

< p style="color: rgb(210, 45, 64); font-size: 22px; text-align: center;">UN SDGs</p>



< p style="color: rgb(210, 45, 64); font-size: 24px;">Barbora Thumsová</p>

< p style="color: rgb(210, 45, 64); font-size: 20px;">Origin and emergence of ranavirosis in two highly endangered species in Spain</p>

< p style="color: black; font-size: 18px;">Faculty of Science</p>

< p style="color: black; font-size: 18px;">Asociación Herpetológica Española</p>

Emerging diseases pose a serious threat to amphibian populations worldwide. Mountain amphibians are particularly vulnerable due to their isolation, exposure to extreme conditions, and the effects of climate change. Over the past two decades, viruses of the Ranavirus genus (Rv) have caused mass mortality and population declines in protected areas across Europe. However, their origin, patterns of emergence, and long-term consequences for vulnerable amphibian populations remain poorly understood. This project will investigate the emergence and spread of Rv in two Spanish national parks, Ordesa y Monte Perdido and Sierra de Guadarrama, where recent outbreaks have affected two threatened amphibian endemics of Iberia and the Pyrenees: *Rana iberica* and *Rana pyrenaica*. These species show signs of increasing Rv prevalence; however, basic data on their population size, disease history, and epidemiology are lacking. This project combines field monitoring with molecular diagnostics, whole-genome sequencing, and laboratory experiments to address these gaps. Samples of amphibians and fish from the field and museum collections will be analyzed to reconstruct the timeline of Rv emergence and to assess the role of introduced salmonids in its spread. Population size will be estimated using mark-recapture models, and infection patterns will be analyzed across time, species, and environments. A temperature-controlled experiment will test how thermal shifts affect infection and mortality. The goal is to identify conditions that reduce disease risk in wild and captive settings. In collaboration with the Spanish Herpetological Society, the results will be translated into monitoring protocols, mitigation strategies, and policy guidance to support the conservation of these threatened amphibians and improve the response to emerging wildlife diseases.

Meet the Project

If you had to explain your project to someone outside your field, how would you describe it in three sentences?

My project studies a virus that is increasingly affecting amphibians in mountain areas of Spain and causing severe population declines. I aim to understand where this virus comes from, why some species and places are more affected than others and how climate change contributes to these differences. Ultimately, the goal is to identify practical ways to reduce its impact and help protect threatened amphibian populations.

What fascinates you most about the topic of your research project?

Working on amphibian diseases means dealing with a problem that is both scientifically challenging and emotionally demanding. It often involves directly witnessing repeated mortality events and population declines, which can be discouraging. At the same time, this close contact with the problem is what gives the work meaning.

Careful observation and data collection can, over time, be translated into knowledge that supports better decisions by managers and conservation practitioners, even when disease mitigation in the wild is extremely difficult. My commitment to this topic stems from a strong sense of responsibility toward these systems and from working with people who, despite the difficulties, remain dedicated to preventing biodiversity loss.

How does your research contribute specifically to achieving the UN Sustainable Development Goals?

The project contributes directly to UN Sustainable Development Goal 15 (Life on Land) by addressing one of a major and sometimes overlooked driver of biodiversity loss: wildlife disease. By focusing on two threatened amphibian species protected by national and European legislation, the project provides knowledge that can be directly used to improve conservation and management actions in protected areas.

Beyond academia, the project supports evidence-based decision-making for park managers and environmental authorities, helping them adapt monitoring, captive-rearing, and mitigation strategies under climate change. By improving our ability to anticipate and reduce disease-driven population collapses, the research contributes to the persistence of vulnerable species and healthier freshwater ecosystems, which are essential for biodiversity and human well-being.

<!DOCTYPE html> <html lang="cs"> <head> <meta charset="UTF-8"> <meta name="viewport" content="width=device-width, initial-scale=1.0"> <title>Obrázek s textem</title> </head> <body> <p style="font-family: 'Trebuchet MS', sans-serif; font-size: 10px; color: gray; margin-top: 10px; font-style: italic;"> N.B. Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them. </p> </body> </html>