now, during my current second Marie Curie fellowship, contracted at the Centre for Ecological Modelling (Maths, St. Andrews Univ.), I'm expanding my expertise to perform quantitative ecological modelling with these data. In summary: similar medium-sized pilot and beaked whales have evolved opposite strategies to cope with the challenges of feeding at depth: pilot whales perform short energetic dives including sprints of up to 36 km/hr at 1 km depth, to capture few rewarding prey; in contrast, beaked whales take 3 to 4 times longer in similar depth dives, targeting some 30 prey/dive with little effort. The differences in their foraging tactics are reflected in their field metabolic rate, pilot whales life style is some 4 times more expensive than beaked whales. To investigate the relation of the species with the habitat, I led two mesopelagic fishing cruises (2010 RV Bocaina, 2012 RV Cornide de Saavedra) in the separate areas of residence of these species. The foraging behaviour of sperm whales is similar to beaked whales. In future projects I plan to use these data for ecosystem management of deep-water fisheries, contributing to quantify non-human predation via budget analysis of prey requirements of deep-diving whales. This is important in the light of the generalised over-exploitation of coastal resources and on-going experimental fisheries of the mesopelagic deep-scattering layer. The DSL holds the largest biomass of the oceans and provides trophic resources to marine mammals, seabirds, sharks and other fish, including tuna. II) Defining a Good Environmental Status for ocean noise within the European Marine Framework Strategy is challenged by our limited knowledge about noise effects on marine fauna. While ambient sound can provide useful cues for marine fauna, noise can affect fauna via behavioural, physiological, cellular and genetic mechanisms. I study noise-impacts on species at the top and base of the marine food-web: cetaceans and invertebrate larvae. E.g. a study performed during my first Marie Curie grant (Auckland Univ.) provided the first evidence that noise can produce malformations on marine invertebrate larvae. I advise about noise issues to national and international bodies.

Resumen del Currículum Vitae:

ResearcherID WOK H-factor: 15; 904 citations (mean: 37.7 per article). (www.researcherid.com/rid/D-3002-2011) Google Scholar H-factor: 19, i10-index: 22, 1883 citations (<http://scholar.google.com/citations?user=NrwZa1kAAAAJ&hl=es>).

ACADEMIC: Doctorate (sobresaliente cum laude, december 2006) at University of La Laguna (ULL) with cosupervisors from Univ. Aarhus (Denmark) and Univ. Cork (Ireland). European mention.

TEACHING: In 9 years since my doctorate I have supervised 3 PhD (all with European/international mention), 11 MSc/DEA of 5 Universities (2 international) and 6 undergraduate collaboration grants/stays, plus hundreds of students in field practicals. Also, I have taught at Universities in UK (degree), New Zealand (Master) and Spain (degree, Master and PhD).

PROJECTS: 31 (16 competitive; 15 international, summing some 1.5 million euros).

PI of 17 projects (12 competitive; 5 international).

EU Marie Curie fellowship holder: 2; the first (FP7 funded) was an outgoing extraeuropean fellowship (Univ. of Auckland-return phase at Univ. La Laguna); the second, on-going at the Univ. of St. Andrews, was marked with 95 over 100 points by the Horizon 2020 reviewers.

CONTRIBUTIONS: Papers: 34 peer-reviewed (29 in the first quartile of zoology, oceanography, ecology, multidisciplinary sciences). Book chapters: 5 (3 international, 4 invited). Some 70 presentations (*:invited) at international scientific conferences (40 as first author; of these, 36 are oral): Behavioural effects of sonar (St. Andrews 2015); OCEANOISE (Barcelona 2015); Spanish Biodiversity Congress (Tenerife 2015); International workshop on diving physiology* (Denmark 2014); International Marine Conservation Congress (Glasgow 2014), IV International Symposium on Marine Sciences (2014, Spain); International Marine Conference of the Society of Animal Physiology* (Germany 2012); Conference of the Society of Conservation Biology (Auckland 2011); International Biologging Conference (Tasmania 2011,



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Strasbourg 2014); CLIOTOP workshop* (Tasmania 2011); Auckland Conservation Board* (November 2011); European Cetacean Society Conferences (Madeira 2016, Setúbal 2013*; Galway 2012, Cádiz 2011, Istanbul 2009; Holland 2008; San Sebastian 2007; La Rochelle 2005; Sweden 2004; Cork 2000, Valencia 1998, Germany 1997); Conference of the Acoustic Society of America (New York 2004, Paris 2009); Conference of the Society of Marine Mammalogy (US 2005, Canada 2009, New Zealand 2014); Tokio Echolocation Conference* (2009); Conference of the Spanish and Latinoamerican Society of Ethology (Tenerife 2006; Valencia 2009); Workshop on Mitigation Requirements for Sonar and Beaked Whales* (Istanbul 2009); Workshops on Research on Beaked Whales* (San Sebastian 2007, La Rochelle 2005); Workshop on Marine Noise* (Lanzarote 2007); ECS Student Workshop* (Istanbul 2009).

Media: 4 documentaries (2 international); numerous TV, radio, press and digital media contributions.

COMMUNITY SERVICES: Reviewer for ANEP, the European Cetacean Society and 12 scientific journals (e.g. Mar. Ecol. Progress Series, Biological Conservation, JASA, Marine Mammal Science, Iranian Journal of Sciences, Deep Sea Research, Endangered Species Research, Marine Pollution Bulletin, BES). Government representative at meetings of OSPAR and ACCOBAMS.

INTERNATIONAL STAYS: Ireland, USA, New Zealand, UK. Fieldwork here and in Bahamas and Italy.