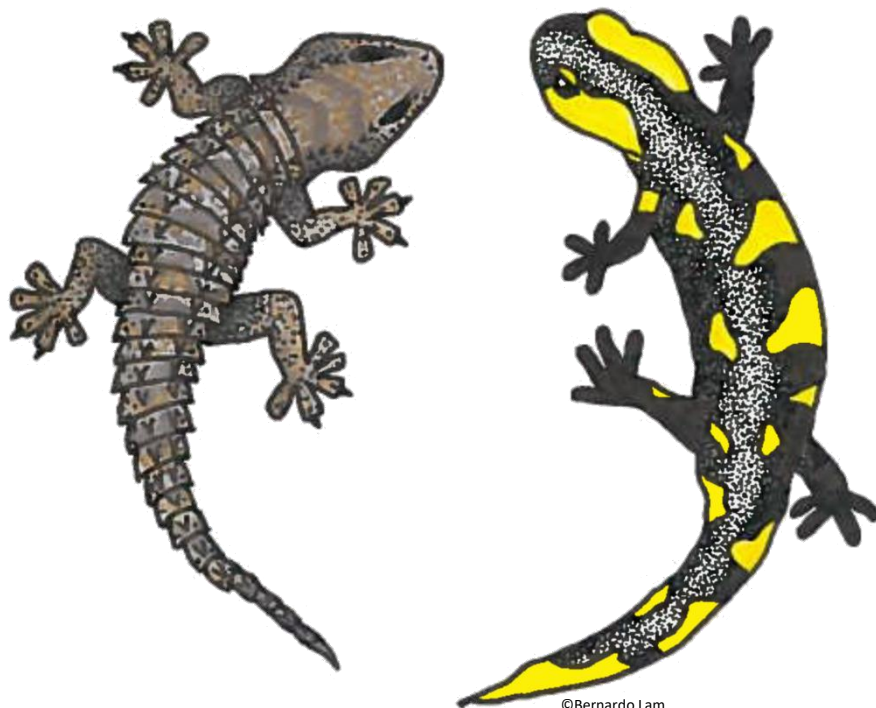


# 1ST INTERNATIONAL TWITTER CONFERENCE OF HERPETOLOGY

#IHERP18



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ABSTRACT BOOK

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## HOW DO AMPHIBIANS COPE WITH IONIZING RADIATION?

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Our work examines how amphibians respond to the chronic exposure to low-dose ionizing radiation in nature. Our research focused on amphibian populations living in areas affected by the nuclear accident occurred at the Chernobyl Power Plant, Ukraine, in 1986. We compare different aspects of the physiology, development and genetics of frogs living inside and outside areas affected by radioactive fallout from the Chernobyl accident. We examine the effects of living on a radioactive environment over a full range of traits, from differences in coloration and presence of external morphological anomalies, to immune levels, ageing patterns, oxidative stress and genomic and transcriptomic responses to ionizing radiation. These studies will give us crucial information for the management of nuclear accidents and radioactive waste, but they could also contribute to a better understanding of rapid evolution processes in natural populations.

## INVESTIGATING THE PRESENCE OF THE AMPHIBIAN CHYTRID FUNGUS IN A NON-NATIVE SPECIES

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The amphibian chytrid fungus (*Batrachochytrium dendrobatidis*) threatens amphibian species globally, with the disease implicated in the extinction of over 200 species and the declines of thousands more. One route by which the chytrid fungus has been spread is by the introduction of non-native species, whom act as reservoirs spreading the disease to naïve populations. A broad study swabbing an introduced population of common midwife toads (*Alytes obstetricans*) in Cambridge, UK has been conducted since 2016. In that time, 44 toads have been swabbed and then screened for the presence of both *B. dendrobatidis* and *B. salamandrivorans* of which all have come back negative. DNA samples have also been taken from the toads and using analysis techniques of the COI gene, the toads are now known to have come from Asturias, Spain.

## CREATING THE FIRST EVER CONSERVATION ACTION PLAN FOR THE ENDEMIC AND ENDANGERED GOLFO DULCE POISON DART FROG USING CITIZEN SCIENCE AND TINY-TECH

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The emblematic Golfo Dulce Poison Dart Frog (*Phyllobates vittatus*) is a unique endemic to the Osa Peninsula, Costa Rica. Though designated as endangered (IUCN 2013), its status may have deteriorated because no active conservation efforts currently address it, and in some areas, this frog has not been found since 2002 (IUCN 2002). Due to increasing habitat fragmentation, water contamination, and the illegal pet trade, the Golfo Dulce Poison Dart Frog is in dire need of a Conservation Action Plan. Moreover, investigation of its current distribution and identification of focal areas for habitat protection and restoration are needed to inform an effective conservation plan. Using “tiny-tech” (radio-tracking) and citizen science, we will engage local stakeholders to raise awareness about important fundamental relationships between human-inclusive local communities and their natural resources where this frog is a rallying point and demonstration focus. Most important, this effort will build local conservation leadership with long-term conservation impact. Secondarily, the effort will

contribute key ecological information that can help inform how to best preserve Golfo Dulce Poison Dart Frog's habitat.

#### AN EFFECTIVE METHOD FOR INCREASING THE CATCH-RATE OF PITFALL TRAPS

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Pitfall traps are widely used by researchers to survey a variety of terrestrial taxa. To test a method for improving the results of pitfall traps, we built a Y-shaped drift fence with six pitfall traps on each arm. We improved the pitfall traps by staking four pieces of aluminum flashing around each of the traps to increase their effective area. These acted as mini-fences that helped to guide animals into the traps. For experimental purposes, we used the aluminum flashing wings every other day. Traps without flashing caught a total of 395 reptiles and amphibians representing 15 species, and traps with the flashing caught a total of 624 reptiles and amphibians representing 20 species.

#### MECHANISMS ALLOWING GENERALIST SPECIES TO BENEFIT FROM HABITAT HOMOGENIZATION

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Complex environments support high biodiversity, probably because they have abundant resources and diverse microhabitat availability, which may reduce the intensity of competition among species. Both natural and anthropogenic disturbances reduce the structural complexity of habitats, leading to homogenization. High abundance of common, generalist species in disturbed habitats may be driven by reduced competition from specialists in similar habitats. We quantified habitat availability and utilization of three co-occurring arboreal geckos (Australian native house geckos (*Gehyra dubia*), northern velvet geckos (*Oedura castelnaui*), and eastern spiny-tailed geckos (*Strophurus williamsi*) in four replicated grazing regimes in an experimental grazing trial in northeast Queensland, Australia. Native house geckos were most abundant in heavily grazed habitats whereas the two other species rarely co-occur (either with each other or with native house geckos). Geckos displayed resource partitioning of habitat features, such as tree species and structural characteristics. We found evidence of interspecific competition between gecko species, in which native house geckos shifted their habitat selection in the presence of velvet geckos. In the absence of other geckos, native house geckos preferred rough, peeling bark and dead trees; yet in the presence of velvet geckos, native house geckos shifted away from dead trees, and used more structurally complex trees, probably due to high niche overlap with velvet geckos. Native house geckos were more resistant to the negative effects of livestock grazing than either velvet geckos or spiny-tailed geckos. In the absence of other species, native house geckos used a wider range of microhabitats. We found the homogenizing effects on habitat structure caused by livestock grazing reduced the diversity and suitability for microhabitat specialists. Reduced competition, therefore, promoted the abundance of microhabitat generalist species (*G. dubia*). This suggests that livestock grazing was a mechanism leading to the homogenization and simplification of habitat structure, which ultimately led to changes in the species composition through reduced competition. We can use this information to increase or maintain biodiversity by understanding species responses to disturbances, and ultimately to habitat complexity.

## INVASIVE CRAYFISH SPECIES AS A MAJOR DRIVER OF AMPHIBIAN DISTRIBUTIONS IN A MEDITERRANEAN STREAM NETWORK

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Due to their fractal nature, stream networks, are probably the most common aquatic habitat in Mediterranean landscapes. Its extension and prevalence make it a critical habitat for amphibians. These habitats are very prone to suffer biological invasions. The species of crayfish *Procambarus clarkii* and *Pacifastacus leniusculus* are two of the most spread invaders found in European streams with evidence of negative impacts in amphibians. These impacts include competition for food and refuges, direct predation on larvae and habitat alteration. In this study, we aim to understand what are the main drivers of amphibian distribution in a river basin.

We surveyed the Sabor river (Northeast of Portugal) stream network in 2015 on 11 occasions. In each occasion, we sampled 30 sites selected using a stratified random procedure. A sampling occasion consisted of a 200 meters transect inside of the riverine habitat performed by two observers that recorded all species of amphibians observed. A total of 168 sites were sampled at least twice.

Using logistic regression, we model distributions of the 8 most common species of amphibians using the following variables:

- Landscape variables: elevation and total annual precipitation;
- Hydrologic variables: Strahler's stream order and the water presence probability;
- Biotic: the probability of the presence of each of the exotic species crayfishes *Procambarus clarkii* and *Pacifastacus leniusculus*.

Using information criteria, we screened the models with all combinations of independent variables plus the interaction of stream order with elevation.

The occurrence of one or the two species of crayfish was included in all of the best models with exception of the models for *B. spinosus* and *P. perezi*. For the three species of Urodela, the occurrence of crayfish was the only variables included in the best model. The environmental factors that are correlated with *A. cisternasii* occurrence is lower altitude and precipitation and higher values of stream order and a positive interaction between altitude and stream order. *A. obstetricans* occurrence is correlated with a higher probability of the presence of running water. The occurrence of *P. perezi* is associated with higher values of stream order and lower probability of the presence of running water while the occurrence of *R. iberica* is associated with same variable but with an opposite effect (lower stream order values and higher probability of water).

The suitable habitat for amphibians in the Sabor basin is mainly restricted to the headwaters. With the amphibian occurrence mainly correlated with low values of predicted occurrence of exotic crayfish, an expectable expansion of crayfish towards the headwaters will result in the decline of available habitat for amphibians.

## Changes in the alien cheloniofauna in a SCI wetland during the last decade

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During the last twenty years we've been monitoring a protected wetland included in the Natura 2000 network. Presence of alien turtles was common from the start, initially dominated by *Trachemys scripta elegans* and few additionally species. After the ban of Tse, *T.scripta scripta* and hybrids began to be more common.

In the last years *Pseudemys* and *Graptemys* have increased their numbers, and the first *Mauremys* (*Chinemys*) *reevesi* was captured.

## FIRST CASE IN A BOSCA'S NEWT (*LISSOTRITON BOSCAI*, LATASTE 1879) OF AN OVARIAN CYST

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The Bosca's Newt (*Lissotriton boscai*) is a small species of newt from the family Salamandridae, endemic from the western part of the Iberian Peninsula. Reproductive disorders in amphibians are not common and poorly described.

The newt, an adult female, originated from the Espírito Santo creek in Miramar (Vila Nova de Gaia, Portugal), was admitted to the Wildlife Rehabilitation Centre of the Biologic Park of Gaia in November 2017, with a dilatation on the left side of the celomic cavity and difficulties in swimming and diving. To the radiologic exam was possible to observe an oval hypoechoic structure on the left side of the celomic cavity that was compressing the internal organs and causing a column deviation. In the *post mortem* exam performed in UTAD, the left ovary, in his cranial portion, presented an oval structure with dimensions 112x53 mm, of a translucid whitish-pink coloration and its content was a translucid, noncellular fluid. The microscopic exam confirmed that was a luteinized cyst in the ovarian.

It is the first time this type of lesion has been described in amphibians, to the author's knowledge. In amphibian female's, reproductive problems are quite rare, with only a few cases reported, mostly in captivity animals. This report is important to improve the knowledge on reproductive pathology in amphibians, especially in Bosca's Newt (*Lissotriton boscai*) and evidence the importance of the *post-mortem* exam in captive and wild amphibians.

## THE SPREADING OF THE INVASIVE ITALIAN WALL LIZARD ON VULCANO: A THREAT TO THE LAST POPULATIONS OF THE CRITICALLY ENDANGERED AEOLIAN WALL LIZARD.

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The Aeolian wall lizard (*Podarcis raffoneae*) is an endemic species of the Aeolian Archipelago of Italy (Mediterranean Sea). Its distribution is limited to three islets and a relatively large island: Vulcano. On this island, there are only two relict populations of Aeolian wall lizard: a population on the summit of Gran Cratere volcano and another on Capo Grosso promontory. The Aeolian wall lizard is threatened by the introduction of the Italian wall lizard (*Podarcis siculus*), which successfully competes and hybridizes with the critically endangered lizard. The invasive lizard is common on Vulcano, although the literature does not provide the exact distribution. Our first purpose was updating the distribution of the Italian wall lizard on Vulcano, with special attention to the last enclaves of the Aeolian wall lizard. Our second aim was investigating the factors determining this distribution range. In the spring of 2016, we surveyed the Italian wall lizard distribution on Vulcano, sampling 10 human-related and 10 natural areas, including Gran Cratere volcano and Capo Grosso promontory. We recorded the presence of the Italian wall lizard in each survey area. As a consequence, the Aeolian wall lizard populations of Vulcano face an imminent extinction risk. The main factors increasing the presence probability of the invasive lizard on Vulcano were the nearness to the harbor (the introduction gateway) and the urbanization degree (the invasion pathway). Therefore, we suggest the implementation of a control plan acting at the same time on the areas of sympatry (mainly Capo Grosso promontory), the introduction gateway (Vulcano harbor) and the source populations (urban areas).

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