



**Pole for Doctoral Studies**  
**Center for Doctoral Studies Sciences, Technologies, and Medical Sciences**

## **ANNOUNCEMENT OF DOCTORAL THESIS DEFENSE**



**Ms. BOUDAJBIR Chaimaa**

**Will present their research work with the aim of earning a  
Doctorate**

**Doctoral program: Biology, Geology, and Chemistry**  
**Discipline: Biology**

**Specialty: Herpetology, Animal Biology, Ecology and Environment**

**On 18/04/2026 at 10H00 at the Hassan BENAJIBA Meetings Room,  
Biology Department, Faculty of Sciences of Tetouan, UAE  
Under the Theme**

**Herpetofauna of the Intercontinental Biosphere Reserve of the  
Mediterranean (Moroccan part, northern Morocco): diversity,  
northern distribution modeling, and conservation challenges**

**Front of the jury composed of :**

<b>First Name &amp; Last Name</b>	<b>Establishment</b>	<b>Designation</b>
Pr. BELQAT Boutaina	FS of Tetouan, UAE	President
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Pr. EL HAISSOUFI Mohamed	FP of Taza, USMBA	Reviewer
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Pr. AKSISSOU Mustapha	FS of Tetouan, UAE	Examiner
Pr. FAHD Soumia	Independent Researcher	Expert
Pr. BRITO ALCOBIA José Carlos	CIBIO/InBIO of Porto, University of Porto, Portugal	Co-Supervisor
Pr. BENNAS Nard	FS of Tetouan, UAE	Supervisor

*Host Research Structure: Ecologie, Systématique, Conservation de la Biodiversité, URL, CNRST n°18*

## Abstract



The Moroccan sector of the Intercontinental Biosphere Reserve of the Mediterranean (IBRM) constitutes one of the most complex and biologically rich ecological systems in North Africa. Yet its role in herpetofaunal conservation remains insufficiently quantified. This thesis provides an integrated assessment of the diversity, spatial distribution, ecological determinants and conservation challenges of amphibians and reptiles within the IBRM, combining field inventories, Geographic Information System (GIS) analyses, ecological niche modelling and spatial conservation prioritization.

A total of 33 amphibian and reptile species were analysed across the IBRM, representing approximately 60% of Morocco's amphibian species and 25% of its reptile fauna. Distribution analyses reveal contrasting biogeographical patterns, ranging from widespread and ecologically tolerant species such as *Pelophylax saharicus*, *Hyla meridionalis*, *Natrix maura*, *Malpolon monspessulanus* and *Podarcis vaucheri*, to range restricted and high-conservation-value taxa closely associated with humid montane environments. The latter group includes emblematic species such as *Salamandra algira*, *Alytes maurus*, *Pelobates varaldii*, *Discoglossus scovazzi* and *Vipera monticola*, whose distributions are largely confined to the forested mountain massifs of the IBRM.

Species richness analyses identify several biodiversity cores located primarily in the internal mountain ranges of the reserve, particularly within and around Talassemrane National Park and Bouhachem Natural Park, as well as adjacent forested units such as Ben Karrich, Jbel Haabib and Jbel Moussa. These areas concentrate the highest levels of endemic and threatened species and correspond to habitats characterized by high precipitation, moderate temperatures and strong topographic heterogeneity. Although spatially limited, internal wetlands play a disproportionate role in structuring local diversity, especially for amphibian species with strict hydrological requirements.

Ecological niche models built using 17 climatic, topographic and land-cover variables showed generally good predictive performance (test AUC values ranging from 0.70 to 0.89). Annual precipitation, minimum temperature of the coldest months, altitude and slope emerged as the most influential predictors of species distributions. Montane forest formations exert a strong positive effect on total species richness, endemic richness and threatened-species richness, whereas habitat fragmentation, increasing dominance of open or degraded land cover and greater distance from continuous forests are associated with a marked decline in the occurrence of the most sensitive taxa.

The conservation assessment indicates that, despite the presence of national and natural parks and Sites of Biological and Ecological Interest (SIBEs), a substantial proportion of suitable habitats for endemic and threatened species lies within marginal or transitional zones where protection remains limited. Spatial prioritization analyses highlight that effective herpetofaunal conservation in the IBRM depends not only on existing protected-area cores, but also on the preservation and reinforcement of ecological corridors, internal valleys and forested connections between mountain massifs. In a context of climate change expected to intensify drought, thermal stress and wetland loss, these findings emphasize the need for adaptive, landscape-scale conservation strategies that integrate land-cover dynamics and future climatic scenarios.

**Keywords** : Herpetofauna; IBRM; Species distribution; Species richness; Ecological niche modelling; MaxEnt; Land cover; Conservation; Climate change.