



Luca being interviewed. Photo: Peter Penicka.

“For me it's a big step forward”.

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The Swiss National Science Foundation (SNSF) is supporting Luca Carraro, a postdoctoral researcher in the Aquatic Ecology department (Eco), with an Ambizione grant of over 800,000 Swiss francs. With this grant, the SNSF encourages young researchers to advance their careers. In this interview, Luca tells us what the grant means to him, how he will use the money and what the requirements are for an Ambizione grant.

Luca, how will you use the Ambizione grant?

Luca Carraro: The funding will allow me to continue my research at Eawag and the University of Zurich on environmental DNA (eDNA), which I started in 2018 as a postdoctoral researcher. It includes my salary for four years, all project funds and the employment of a technical assistant.

What are the criteria for receiving an Ambizione grant?

The SNSF supports young researchers with this grant. That means the doctoral thesis must have been completed no more than four years before the submission deadline and you must have been active in research for at least one year during that time. I think my project aroused interest because it is interdisciplinary, as it combines hydrology and ecology. I had submitted an application last year that received positive feedback but was not successful in the end. In the meantime, however, my CV has become more robust: for example, I had an article published in Nature Communications in 2020. That may have made a difference.

What does your research consist of?

I work with eDNA, which is a new research approach that makes it possible to tell from a water sample what organisms are living in the river. To do this, the DNA in the sample is sequenced and you get a fingerprint, so to speak, of the species abundance in the body of water. However, the resolution of this fingerprint is not very high. This means that if I find a DNA snippet of a certain species in my sample, I know that this species is present somewhere, but I am unable to tell exactly where it lives. The DNA can come from a wide variety of river sections upstream. This is where my research comes in: with a computer model I developed, I can precisely locate the living space of the individual species. And also how many organisms of the species are present there. This gives a spatially much finer picture of biodiversity. In this way, we can identify and protect species-rich hotspots.

How does the model work in concrete terms?

I need a lot of samples from different parts of the river and also from different time points, because the distribution of the species changes over time. The model is then fed with this data. It also takes into account the transport and decay of DNA in the river water and is based on hydrological principles. This is where my engineering knowledge comes in: I studied civil engineering and am now combining this with ecological research. The idea came to me during my doctoral thesis in ecohydrology at EPFL. That's how I came to join Florian Altermatt's group, which has been working on eDNA for a longer period of time.

What does the grant mean to you?

For me, it is a big step forward on the way to further developing and establishing my field of research. I think I can make a difference at this interface between the disciplines, as there is still a big knowledge gap that has often been overlooked in the past. I would like to pass this knowledge on to Master's and doctoral students and eventually turn it into a professorship one day.

About the person

Luca studied civil engineering in Padua, Italy. He obtained his PhD in ecohydrology at EPFL and has since worked as a postdoctoral researcher at Eawag's Aquatic Ecology Department and at the University of Zurich.

Related Links

Luca's CV

Ambizione Award

<https://www.eawag.ch/en/info/portal/news/news-archive/archive-detail/for-me-its-a-big-step-forward>