Joan Maspons

Curriculum Vitae

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Experience

Sep 2018 – present **Technician in data analyses, data management and modeler**, *Centre de Recerca Ecològica i Aplicacions Forestals*, Global Ecology Unit.

Dec 2015 – Mar 2017 **Technician in data analyses, data management and modeler**, *Centre de Recerca Ecològica i Aplicacions Forestals*, Project "Life history strategies to cope whit human-induced rapid environmental changes".

I set up and manage the Linux server for data analyses and data management. My work was to maintain the data of the project by building and updating the databases in a SQL server and to maintain backups of the infrastructure. I created an R based GIS with temporal series of global environmental data from remote sensing and species distribution to produce datasets of indexes describing the patterns of temporal variation for more than 25000 species. I developed R packages to facilitate the access to the DB by other lab researchers and I implemented functions to run phylogenetic path analyses. I also performed comparative analyses using Bayesian phylogenetic models and phylogenetic path analyses. I developed and implemented Individual Based Models to theoretically explore the interactions among the life history strategies and the behavior plasticity, and stochastic models to develop new predictions about the life history responses to environmental changes. I contributed to some papers and I participated in international conferences and workshops.

Nov 2011 – Nov 2015 **Predoctoral researcher**, *Centre de Recerca Ecològica i Aplicacions Forestals*, Project "Response of birds to environmental changes: Many losers and a few winners?".

I study how life histories affects the responses of the species to environmental changes. Life history theory predicts that not all combination of traits are possible. Because the limited resources available, species optimize the allocation of time en energy to different components of the fitness such as survival or reproduction. This restriction causes trade-offs among traits that covariate and defines different axes of variation. One of the most studied axis of variation is the fast-slow axis where animals that have high reproduction die younger than those that have low productivity. The fast-slow axis can be seen as a gradient of strategies that invest in the short term or in the future. The optimum strategy depends on the predictability and variability of the environment as well as on the extrinsic mortality for each age class. Other axes of variation include how species invest the reproductive effort in few or many independent attempts or how to split the investment in few high quality or many cheap offspring. I'm trying to disentangle the effects of life histories on the responses to environmental change by means of global scale comparative analyses and modeling to produce new predictions. As a case of study I use data from birds communities along urbanization gradients, data from exotic species introduced in new environments and the current distribution of the species and their life history traits to find patterns and mechanisms explaining the diversity and distribution of the species traits.

Feb 2010 – Oct 2011	**Technician in data management and modeler**, *Centre de Recerca Ecològica i Aplicacions Forestals*, Project "CLIMSAVE". I run simulations of the dynamics of managed and unmanaged forests across Europe for different scenarios of climate change using GOTILWA+, a process based model. I adapted GOTILWA+ to use input data from a SQL server and I managed a spatial data base (GIS) for the simulations. I development and implemented a fast meta-model based on neural networks (metaGOTILWA) to integrate GOTILWA+ in an integrated web platform to assess climate change impacts and vulnerabilities for a range of sectors, including agriculture, forests, biodiversity, coasts, water resources and urban development. Part of work included the participation in international workshops for the CLIMSAVE project at Lund, Cranfield, Budapest and Cerdanyola.
Gen 2009 – May 2009	**Trainee**, *Metla (Finnish Forest Research Institut)*, Project "Interlinkages between forest biodiversity and carbon sequestration". The project studies succession of the fungal communities living in dead wood logs in boreal forests. I prepared samples for laboratory analyses, measured wood densities, and analyzed fungal communities by DGGE fingerprinting. I participated in the field work of the project by assisting in sample collection. In addition, I used the Yasso model to estimate the decomposition state of dead logs and I analyzed data related to the project. The results were presented in seminars. Project leader: Dr. Raisa Mäkipää. Supervisor: Dr. Mikko Peltoniemi and Dr. Tiina Rajala.

Education

2011 – ...	**Ph.D. in Terrestrial Ecology**, *Universitat Autònoma de Barcelona & CREAF*, "Life histories and responses to environmental changes", Director: Dr. Daniel Sol. FPI grant (BES-2011-043668) on the project "Birds responses to environmental changes: Many losers and few winners?" (CGL2010-21838). I expect to defend my thesis on 2018.
2010	**Master in Terrestrial Ecology and Management of the Biodiversity**, *Universitat Autònoma de Barcelona & CREAF*, Master thesis: "Life history, founder population size and invasion success", Director: Dr. Daniel Sol. Major track: Research in Terrestrial Ecology
2006 – ...	**Technical Engineering in Computer Systems**, *Universitat Oberta de Catalunya*. 87 completed credits out of 180 and three completed minor tracks: **Basic Programming**, **Advanced Object Oriented Programming** and **Data Management**.
2009	**B.Sc. in Biology**, *Universitat de Barcelona*.

Stages

2015	**Predoctoral mobility grant for short stages**, *University of Zurich*, Dr. Hanna Kokko's group, as part of my PhD. Grant EEBB-I-15-09881
2009	**Sòcrates-ERASMUS international exchange program**, *University of Helsinky*, as part of my B.Sc. in Biology.
2005 – 2006	**Sèneca exchange program**, *Universitat de València*, as part of my B.Sc. in Biology.

Projects

Jun 2014 – Jun 2017	**Life history strategies to cope with human-induced rapid environmental changes**, *Technician at CREAF*, Centre de Recerca Ecològica i Aplicacions Forestals, Ministerio de Economia y Competitividad CGL2013-47448-P. IP: Dr. Daniel Sol

Nov 2011 – Nov 2015	**Response of birds to environmental changes: Many losers and a few winners?**, *Predoctoral Researcher at CREAF*, Centre de Recerca Ecològica i Aplicacions Forestals, Ministerio de Ciencia y Educación CGL2010-21838. IP: Dr. Daniel Sol
Feb 2010 – Oct 2011	**CLIMSAVE: Climate Change Integrated Assessment Methodology for Cross-Sectoral Adaptation and Vulnerability in Europe**, *Predoctoral Researcher at CREAF*, Centre de Recerca Ecològica i Aplicacions Forestals, www.climsave.eu European Commission Seventh Framework Programme Contract Number: 244031. IP: Dr. Santi Sabaté
Jan – May 2009	**Interlinkages between forest biodiversity and carbon sequestration**, *Stage at Metla (Finnish Forest Research Institut)*, Vantaa, Finland. IP: Dr. Raisa Mäkipää.

Courses

May 2014	**Introduction to Individual Based Models in ecology using Netlogo**, *Transmitting Science*, Hostalets de Pierola, Catalonia, Spain. With Dr. Jürgen Groeneveld and Dr. Alexander Singer
Nov 2012	**Sampling design and applied statistics for monitoring the biodiversity**, *Institut Català d'Ornitologia and Museu de Ciències Naturals de Barcelona*, Barcelona, Catalonia, Spain. Capture–recapture methods using MARK with Dr. Viviana Ruiz.
Nov 2010	**GLMM – Generalized Linear Mixed Models in ecology**, *Centre de Recerca Ecològica i Aplicacions Forestals (CREAF)*, Bellaterra, Catalonia, Spain. GLMM and extensions of lineal models in R with Dr. Daniel Sol.
Oct – Nov 2010	**SQL Server**, *Centre de Recerca Ecològica i Aplicacions Forestals (CREAF)*, Bellaterra, Catalonia, Spain. Management and creation of big data bases with optimum performance.
May 2010	**Dynamic Landscape Modelling**, *Centre Tecnològic Forestal de Catalunya (CTFC)*, Solsona, Catalonia, Spain. Modeling using SELES (Spatially-Explicit Landscape Event Simulator) with Dr. Andrew Fall.

Computer skills

Languages	R, Netlogo, C, C++, Octave, Java	GIS	R, QGIS, MiraMon
Data Bases	MySQL, MS SQL Server, PostgreSQL	SysAdmin	GNU/Linux, remote servers, bash
R	development of packages, Rmarkdown, shiny web apps	HPC	Parallelization, vectorization, compiled code, use of clusters
Miscellaneous	Version control systems (git, svn), regular expressions, web scraping		

Statistics

Lineal Models	GLM and GLMM using maximum likelihood or Bayesian approaches when needed (e.g. non homogeneous data with phylogenetic or spatial structure)
Causality Models	SEM, path analyses
Hypothesis testing	Model selection procedures

Ordination	PCA, CA, EFA, CFA, NMDS
Computer intensive methods	Randomizations, bootstrap, Jackknife, Monte Carlo
Data Mining	Artificial neural networks, clustering, classification and regression trees
Network analyses	Data visualization, network properties

Languages

Català	C2	*Native language*
Castellano	C2	
English	C1	
Français	A	*Optional language during High School*

Publications

Sayol, Ferran, Philip A Downing, Andrew N Iwaniuk, **Maspons, Joan**, and Daniel Sol (2018). "Predictable evolution towards larger brains in birds colonizing oceanic islands". In: *Nature Communications*, In press.

Sol, Daniel, **Maspons, Joan**, Alejandro Gonzalez-Voyer, Ignacio Morales-Castilla, László Zsolt Garamszegi, and Anders Pape Møller (2018). "Risk-taking behavior, urbanization and the pace of life in birds". In: *Behavioral Ecology and Sociobiology* 72.3, p. 59.

Sayol, Ferran, **Maspons, Joan**, Oriol Lapiedra, Andrew N. Iwaniuk, Tamás Székely, and Daniel Sol (2016). "Environmental variation and the evolution of large brains in birds". In: *Nature Communications* 7, p. 13971.

Sol, Daniel and **Maspons, Joan** (2016). "Life history, behaviour and invasion success". In: *Animal behaviour and invasive species*. Ed. by Weis and Daniel Sol. Cambridge Univ Press.

Audsley, Eric, Mirek Trnka, Santiago Sabaté, **Maspons, Joan**, Anabel Sanchez, Daniel Sandars, Jan Balek, and Kerry Pearn (2015). "Interactively modelling land profitability to estimate European agricultural and forest land use under future scenarios of climate, socio-economics and adaptation". In: *Climatic Change* 128.3-4, pp. 215–227.

Sol, Daniel and **Maspons, Joan** (2015). "Integrating behavior into life-history theory: a comment on Wong and Candolin". In: *Behavioral Ecology* 26.3, pp. 677–678.

Sol, Daniel, Cesar González-Lagos, Darío Moreira, **Maspons, Joan**, and Oriol Lapiedra (2014). "Urbanisation tolerance and the loss of avian diversity". In: *Ecology letters* 17.8, pp. 942–50.

Sol, Daniel, Cesar González-Lagos, Dario Moreira, and **Maspons, Joan** (2013). "Measuring tolerance to urbanization for comparative analyses". In: *Ardeola* 60.1, pp. 3–13.

Sol, Daniel, **Maspons, Joan**, Miquel Vall-llosera, Ignasi Bartomeus, Gabriel E García-Peña, Josep Piñol, and Robert P Freckleton (2012). "Unraveling the life history of successful invaders". In: *Science* 337.6094. (Recommended by F1000 Faculty http://f1000.com/717952697?bd=1), pp. 580–583.

Public communications

Maspons, Joan and Daniel Sol (2017). "Estratègies vitals i respostes als canvis ambientals". In: III Jornades Científiques del Departament de Biologia Animal, de Biologia Vegetal i d'Ecologia. Cerdanyola del Vallès.

Maspons, Joan and Daniel Sol (2016). "Effects of the interaction of life history and behavior on population dynamics". In: Workshop: Towards a general theory of the pace-of-life syndrome 2. Hannover, Germany.

Sol, Daniel and **Maspons, Joan** (2016). "Biological invasions and behavior". In: InDyNet Workshop, Freie Universität Berlin. Berlin, Germany.

Maspons, Joan and Daniel Sol (2015). "Oral presentation: Integrating behaviour to unravel the life history of successful invaders". In: Ecology and Behaviour 2015. 11th meeting. Toulouse, France.

"Modelling workgroup: What environmental conditions favor the evolution of POLS?" (2015). In: Workshop: Towards a general theory of the pace-of-life syndrome 1. Hannover, Germany.

Sayol, Ferran, Andrew Iwaniuk, **Maspons, Joan**, Oriol Lapiedra, and Daniel Sol (2015). "Oral presentation: Migratory behaviour shapes brain size evolution in birds". In: Ecology and Behaviour 2015. 11th meeting. Toulouse, France.

Sayol, Ferran, Daniel Sol, Oriol Lapiedra, **Maspons, Joan**, and Andrew Iwaniuk (2015a). "Invited seminar: The evolution of brain size in changing environments". In: University of Scranton. Scranton, USA.

Sayol, Ferran, Daniel Sol, Oriol Lapiedra, **Maspons, Joan**, and Andrew Iwaniuk (2015b). "Oral presentation: Coping with seasonal changes through alternative behavior strategies in birds". In: 100th Ecological Society of America Conference. Baltimore, USA.

Maspons, Joan and Daniel Sol (2012). "Poster: The effect of bed-hedging on introduced populations success". In: Neobiota 2012. 7th European Conference on Biological Invasions. Pontevedra, Galicia, Spain.

Sol, Daniel, **Maspons, Joan**, Miquel Vall-llosera, Ignasi Bartomeus, Gabriel E. García-Peña, Josep Piñol, and Robert P. Freckleton (2012). "Oral presentation: Unraveling the life history of successful invaders". In: Neobiota 2012. 7th European Conference on Biological Invasions. Pontevedra, Galicia, Spain.

Maspons, Joan, Santi Sabaté, and Carlos Gracia (2011a). "Oral presentation: MetaGOTILWA+". In: WP2 Integrated Assessment Platform. Budapest, Hungary: CLIMSAVE.

Maspons, Joan, Santi Sabaté, and Carlos Gracia (2011b). "Poster: Speeding up the runtime of GOTILWA+ using artificial neural networks: from weeks to seconds". In: III reunión del grupo de trabajo de modelización forestal. Lugo, Galicia, Spain: Sociedad Española de Ciencias Forestales y Universidade de Santiago de Compostela.

Maspons, Joan and Daniel Sol (2010). "Oral presentation: Life history, founder population size and invasion success". In: XX Congreso Español de Ornitologia. Tremp, Catalonia, Spain: SEO/BirdLife.

Sabaté, Santi, **Maspons, Joan**, and Carlos Gracia (2010a). "Oral presentation: Climate change integrated assessment methodology for forest adaptation and vulnerability in Europe". In: WP2 Integrated Assessment Platform. Cranfield, UK: CLIMSAVE.

Sabaté, Santi, **Maspons, Joan**, and Carlos Gracia (2010b). "Oral presentation: GOTILWA+, a process based model for forests". In: WP2 Integrated Assessment Platform. Lund, Sweden: CLIMSAVE.