



## Interview: Anne-Sophie LAFUITE, PhD candidate

### ► Could you tell us about what you do?

After starting by studying biology at ENS Lyon, I decided to specialise in theoretical ecology with an initial Master's degree done in Paris (M2 Ecology, Biodiversity, Evolution), followed by a second in environmental economics (M2 Economics of Sustainable Development, the Environment and Energy). I then did my Master's thesis internship under the co-supervision of the Toulouse School of Economics and the CNRS Theoretical and Experimental Ecology Research Station (Moulis), where I am currently finishing up my PhD.

My thesis topic is on modelling the long-term dynamics of combined man-made and natural systems. More specifically, my models include both the loss of biodiversity and ecosystemic services as feedback on agricultural productivity and human demographics, and market constraints in the form of an economic model of overall balance.

I also look at the use of economic tools to preserve natural habitats, biodiversity and services, as well as the links between social norms and changes in consumption which could enable our modern societies to achieve sustainable development.

### ► What are your career plans?

I aim to use my interdisciplinary skill set to help preserve the environment and conserve the biodiversity and sustainability of socio-ecological systems, within a research organization or NGO.

### ► What makes working at the intersection of economics and ecology an asset for your career plan?

The seriousness of the current ecological crisis requires going beyond the traditional boundaries of economics and ecology to create a science of sustainability based on combined socio-ecological systems. Only a detailed understanding of the ecological and economic dynamics and issues at play can make it possible to examine the interactions between nature and society, which have too long been seen as totally separate, independent fields.

### ► Do you have any advice for students who want to study both economics and ecology?

Being able to learn about both ecology and economics within a single master's programme is a unique opportunity, if you are aiming for a career focused on sustainability issues. But interdisciplinary work requires you to be very flexible and open-minded, because communication between different fields can be tricky. Working on the frontier between these two disciplines can be both very enriching and very frustrating, and requires a great deal of patience and perseverance.

#### • Thoughts from Gonzague Denise, an M2 ERNA student

*"I'm currently doing my Master's degree internship (M2 ERNA - environmental economics and natural resources - at the Toulouse School of Economics), in the CNRS CBTM (Centre for Biodiversity Theory and Modelling) lab. I work with Anne-Sophie, whose thesis topic aims to establish the connection between human population dynamics and biodiversity dynamics, and more specifically biodiversity delays. I hope to continue working on the interactions between ecology and economics, and since combining these fields is a fairly recent innovation, I think it is key to study with teams that are on the cutting edge in both! TSE has given me the opportunity to explore fairly basic areas of ecology and how economic and social forces have become essential drivers for them. To be able to link and create a convergence between economics and ecology, you have to be very curious and have a strong capacity to synthesize information."*



## Interview: **FILIPPO MARIA D'ARCANGELO**, *PhD candidate*

### ► Can you briefly tell us about what you do?

I am a PhD candidate in Economics, currently finishing my second year at the Toulouse School of Economics.

### ► What are your career plans?

I am an applied microeconomist with a research interest in environmental economics. I study economic agents' behaviors when faced with the scarcity of natural resources. Common property issues and externalities influence coordination and incentives, impacting economic activities and the environment. I study policies that reconcile environmental concerns with efficient levels of production and consumption. My main area of research is currently the development of herbicide resistance in weeds and how farmers' individual incentives are leading us to a case of a "tragedy of the commons".

### ► What makes working on the intersection of ecology and economics an asset for your future career plans?

Most of the natural resources that we extract and use for our economic activities follow the laws of biology. For example, forests and their ability to provide wood, sustain biodiversity and release oxygen; or fishery, agricultural and livestock production. Understanding the underlying biological principles that determine the sustainability of these resources is necessary to provide and test relevant economic theories.

### ► Do you have any advice for students who want to study economics and ecology?

Among ecologists, the predominant prejudice is that economists fail to acknowledge the importance of the environment's influence on our lives. Economists, on the other hand, have a long track record of dismissing or forgetting the role of biology and ecology in the determination of agents' behaviors. Being able to reconcile both approaches can certainly benefit their resumé and, ultimately, the planet.



## Interview: Kirsten Henderson, PhD Researcher

### ► Can you briefly tell us about what you do?

I am a post-doc researcher at the CNRS in Moulis, as a member of the Centre for Biodiversity Theory and Modelling team. I generate dynamic models which attempt to predict human population size and land cover patterns in the future. Perhaps, more importantly, I use those models to determine what drives the interactions between humans and the surrounding environment.

### ► What are your career plans?

My models describe interactions between humans and the environment, focusing on changes driven by consumption and degradation of natural and agricultural resources. The ecological aspect of my research is based on evidence that agricultural land productivity, as well as the rate and severity of land degradation, are related to the availability of ecosystem services and biodiversity. Human and agricultural expansion is therefore limited by ecosystem services. I combine this with the principles of supply and demand and resource use efficiency to measure the impact of changing ecosystem dynamics on human population size and well-being. I also look at how changes in demographics, resource use, and land valuation influence land cover patterns, as well as ecosystems' ability to provide services that are beneficial to humans.

### ► What makes working on the intersection of ecology and economics an asset for your future career plans?

I think that working on the interface between ecology and economics is essential to address major global issues in an effort to achieve environmental and human well-being – which I believe are inseparable. The two subjects are rarely discussed together, but ecology and economics are intricately linked. In our current society, economic sustainability is dependent on natural capital and the conservation/maintenance of ecosystems is mainly governed by a monetary valuation of the ecosystem. Unless there we see a massive shift in our cultural values, consumption patterns, perceptions and technology, human-ecosystem interdependence will only increase as the human population grows, which makes this a compelling field to be a part of.

### ► Do you have any advice for students who want to study economics and ecology?

Being at the interface of any discipline can be a challenge, as there are principles, theories or simply ways of interpreting issues or thinking that are completely different between the two fields. Melding ecology and economics definitely has its challenges, but that's what makes it so interesting to study. It gives a broader interpretation of global issues, forces objectivity and challenges the researcher to think about multiple interacting factors. Working on the interface between ecology and economics gives a much needed dimensionality to research on issues that have a tremendous impact on our society.