



CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date 05/09/2022

First name	Juli		
Family name	Broggi Obiols		
Gender	Male	Birth date	11/08/1973
ID number	DNI 46350029s		
e-mail	julibroggi@gmail.com	URL Web	
Open Researcher and Contributor ID (ORCID)	0000-0002-1706-4014		

A.1. Current position

Position	Científico Titular		
Initial date	25/11/2021		
Institution	Museo Nacional de Ciencias Naturales		
Department/Center	Ecología Evolutiva		
Country	Spain	Teleph. number	629331951
Key words	Behavioural and Evolutionary Ecology; Ecophysiology; Energetics		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
06/05/2020-04/11/2021	Postdoctoral researcher at EBD, CSIC. (Spain) CILIFO project
01/05/2017-01/02/2018	Temporal sick leave leading to permanent handicap (44%)
01/10/2015-30/09/2017	Postdoctoral researcher at Lund University (Sweden) and EBD, CSIC Andalucía Talent Hub project
04/07/2015-30/09/2015	Postdoctoral researcher at University of Oviedo, IMIB, CSIC (Spain)
06/12/2014	Birth of my son
30/11/2011-29/11/2014	Postdoctoral researcher at EBD, CSIC (Spain). Juan de la Cierva project

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PHD	University of Oulu (Finland)	2006
Licensed	University of Barcelona (Spain)	1997

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

One fundamental aspect in evolutionary and ecological studies is the adaptation to new environments, either from the perspective of invasive species, acclimatization to changing environmental conditions or exposure to new pathogenic or ecological circumstances. Understanding the micro-evolutionary processes that allow species to withstand changing conditions is crucial for the study of invasions, expansions, response to changing environments and emerging diseases. For that purpose, the combination of empirical knowledge on ecology, physiology and immunology of wild populations is of prime importance, particularly from populations at range-limits. During my research career I have developed diverse ecophysiological and immunological approaches within an evolutionary perspective to achieve these goals. Furthermore, I have concentrated in non-model species specially in the context of realistic ecological scenarios, or by means of experimental trials (in the wild whenever possible) to



address the evolutionary and ecological questions that can be summarized as: What are the relevant traits and how did they evolve to allow individuals to persist and evolve when confronted with changing conditions. My intention is to persist in this line of research, combining the already acquired with new techniques. During my career I have developed several specific research lines, that are finally intermingling with each other, a successful outcome that is yielding fruitful and certainly promising results.

1. Winter ecology of small forest passerine birds. I have mainly focused in behavioural and ecological aspects determining the energy management strategies of small passerines. I standardized the use of basal metabolism measurements in wild passerine birds by showing for first time their repeatability and genetic bases through “common garden” experiments (JB Evolution, 2005). I have shown how small wintering birds not only manage their energy budget through reserve acquisition, but also through adjustment of the overall cost of living (JB Oecologia, 2019) and how this phenotype is inherited partly due to plastic changes during the pre-hatching period (Oecologia, 2021; ongoing research). I’ve also recently focused on more applied issues as the effect of human supplemented food on bird winter energetic strategies (Nilsson et al. 2020; Broggi et al 2022). 20 SCI papers producing >400 citations.

2. Breeding biology of diverse avian species. I have studied factors related to breeding performance and sexual selection mostly in forest passerine species. By means of capture-recapture analyses and laboratory and field experiments I studied the dynamics of populations exposed to ecologically challenging situations (Thomson et al. 2010; Pakanen et al. 2016). I studied the use of secondary sexual ornaments and their mechanistic (physiological) basis (Broggi et al. 2009; Senar et al. 2010). I am recently focusing on carry-over effects between different life-history stages i.e. winter and breeding, what is the currency and the physiological consequences of such effects (Broggi et al. 2020, 2022). 6 SCI papers producing >150 citations.

3. Evolution of avian and non-avian populations, particularly from marginal locations within the distribution range (Illera et al. 2011), exposed to new environmental conditions (Lee et al. 2020), pathogens (Broggi et al. 2016) and invasive species (Álvarez-Blanco et al. 2020). I have used diverse techniques from molecular and diverse comparative physiology analyses to experimental approaches in wild populations to understand how behavioural, physiological and morphological plasticity and adaptation may shape differences among populations exposed to varying conditions.

I have 47 publications of which 36 are peer-reviewed scientific contributions in SCI journals. I have published in most highly ranked journals in animal ecology and evolution eg. Evolution, Evolutionary Ecology, Molecular Ecology, Molecular Phylogenetics and Evolution, Ecology, Functional Ecology, Oikos, Oecologia, Journal of Animal Ecology, Journal of Avian Biology, PloSOne, Biology letters etc. Additionally, I have published 1 book, 2 book chapters and 4 articles in popular-science magazines and 2 book reviews in SCI journals. Despite the fact that my contributions to these fields are recent, my work has already attracted 877. My h-index is 18 and will rapidly increase as most of my published papers are recent contributions, and there are many ready to come out. In addition to securing funds for the research, in the majority of my published papers my contribution has included most steps from the conception and design of the study, to the conduction of the field or experimental work to the analysis of the data and writing of the research article. I have predominantly followed empirical approaches, and whenever possible field experiments have been undertaken. I think that working on non-model species in the wild is a challenging field that can yield important insights into how ecophysiological, behavioral and life-history traits have evolved.

Part C. RELEVANT MERITS (*sorted by typology*)

C.1. Publications

Broggi J, Orell M, Hohtola E, Nilsson J-Å .(2004) Metabolic response to temperature variation in the Great tit: An interpopulation comparison. Journal of Animal Ecology 73, 967-972



- Broggi J, Hohtola E, Orell M, Nilsson J-Å (2005) Local adaptation to winter conditions in a passerine spreading north: a common garden approach. *Evolution* 59:1600-1603
- Broggi J, Hohtola E, Koivula K, Orell M, Thomson RL, Nilsson J-Å (2005). Sources of variation in winter basal metabolic rate in the great tit. *Functional Ecology* 21, 528-533. 2007.
- Kvist L, Broggi J, Illera JC, Koivula K (2005). Colonisation and diversification of the blue tits (*Parus caeruleus teneriffae*-group) in the Canary Islands. *Molecular Phylogenetics and Evolution* 34, 501-511.
- Broggi J, Hohtola E, Koivula K, Orell M, Nilsson J-Å (2009) Long-term repeatability of winter basal metabolic rate and mass in a wild passerine. *Functional Ecology* 23:768-773
- Illera JC, Koivula K, Broggi J, Päckert M, Martens J, Kvist L (2011). A multi-gene approach reveals a complex evolutionary history in the Cyanistes species group. *Molecular Ecology* 20, 4123-4139
- Rønning B, Broggi J, Bech C, Moe B, Ringsby TH, Pärn H, Hagen IJ, Saether BE, Jensen H (2015) Is basal metabolic rate associated with recruit production and survival in free-living house sparrows? *Functional Ecology* 30:1140-1148
- Broggi J, Nilsson JF, Koivula K, Hohtola E, Nilsson J-Å (2019) Mass or pace? Seasonal energy management in wintering boreal passerines. *Oecologia* 189:339-351
- Hyeun-Ji L, Broggi J, Sánchez-Montes G, Díaz-Paniagua C, Gomez-Mestre I (2020) Dwarfism in close continental amphibian populations despite lack of genetic isolation. *Oikos* 129, 1243-1256
- Broggi J, Hohtola E, Koivula K, Rytönen S, Nilsson J-Å. (2021) Prehatching Temperatures Drive Interannual Cohort Differences In Great Tit Metabolism. *Oecologia*.198, 619-627.

C.2. Congress

- Oral presentation. Broggi, J. Physiological consequences of short-term individual variation in the cost of living. International Society for Behavioural Ecology Congress 2022. Stockholm, Sweden. 28/7/2022.
- Oral presentation. Broggi, J. Winter food supplementation as a driver of subsequent breeding performance. 12th Conference of the European Ornithologist Union. Cluj-Napoca, Rumanía. 26/08/2019.
- Oral presentation. Broggi, J. Modulation of basal metabolic rate as an adaptive energy management strategy. Society for Experimental Biology Annual meeting. Sevilla, España 02/07/2019.
- Oral presentation. Broggi, J. Birds at feeders not only get fat.: Congress of the Spanish Society of Ethology and Evolutionary Ecology. Mieres, España. 04/09/2018.
- Oral presentation. Broggi, J. Longterm variation in winter metabolism in a boreal passerine population. 11th European Ornithologist Union Conference. Turku, Finlandia. 18/08/2017.
- Oral presentation. Broggi, J. Dominance and metabolic rate in Zebra finches: An experimental approach. 16th Congress International Society for Behavioral Ecology. Exeter, UK. 28/07/2016.
- Oral presentation. Broggi, J. Reserves or expenditure. what are small boreal passerines regulating in winter? 10th Conference of the European Ornithologists Union. Badajoz, España. 24/08/2015.
- Oral presentation. Broggi, J. Avian maternal transfer of antibodies: are they affecting the offspring specific immune response? XIV Congress of the European Society for Evolutionary Biology. Lisboa, Portugal. 15/08/2013



Oral presentation. Broggi, J. Sources of variation in basal metabolic rate in a wild passerine. 24th International Ornithological Congress IOC. Hamburg, Germany. 13/08/2006.

Oral presentation. Broggi, J. Genetic basis for metabolic response to winter conditions in the great tit: A common garden approach. 10th International Behavioral Ecology Congress. Jyväskylä, Finlandia. 01/07/2004.

Poster presentation. Broggi, J. Winter fattening in the willow tit: Long-term insurance or short-term by-product? 23rd International Ornithological Congress. Beijing, China. 01/08/2002.

C.3. Research projects

1 Project. Feathers in the sun: the role of plumage structure in the physiological response to solar radiation. Juli Broggi Obiols. (Museo Nacional de Ciencias Naturales, CSIC). 01/09/2022-01/09/2025. 120.000 €.

2 Project. CILIFO. Xim Cerdá. (Estación Biológica de Doñana). 01/05/2020-01/05/2022.

3 Project. Carry over effects from winter to breeding season. (University of Lund). 16/11/2016-18/11/2019. 13.225 €.

4 Project. What is being optimized in wintering passerines: Reserves or Expenditure? An experimental approach. (University of Lund). 03/11/2016-03/11/2018. 4.200 €.

5 Project. The evolutionary ecology of phenotypic plasticity of morphological, life history and behavioural traits in wild birds.. Laszlo Garamszegi. (Estación Biológica de Doñana,CSIC). 01/06/2016-01/06/2018. 186.200 €.