Hector Zumbado-Ulate

Ecologist and Evolutionary Biologist (Ph.D.)

Biologist with 10+ experience teaching for college level (undergraduate and graduate students) and conducting research on spatial ecology and conservation.

zumbadohector@gmail.com

+1 (765) 607-3929

Riverside California

hzumbado.wixsite.com/mysite

RESEARCH INTERESTS

Disease ecology | Invasive species | Species distribution modeling | Niche dynamics | Conservation

CURRENT RESEARCH

2021-Present **Postdoctoral Scholar**
University of California, Riverside
Department of Entomology. Supervisor: Dr. Matt Daugherty

EDUCATION

2015-2021 **Ph.D. in Ecology and Evolutionary Biology**
Purdue University
Dissertation: Evaluating pathogen occurrence and coexisting threats across amphibian species distributions

2005-2009 **M.Sc. in Biological Sciences**
University of Costa Rica
Dissertation: Detection of *Batrachochytrium dendrobatidis* in the tropical dry forest of Costa Rica

2000-2004 **B.Sc. in Biological Sciences**
University of Costa Rica

PEER-REVIEWED PUBLICATIONS

Zumbado-Ulate, H., K. Neam, A. García-Rodríguez, L. Ochoa-Ochoa, G. Chaves, J.E Kolby, S. Granados-Martínez, A. Hertz, F. Bolaños, D. Ariano- Sánchez & C. L. Searle. 2022. Ecological correlates of extinction risk and persistence of direct-developing stream-dwelling frogs in Mesoamerica. ***Global Ecology and Conservation:* 38: e02197.** https://doi.org/10.1016/j.gecco.2022.e02197

Zumbado-Ulate, H., C. L. Searle, G. Chaves, V. Acosta-Chaves, A. Shepack, S. Salazar & A. García-Rodríguez. 2021. Assessing suitable habitats for treefrog species after previous declines in Costa Rica. ***Diversity* 13: 577.** https://doi.org/10.3390/d13110577

García-Rodríguez, A., D. Basanta, M. García-Castillo, **H. Zumbado-Ulate**, K. Neam, S. Rovito, C. Searle, & G. Parra. 2021. Anticipating the potential impacts of *Batrachochytrium salamandrivorans* on Neotropical salamander diversity. ***Biotropica* 00: 1-13**. https://doi.org/10.1111/btp.13042

Granados-Martínez, S., **H. Zumbado-Ulate**, C.L. Searle, B.F. Oliveira & A. García-Rodríguez. (2021). Niche contraction of an endangered frog driven by the amphibian chytrid fungus. ***EcoHealth* 18: 134-144.** https://doi.org/10.1007/s10393-021-01525-z

Whitfield, S.M., G. Alvarado, J. Abarca, **H. Zumbado-Ulate**, R. Jimenez & J. Kerby. (2021). Ranavirus is widespread in Costa Rica and co-occurs with threatened amphibians. ***Diseases of Aquatic Organisms* 144: 89-98.** https://doi.org/10.3354/dao03576

Zumbado-Ulate, H., A. García-Rodríguez & C. L. Searle. (2021). Species distribution models predict the geographic expansion of an enzootic amphibian pathogen. ***Biotropica* 53: 221-231.** https://doi.org/10.1111/btp.12863

De León, M., **H. Zumbado-Ulate**, A. García-Rodríguez, G. Alvarado, H. Sulaeman, F. Bolaños & V.T. Vredenburg. (2019). *Batrachochytrium dendrobatidis* infection in amphibians predates first known epizootic in Costa Rica. ***PLOS ONE* 14: e0208969.** https://doi.org/10.1371/journal.pone.0208969

Zumbado-Ulate, H., K. N. Nelson, A. García-Rodríguez, G. Chaves, E. Arias, F. Bolaños, S. Whitfield & C.L. Searle. (2019). Endemic infection of *Batrachochytrium dendrobatidis* in Costa Rica: Implications for amphibian conservation at regional and species level. ***Diversity* 11: 129.** https://doi.org/10.3390/d11080129

Zumbado-Ulate, H., A. García-Rodríguez, V.T. Vredenburg & C.L. Searle (2019). Infection with *Batrachochytrium dendrobatidis* is common in tropical lowland habitats: implications for amphibian conservation. ***Ecology and Evolution* 9: 4917-4930.** https://doi.org/10.1002/ece3.5098

Whitfield, S.M., G. Alvarado, J. Abarca, **H. Zumbado-Ulate**, I. Zuñiga, M. Wainwright & J. Kerby. (2017). Differential patterns of *Batrachochytrium dendrobatidis* infection in relict amphibian populations following severe disease-associated declines. ***Diseases of Aquatic Organisms* 126: 33-41.** https://doi.org/10.3354/dao03154

Chaves, G., **H. Zumbado-Ulate**, A. García-Rodríguez & E. Gómez. (2017). *Craugastor taurus*. Diet. **H*erpetological Review* 48: 158-159.**

Zumbado-Ulate, H., F. Bolaños, G. Gutiérrez-Espeleta & R. Puschendorf. (2014). Extremely low prevalence of the chytrid fungus *Batrachochytrium dendrobatidis* in the tropical dry forest of Costa Rica provides new evidences for a climatic refuge from disease. ***EcoHealth* 11: 593-602.** https://doi.org/10.1007/s10393-014-0967-2

Chaves, G., **H. Zumbado-Ulate**, A. García-Rodríguez, E. Gómez, M. J. Ryan & V.T. Vredenburg. (2013). Rediscovery of the streamside frog *Craugastor taurus* (Craugastoridae) in Costa Rica. ***Tropical Conservation Science* 7: 628-638.** https://doi.org/10.1177/194008291400700404

Zumbado-Ulate, H. & V. Acosta. (2013). *Cochranella granulosa* (Granulated glass frog). Feeding behavior. ***Herpetological Review* 43: 631.**

Zumbado-Ulate, H. & B. Willink. (2011). *Craugastor ranoides*. Distribution. ***Herpetological Review* 42: 236.**

Zumbado-Ulate, H, F. Bolaños, B. Willink & F. Soley-Guardia (2011). Population status and natural history notes on the critically endangered stream frog *Craugastor ranoides* (Craugastoridae). ***Herpetological Conservation and Biology* 6:455-464.**

Puschendorf, R., A.C. Carnaval, J. VanDerWal, **H. Zumbado-Ulate**, F. Bolaños, G. Chaves & R. Alfford. (2009). Distribution models for the amphibian chytrid *Batrachochytrium dendrobatidis* in Costa Rica: proposing climatic refuges as a conservation tool. ***Diversity and distributions* 15: 401-408.** https://doi.org/10.1111/j.1472-4642.2008.00548.x

Zumbado-Ulate, H., F. Soley-Guardia & F. Bolaños. (2009). *Craugastor ranoides*. Predation. ***Herpetological Review* 40: 201.**

Zumbado-Ulate, H., R. Puschendorf & M.M. Chavarría. (2007). *Eleutherodactylus ranoides*. Distribution. ***Herpetological Review* 38: 184-185.**

POPULAR SCIENCE PUBLICATIONS

Zumbado-Ulate, H., A. García-Rodríguez, G. Chaves & G. Alvarado. (2011). Searching for lost frogs of the *Craugastor rugulosus* group: Understanding their disappearance and assessing their current population status. ***Froglog* 95:28.**

ORAL PRESENTATIONS (FIRST AUTHOR ONLY)

2021 North Central College, Naperville, Illinois, USA
2019 Amphibian Disease Meeting, Tempe, Arizona, USA
2019 Ecological Society of America Annual Meeting, Louisville, Kentucky, USA
2018 Amphibian Disease Meeting, Tempe Arizona, USA
2017 Latino American Congress of Herpetology, Quito, Ecuador
2011 San Francisco State University, San Francisco, California, USA
2011 Museum of Vertebrate Zoology, Berkeley, California, USA
2006 Joint Meetings of Ichthyologists and Herpetologists, New Orleans, USA
2005 Joint Meetings of Ichthyologists and Herpetologists, Tampa, USA

TEACHING EXPERIENCE AT COLLEGE LEVEL

Graduate Instructor (2015-2021)
Purdue University

- Fundamentals of Biology II
- Systems and Devices for Physiology Measurements
- Development, Structure and Function of Organisms
- Introduction to Ecology and Evolution
- Field Ecology
- Ecology

Lecturer Professor (2010-2015)
University of Costa Rica

- Introductory Biology
- Herpetology
- Biological Diversity of Costa Rica
- Introduction to Flora of Costa Rica
- Amphibian Population Decline Research
- General Zoology
- Natural History of Costa Rica

Lecturer Professor (2010-2015)
National University of Costa Rica

- Herpetology
- General Zoology I
- Laboratory of General Zoology II

Lecturer Professor (2010-2015)
University Studies Abroad Consortium

- Plants and People
- Tropical Ecology
- Tropical Ecology Field Study
- Introduction to Conservation Biology
- Classification and Taxonomy of flowering Plants

Field Instructor (2008-2018)
Organization for Tropical Studies

- Herpetology (for Harvard University)

SPECIALIZATION COURSES

- Occupancy Modeling (Center for Wildlife Studies)
- R Bootcamp (Center for Wildlife Studies)
- Obtaining and Cleaning Species Occurrence Data with R (Transmitting Science)
- Introduction to Ecological Niche Modeling (Transmitting Science)
- Evaluating and Validating Species Distribution Models with R (Transmitting Science)
- Environmental Variables: How to Obtain and Process them with R (Transmitting Science)
- Geographic Information Systems with QGIS (CELEBIOS)
- Introduction to Web Cartography with ArcGIS Online (CELEBIOS)
- Amphibian Biology and Breeding (The Association of Zoos and Aquariums)
- Conservation Genetics: Molecular Tools (REGENEC)
- Advanced Training in Amphibian Population Decline Research (RANA)

SKILLS

- Fluent in English and Spanish language
- Geographic information systems (ArcMap, ArcGIS Pro, ArcGIS Online, and QGis)
- Data analysis in R
- Ecological niche modeling
- Occupancy modeling
- Identification of amphibians, especially native to Central America, and the midwestern USA
- Identification of tropical plants, especially species native to Central America
- Reptile and amphibian museum curation techniques
- Strong background in DNA extraction and qPCR analysis.

ORGANIZATION AFFILIATIONS

Association for Tropical and Biology Conservation (ATBC)
Ecological Society of America (ESA)