

A virus lethal to amphibians is spreading across Portugal

March 13, 2017 by Eva Rodríguez Nieto, Spanish Foundation for Science and Technology (FECYT)



Common midwife toad metamorphic forms and larvae in the Serra de Estrela, infected simultaneously by chytrid fungi and ranavirus. Credit: Gonçalo M. Rosa

A new strain of ranavirus is currently causing mass mortality in several species of amphibian in the Serra da Estrela, the highest mountain range in continental Portugal. This infectious agent is hypervirulent and also affects fish and reptiles, which complicates the situation, according to a study boasting the collaboration of the National Museum of Natural Sciences in Madrid.

An emerging virus is affecting [amphibian populations](#) in Portugal, but this is not the first time amphibians have been a source of worry in the country. In 2009, hundreds of midwife toads (*Alytes obstetricans*) were found dead in Serra da Estrela Natural Park.






A research study published in the journal *Scientific Reports* raises a new alert on this genus of virus, which has also been discovered in Spain and elsewhere in Europe. As

Jaime Bosch, a researcher at the National Museum of Natural Sciences and co-author of the study, tells SINC: "Ranaviruses have been known about for a long time, although in recent years globalisation is setting off mass mortalities throughout the world, and new strains also keep appearing, probably from Asia."

The fact that these viruses also affect fish and reptiles complicates the situation enormously, firstly because they can spread easily and also because of their persistence in the environment, even after amphibians disappear.

"They have probably been infecting amphibian populations in Spain for several decades. In 1992 we discovered what turned out to be the first known case in our country, although at the time we didn't even know exactly which organism caused the problem," the scientist adds.

In autumn 2011, another curious episode of mortality arose in the Serra da Estrela, which not only affected midwife toads but also other species of

Featured	Last comments	Popular
	Ancient Antarctic ice sheet collapse could happen again, triggering a new global flood Dec 21, 2018 28	
	Holiday asteroid imaged with NASA radar Dec 21, 2018 0	
	New Horizons scientists puzzled by lack of a 'light curve' from their Kuiper Belt flyby target Dec 21, 2018 3	
	A big space crash likely made Uranus lopsided Dec 21, 2018 3	
	Mars Express gets festive: A winter wonderland on Mars Dec 21, 2018 2	
more »		

Phys.org on Facebook

[Like](#) [Marinho Lopes](#) and 1.4M others like this.

Email newsletter

Relevant PhysicsForums posts

How does a neuron decide when to send a signal?
18 hours ago

A Question About Evolution... Dec 22, 2018

amphibians in the park. The episode was in contrast to all mortality patterns previously associated with chytridiomycosis on the Iberian Peninsula and Europe.


Tests carried out on dead animals confirmed that not only was there infection by chytrid fungi; they then discovered the new strain of ranavirus in all species analysed.



Specimen of a marbled newt with clear symptoms of ranaviriosis. Credit: Gonalo M. Rosa

"Viruses of this genus are found all over the world and can infect various groups of animals. But different strains have different degrees of virulence and the one circulating in the Serra da Estrela belongs to a hypervirulent group called CMTV-Ranavirus," explains Gonalo M. Rosa from the Portuguese Centre of Ecology, Evolution and Environmental Changes (CE3C). "This new strain has been linked to annual mass mortality of several species of amphibian, similar to the mortality recorded in northern Spain."

PCR Application

 Absolute quantification of nucleic acid target sequences. Learn more! bio-

The ranavirus is highly infectious to several species at various life stages and can reach various altitudes. "This strain has the potential to affect practically all species in the systems in which we discovered them," M. Rosa emphasises.

It therefore represents a crucial challenge for wildlife conservation and makes it necessary to urgently optimise conservation strategies for amphibians.

The ranavirus in Spain

The best-known case in Spain is that of the Picos de Europa National Park, where scientists have been working since 2005. "Several amphibian populations at the park have practically been wiped out, and we have not yet been able to find a method to diminish the effects of the disease," the researcher laments.

In addition to this case, another is currently being studied in Pontevedra and, in recent years, they have detected three further episodes of mass mortality related to these viruses in other areas of Spain, which have not yet been published. "At the moment, the only option to combat these viruses is to prevent them from spreading, since treating animals is not possible, and eliminating them from the natural environment even less so," explains Bosch.

Establishing severe border controls could prevent new strains entering through the exotic pet trade. Monitoring the species introduced - mostly fish - would be fundamental to end their most abundant reservoirs.

Explore further: Amphibian communities collapse in wake of viral outbreak

Slowing down the aging process: facts and latest research? Dec 22, 2018

Origin of Life Dec 22, 2018

The Cognitive Tradeoff Hypothesis Dec 21, 2018

Moth Cocoon Insecticide Dec 19, 2018

More from Biology and Medical

More information: Gonalo M. Rosa et al. Impact of asynchronous emergence of two lethal pathogens on amphibian assemblages, *Scientific Reports* (2017). DOI: [10.1038/srep43260](https://doi.org/10.1038/srep43260)

Journal reference: [Scientific Reports](#)

91 shares

Provided by: [Spanish Foundation for Science and Technology \(FECYT\)](#)

[feedback to editors](#)

Related Stories



Amphibian communities collapse in wake of viral outbreak

October 16, 2014

Two closely related viruses that have been introduced to northern Spain in recent years have already led to the collapse of three different species of amphibian—the common midwife toad, the common toad, and the alpine

newt—in ...

Amphibians being wiped out by emerging viruses

October 16, 2014

Scientists tracing the real-time impact of viruses in the wild have found that entire amphibian communities are being killed off by closely related viruses introduced to mountainous areas of northern Spain.



Study predicts ranavirus as potential new culprit in amphibian extinctions

Recommended for you



Howler monkey study examines mechanisms of new species formation

December 22, 2018

A new University of Michigan study of interbreeding between two species of howler monkeys in Mexico is yielding insights into the forces that drive the evolution of new species.



Bees can count with just four nerve cells in their brains

December 21, 2018

Bees can solve seemingly clever counting tasks with very small numbers of nerve cells in their brains, according to researchers at Queen Mary University of London.



Camera trap study reveals the hidden lives of island carnivores

December 21, 2018

User comments

Commenting is closed for this article.

We recommend

Study Points to Related, Multi-Host Viral Pathogens in Spanish Amphibian Declines

GenomeWeb

What is SARS? What are the symptoms of SARS?

James McIntosh, Medical News Today

Malaysian State Offended By Name Of Bat Virus

Catharine Paddock PhD, Medical News Today

A Preliminary Identification of Pepper Viruses and CMV Strains in Tianjin Suburb

Li Yunhua et al., Acta Agriculturae Boreali-Sinica

Viruses: What are they and what do they do?

University of Illinois-Chicago et al., Medical News Today

Tumor clonality and resistance mechanisms in EGFR mutation-positive non-small-cell lung cancer