

# Caroline Fromont

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## EDUCATION

### **Hawkesbury Institute for the Environment, Western Sydney Uni, Australia**

Ph.D. Candidate in Molecular Ecology  
Supervision: James Cook, Markus Riegler

2013-  
present

### **University of Lyon, France**

M.sc in Geography — Interface Nature and Societies

2011-2012

### **Agrocampus Ouest, Rennes, France**

M.sc in Agronomy — Crop Protection and Environment

2008-2011

### **Lycee Jean-Baptiste Say, Paris, France**

Preparatory classes (equivalent to an undergraduate degree) -  
Majors in Biology and Chemistry, minors in Physics and Mathematics

2006-2008

## PROFESSIONAL EXPERIENCES

### **University of Western Sydney, Australia**

Demonstrator, Invertebrate Biology

2014-2015

### **Hawkesbury Institute for the Environment, Western Sydney Uni, Australia**

Australian psyllids in complex interactions : species, populations, parasitoids and endosymbionts

Fieldwork | DNA extraction and sequencing | Phylogeny | NGS: shotgun and 16S amplicon sequencing | Population genetics

Supervision: James Cook, Markus Riegler

2013-  
present

### **INRA and YNSECT, Versailles, France**

Optimization of diets given to insects (*Tenebrio molitor* and *Hermetia illucens*) for protein production for animal and human consumption

Identification industry by-products | Insect rearing | Feeding assay

Supervision: Frederic Marion-Poll (INRA), Antoine Hubert (Ynsect)

03/2012-  
10/2012

### **IRD/ICIPE, Nairobi, Kenya**

Study of potential gene flow of Kenyan populations of *Busseola fusca*, focus on some dispersal and reproductive aspects

Fieldwork | Study of flight in wind tunnel | Controlled crosses

Supervision: Pascal Campagne, Bruno Le Ru

03/2011-  
09/ 2011

<b>Museum National d'Histoire Naturelle, Paris, France</b>	08/2010
Bat monitoring in Paris	
Project coordination   Bat recording	
<u>Supervision</u> : Christian Kerbiriou	
<b>Agroproj', Morocco</b>	2009-2010
Comparison of agricultural techniques in 2 villages	
Creation of the association   Interviews with farmers and locale organizations	
<b>University of Sydney, Australia</b>	08/2009-2/2010
Influence of the macronutrient intake on <i>Tenebrio molitor</i> immune response	
Insect rearing   Diet preparation   Immune assay	
<u>Supervision</u> : Fleur Ponton, Steve Simpson	

## RESEARCH INTERESTS

### Insect diversity and interaction — dispersal and population genetics — nutrition

#### Ph.D. project : Australian psyllids in complex interactions : species, populations, parasitoids and endosymbionts

A given insect species is typically involved in interactions with several other species, as part of a wider food web (insect herbivore, host plants, parasitoids, predators). Although many species interactions are antagonistic, beneficial associations also occur and there is growing realisation of the importance of microbial endosymbionts in the lives of insects and other animals (i.e. niche accessibility, parasitoid protection). Consequently, our understanding of species interactions and food webs increasingly relies upon investigations at a range of biological levels. Moreover, different elements of the food web may have different patterns of variation in time and space with knock-on effects for species interactions and community structure. During my PhD, I am interested in understanding the relationships between the Australian fig psyllids (*Mycopsylla* spp.), their fig host, parasitoids and endosymbionts. I am using NGS and Sanger sequencing to characterize the diversity and host-specificity of the psyllids, their endosymbionts and parasitoids. In addition, I am comparing inter- and intra-specific genetic variations of the psyllids and their primary and secondary symbionts. By focusing on one species that colonized three islands (Australia, Lord Howe Island and New Zealand), I also want to understand its biogeography and gene flow between populations.

#### Previous research

In general, I am interested in insect dispersal and I have explored this issue by studying the flight capacities of *Busseola fusca*, a maize pest moth, in a controlled experiment in a flight tunnel. We focussed on this species as it developed a resistance to *Bt* maize in South Africa in few years and we wanted to understand which factors (dispersal, mating preferences, ...) may be involved in the development of this resistance.

I also have a broad interest in insect nutrition. I previously did two studies on this topic. The first, at the University of Sydney, integrated insights of nutritional research in the study of immunity (especially for immune system maintenance). The second, in collaboration with Ynsect, a company that is rearing insects for animal feed and at term, for human food had for objective to identify, locate and quantify industry and restaurant wastes and to start feeding trials using those wastes.

## PUBLICATIONS

Ponton F., Lalubin F., **Fromont C.**, Wilson K., Behm C., Simpson S.J. (2011) Hosts use altered macronutrient intake to circumvent parasite-induced reduction in fecundity. *International Journal of Parasitology* 41 (1) 43-50

**Fromont C.**, Riegler M., Cook J.M. () Characterisation of fourteen microsatellite markers for the Australian fig psyllid, *Mycopsylla fici*. *Australian Journal of Zoology* (In press)

GRANTS & FELLOWSHIPS	ABRS Travel Grant for Association for Tropical Biology and Conservation conference (AU\$1650)	2015
	Hawkesbury Institute for the Environment Postgraduate Research Award	2013-2016
PRESENTATIONS AND WORKSHOPS	<b>Fromont, C.</b> , Riegler, M., Cook, J. (Speed talk) Hidden diversity and host specificity in fig-psylloid-parasitoid interactions Ecological Society of Australia, Alice Springs, Australia	2014
	<b>Fromont, C.</b> , Riegler, M., Cook, J. (oral presentation) Insights into two colonisation events: Australian fig psylloids on Lord Howe Island and New Zealand Association for Tropical Biology and Conservation, Honolulu, USA	2015
	Introduction to phylogenetic analysis— Workshop University of Sydney, Australia Simon Ho and Sebastian Duchene	2013
	GenAlex—Genetic Analysis for population studies—Workshop Australian National University, Canberra, Australia Rod Peakall and Peter Smouse	2013
MEMBERSHIPS	Royal Zoological Society of New South Wales Australian Entomological Society Association for Tropical Biology and Conservation	