

## ECR SPOTLIGHT

# ECR Spotlight – Constance Blary

ECR Spotlight is a series of interviews with early-career authors from a selection of papers published in Journal of Experimental Biology and aims to promote not only the diversity of early-career researchers (ECRs) working in experimental biology but also the huge variety of animals and physiological systems that are essential for the 'comparative' approach. Constance Blary is an author on 'Low achromatic contrast sensitivity in birds: a common attribute shared by many phylogenetic orders', published in JEB. Constance is a PhD student in the lab of Olivier Duriez at CEFE, CNRS, Montpellier, France, investigating the visual perception of wind turbines by birds.

### How did you become interested in biology?

I have always been fascinated by animals, especially their cognitive and sensory abilities. Throughout my school years, science has consistently been my favourite subject. It quickly became clear that a career in any other field would not align with my passions. However, university was the place where my interest for biology truly blossomed, expanding beyond animals to encompass all living organisms.

During my academic journey, I had the opportunity to engage in internships, providing hands-on experiences that solidified my commitment to pursuing a career in biology. These experiences did not only bring me a deeper understanding of the subject but also cemented my will to contribute to the understanding and preservation of the natural world.

### Describe your scientific journey and your current research focus

I began my university studies with a preparatory class in biology, chemistry, physics and earth sciences. This is a two-year French course after high school, preparing students for the competitive entrance exams to French agricultural engineering schools, among others. I then took the entrance exam to the 'Institut Agro' and started agricultural engineering studies. There, I had the opportunity to take a 5-month course on wildlife management at the University of Prague (Czech Republic). Alongside my degree in agricultural engineering, I obtained a master's degree in ethology and ecology at Jean Monnet University (Saint-Etienne, France). This dual training, combined with three internships in three different French research laboratories, enabled me to start a PhD thesis straight after completing my master's degree. My PhD thesis is part of a French collaborative research program (<https://mape.cnrs.fr/>) aiming at reducing bird mortality at wind farms by bringing together researchers and stakeholders of the French wind energy industry. I focused on improving knowledge on visual perception of wind turbines by birds.

### How would you explain the main findings/message of your paper to a member of the public?

The visual abilities of birds are often considered by the non-scientific person to be far superior to those of humans, especially for birds of prey. However, vision can be divided into several abilities,



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and some of them, such as sensitivity to achromatic contrasts, appear to be lower than human abilities. In this study, we assessed the sensitivity to achromatic contrasts of 32 avian species from 12 phylogenetic orders. We found sensitivity to achromatic contrasts to be 7 to 30 times lower than that of humans, with great variability depending on the species. This variability in the lowest contrast perceived by species is 25% explained by their phylogeny.

### What do you enjoy most about research, and why?

Above all, it is the multidisciplinary nature of research that keeps me going. Every day is different, with new challenges to overcome. Particularly, I enjoy designing and carrying out experiments with animals, because it forces me to step out of my human thinking to put myself in the animal's place and adapt my experimental setup and protocols to each species, individual and situation encountered. As a researcher, I often face failures, which can be demotivating. However, when I finally find the solution to my problem, or when the first results appear, it is extremely exhilarating to think that I am the first person in the world to discover this result.

### What is the hardest challenge you have faced in the course of your research and how did you overcome it?

Experiments with animals constitute one of my greatest joys in research, but also my greatest challenge. During my PhD thesis,

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**A Chilean flamingo (*Phoenicopterus chilensis*) in the experimental device used to study its sensitivity to achromatic contrasts using the optocollic reflex.**

I had to work with lots of different species of birds, ranging from small birds like sparrows, to very large birds like cranes or vultures. As a result, I had to adapt my experiences to each of these species to ensure the well-being of the birds and reduce any stress as much as possible. In research, we always try to prepare our experiments as best as possible in advance, by reading as much literature as possible to anticipate hazards. However, we cannot predict everything. For example, I had not anticipated that the griffon vultures would manage to destroy my experimental device in a few minutes. In this type of situation, once the animal has been brought to safety, it is necessary to think about the problem and discuss it with the animal handlers to try a new approach. In the case of this example, I finally

replaced the wooden parts destroyed by the vultures with tires, a material which proved to be difficult for them to destroy.

**What is the most important piece of equipment for your research, what does it do and what question did it help you address?**

What was essential to my research was not a piece of equipment, it was my collaborators. The experiments that I carried out during my PhD thesis required captive birds. Therefore, I asked various zoological parks and wildlife care centres to agree to participate in my studies by making their birds available to me. Few people know it, but one of the objectives of zoological parks is to participate in improving knowledge of species, and therefore participate in research. This collaboration, essential for research, but also for zoological parks, is too little highlighted.

**What is the most important lesson that you have learned from your career so far (this could be scientific or personal)?**

The biggest lesson I learned during my PhD thesis is mutual support between researchers. To my great surprise, good ideas and solutions are often found by people outside of my field of research, such as during a coffee break. I am convinced that exchange and solidarity are essential to perform quality research. Discussing also allows you to question yourself and approach your research from a new point of view. As a researcher, we must not take any knowledge for granted, because nothing is certain. But when we are focused on our research subject, it is sometimes difficult to get out of it and put our knowledge into perspective.

**Reference**

**Blary, C. L. M., Duriez, O., Bonadonna, F., Mitkus, M., Caro, S. P., Besnard, A. and Potier, S. (2024).** Low achromatic contrast sensitivity in birds: a common attribute shared by many phylogenetic orders. *J. Exp. Biol.* **227**, jeb246342. doi:10.1242/jeb.246342