

Jacobo Reyes-Velasco, PhD

Professional Address

New York University Abu Dhabi
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Research Interests

Conservation biology; molecular evolution; phylogeography.

Education

2010 - 2015

Doctor of Philosophy (Ph.D.). University of Texas at Arlington.
Dissertation title: “The venomous rattlesnakes and New World coralsnakes: Molecular systematics, biogeography and the evolution of venom systems”.
Advisors: Dr. Jonathan A. Campbell & Dr. Todd A. Castoe.

2004 - 2008

Bachelor’s Degree (B.S.) in Biology. Universidad de Guadalajara, Mexico.
Undergraduate theses title: “New State Records for Amphibians and Reptiles from Colima, Mexico”.
Advisor: Dr. Sonia Navarro- Pérez.

Professional Experience

2015 – Present

Postdoctoral Associate, New York University Abu Dhabi. Advisor: Stephane Boissinot, PhD.

2010 – 2015

Teaching Assistant. University of Texas at Arlington.

2010

Fixer, translator, and animal handler for the show *Venom Power*, National Geographic Television. Chamela, Jalisco, Mexico.

2008 – 2009

Ecotour guide. Ecotours de Mexico. Puerto Vallarta, Mexico.

Grants, Honors & Awards

2014

- Theodore Roosevelt Memorial Fund Grant, American Museum of Natural History. “Systematics of the *Micrurus diastema* species complex of coral snakes” – \$2,100 USD.

2013

- Young Explorer Grant, National Geographic Society. “Natural history of the rattlesnake *Crotalus lannomi*” – \$5,000 USD.

2011

- Phi Sigma Research Grant, University of Texas at Arlington. “Systematics of the snake genus *Coniophanes*”. – \$750 USD.
- William F. Pyburn Award for Herpetological Research. University of Texas at Arlington.

2010

- Chelonian Research Foundation - Linnaeus Fund Award. “Surveys to evaluate the conservation status of several Endemic Mexican Kinosternid turtles”. – \$1,000 USD.

2004

- International Environmental Science Fair Istanbul, Turkey. Third Place.
- Youth Ecology Award on Academic Merit. Colima, Mexico.
- Expo ESI-AmLat, Environmental Sciences Category. Fortaleza do Ceará, Brazil. First Place.
- National Youth Award. Awarded by the President of Mexico, Vicente Fox-Quezada.

2003

- Intel International Science Fair. Natural Sciences. Cleveland, Ohio, USA. Participant.
- State Ecology Award, Colima Mexico. Government of the State of Colima.
- Youth Ecology Award on Conservation. Colima, Mexico.

2002

- National Mexican Youth Contest of Projects for Rural Development. First place.
- National Mexican Youth Contest of Science and Technology. First Place, Natural Sciences Category.

Publications

[24] Roman I, Bourgeois Y, **Reyes-Velasco J**, Jensen OP, Waldman J, Boissinot S. Contrasted patterns of divergence and gene flow among five fish species in a Mongolian rift lake following glaciation. *Biological Journal of the Linnean Society*. 2018;125(1):115-25.

[23] **Reyes-Velasco J**, Manthey JD, Freilich X, Boissinot S. Diversification of African tree frogs (genus *Leptopelis*) in the highlands of Ethiopia. *Molecular ecology*. 2018;27(9):2256-70.

[22] **Reyes-Velasco J**, Manthey JD, Bourgeois Y, Freilich X, Boissinot S. Revisiting the phylogeography, demography and taxonomy of the frog genus *Ptychadena* in the Ethiopian highlands with the use of genome-wide SNP data. *PloS one*. 2018;13(2):e0190440.

[21] Perry BW, Card DC, McGlothlin JW, Pasquesi GI, Adams RH, Schield DR, et al. Molecular adaptations for sensing and securing prey and insight into amniote genome diversity from the garter snake genome. *Genome biology and evolution*. 2018;10(8):2110-29.

- [20] Pasquesi GI, Adams RH, Card DC, Schield DR, Corbin AB, Perry BW, et al. Squamate reptiles challenge paradigms of genomic repeat element evolution set by birds and mammals. *Nature communications*. 2018;9(1):2774.
- [19] Grünwald CI, **Reyes-Velasco J**, Franz-Chávez H, Morales-Flores KI, Ahumada-Carrillo IT, Jones JM, et al. Six new species of *Eleutherodactylus* (Anura: Eleutherodactylidae: subgenus *Syrrhophus*) from Mexico, with a discussion of their systematic relationships and the validity of related species. *Mesoamerican Herpetology*. 2018;5(1):7-81.
- [18] Cox CL, Davis Rabosky AR, Holmes IA, **Reyes-Velasco J**, Roelke CE, Smith EN, et al. Synopsis and taxonomic revision of three genera in the snake tribe Sonorini. *Journal of Natural History*. 2018;52(13-16):945-88.
- [17] Manthey JD, **Reyes-Velasco J**, Freilich X, Boissinot S. Diversification in a biodiversity hotspot: genomic variation in the river frog *Amietia nutti* across the Ethiopian Highlands. *Biological Journal of the Linnean Society*. 2017;122(4):801-13.
- [16] Adams RH, Blackmon H, **Reyes-Velasco J**, Schield DR, Card DC, Andrew AL, et al. Microsatellite landscape evolutionary dynamics across 450 million years of vertebrate genome evolution. *Genome*. 2016;59(5):295-310.
- [15] Schield DR, Card DC, Adams RH, Jezkova T, **Reyes-Velasco J**, Proctor FN, et al. Incipient speciation with biased gene flow between two lineages of the Western Diamondback Rattlesnake (*Crotalus atrox*). *Molecular Phylogenetics and Evolution*. 2015;83:213-23.
- [14] **Reyes-Velasco J**, Ahumada-Carrillo I, Burkhardt TR, Devitt TJ. Two new species of *Eleutherodactylus* (subgenus *Syrrhophus*) from western Mexico. *Zootaxa*. 2015;3914(3):301-17.
- [13] Streicher JW, **Reyes-Velasco J**, Cox CL, Campbell JA, Flores-Villela O. Additional distributional records of a recently described Mexican toad species, *Incilius mccoysi* (Anura: Bufonidae). *Herpetology Notes*. 2014;7:207-210.
- [12] **Reyes-Velasco J**, Card DC, Andrew AL, Shaney KJ, Adams RH, Schield DR, et al. Expression of venom gene homologs in diverse python tissues suggests a new model for the evolution of snake venom. *Molecular biology and evolution*. 2014;32(1):173-83.
- [11] Card DC, Schield DR, **Reyes-Velasco J**, Fujita MK, Andrew AL, Oyler-McCance SJ, et al. Two low coverage bird genomes and a comparison of reference-guided versus de novo genome assemblies. *PLoS One*. 2014;9(9):e106649.
- [10] **Reyes-Velasco J**, Meik JM, Smith EN, Castoe TA. Phylogenetic relationships of the enigmatic longtailed rattlesnakes (*Crotalus ericsmithi*, *C. lannomi*, and *C. stejnegeri*). *Molecular phylogenetics and evolution*. 2013;69(3):524-34.
- [9] **Reyes-Velasco J**, Iverson JB, Flores-Villela O. The conservation status of several endemic Mexican Kinosternid turtles. *Chelonian Conservation and Biology*. 2013;12(1):203-8.
- [8] Castoe TA, De Koning AJ, Hall KT, Card DC, Schield DR, Fujita MK, et al. The Burmese python genome reveals the molecular basis for extreme adaptation in snakes. *Proceedings of the National Academy of Sciences*. 2013;110(51):20645-50.

- [7] **Reyes-Velasco J**, Grünwald CI, Jones JM, Price MS, Fisher JT. New distributional records for the herpetofauna of Mexico. *Herpetological Review*. 2012;43(3):353-4.
- [6] Cox CL, Davis Rabosky AR, **Reyes-Velasco J**, Ponce-Campos P, Smith EN, Flores-Villela O, et al. Molecular systematics of the genus *Sonora* (Squamata: Colubridae) in central and western Mexico. *Systematics and Biodiversity*. 2012;10(1):93-108.
- [5] **Reyes-Velasco J**, Mulcahy DG. Additional taxonomic remarks on the genus *Pseudoleptodeira* (Serpentes: Colubridae) and the phylogenetic placement of "*P. uribe*". *Herpetologica*. 2010;66(1):99-110.
- [4] **Reyes-Velasco J**, Grünwald CI, Jones JM, Weatherman GN. Rediscovery of the rare Autlán long-tailed rattlesnake, *Crotalus lannomi*. *Herpetological Review*. 2010;41(1):19-25.
- [3] Jadin RC, **Reyes-Velasco J**, Smith EN. Hemipenes of the long-tailed rattlesnakes (Serpentes: Viperidae) from Mexico. *Phyllomedusa: Journal of Herpetology*. 2010;9(1):69-73.
- [2] **Reyes-Velasco J**, Hermosillo-Lopez IA, Grünwald CI, Avila-Lopez OA. New State Records for Amphibians and Reptiles from Colima, Mexico. *Herpetological Review*. 2009;40(1):117-20.
- [1] Bryson Jr RW, Nieto Montes de Oca, A, **Reyes-Velasco J**. Phylogenetic position of *Porthidium hespere* (Viperidae: Crotalinae) and phylogeography of arid-adapted hognosed pitvipers based on mitochondrial DNA. *Copeia*. 2008;2008(1):172-8.

In preparation

Reyes-Velasco, Jacobo, Richard H. Adams, Christopher L. Parkinson, Jonathan A. Campbell, Eric N. Smith, Stephane Boissinot, Todd A. Castoe. Molecular systematics of coral snakes of the *Micrurus diastema* species complex.

Goutte, Sandra, Jacobo Reyes-Velasco & Stephane Boissinot. A new species of puddle frog (Anura; Phrynobatrachidae; *Phrynobatrachus*) from an unexplored mountain in southwestern Ethiopia.

Short Notes

[18] Avila-Lopez, Oscar A., Jacobo Reyes-Velasco, Alexander Hermosillo-Lopez. (2012). *Leptodactylus melanonotus* (Sabinal frog). *Prey. Herpetological Review*, 43(1), 122-123.

[17] Sheehy Coleman M., Jeffrey W. Streicher, Christian L. Cox, Ruben U. Tovar, Jacobo Reyes-Velasco. (2012). *Dipsas gaigae* (Gauge's thirst snake). *Reproduction. Herpetological Review*, 43(2), 342-343.

[16] Mertz, William. H., Jacobo Reyes-Velasco, Christoph I. Grünwald. (2011). *Leptodeira uribe* (Uribe's cat-eyed snake). *Herpetological Review*, 42(1).

[15] Sheehy, Coleman M., Jeffrey W. Streicher, Christian L. Cox, Jacobo Reyes-Velasco. (2011). *Tropidodipsas philippii* (Philippi's snail-eating snake). *Arboreality. Herpetological Review*, 42(3), 446-447.

- [14] Ahumada-Carrillo Ivan T., Oscar F. Reyna-Bustos, Jacobo Reyes-Velasco. (2011). *Micrurus laticollaris* (Balsan coral snake). Herpetological Review, 42(2).
- [13] Streicher, Jeffrey W., Coleman M. Sheehy III, Christian L. Cox, Jacobo Reyes-Velasco, Ginny N. Weatherman. (2010). *Smilisca baudinii* (Mexican treefrog) and *Pachymedusa dacnicolor* (Mexican leaf frog). Reproduction. Herpetological Review, 41(2), 208.
- [12] Reyes-Velasco, Jacobo, Christoph I. Grünwald and Jason M. Jones. (2010). *Geophis tarascae* (Tarascan earth snake). Herpetological Review, 41(1), 109-110.
- [11] Mertz, William H., Jacobo Reyes-Velasco and Christoph I. Grünwald. (2010). *Tropidodipsas fasciata* (Banded snail sucker). Herpetological Review, 41(4), 520.
- [10] Reyes-Velasco, Jacobo. (2009). *Porthidium hespere* (Western hognose pitviper). Diet. Herpetological Review, 40(1), 101.
- [9] Reyes-Velasco, Jacobo, Timothy R. Burkhardt and Jason M. Jones. (2008). *Dermophis oaxacae* (Oaxacan caecilian). Herpetological Review, 39(4), 480.
- [8] Reyes-Velasco, Jacobo, Christoph I. Grünwald, Jason M. Jones and Ginny N. Weatherman. (2008). *Crotalus willardi meridionalis* (Southern ridge-nosed rattlesnake). Herpetological Review, 39(4), 485.
- [7] Goldberg, Stephen R., Jacobo Reyes-Velasco, Charles R. Bursay and Eric Dugan. (2008). *Porthidium hespere* (Western hognose viper). Endoparasites. Herpetological Review, 39(1), 99.
- [6] Ingrasci, Matthew J., Kirk Setser and Jacobo Reyes-Velasco. (2008). *Lampropeltis alterna* (Gray-banded kingsnake). Herpetological Review, 39(3), 371-372.
- [5] Reyes-Velasco, Jacobo, Christoph I. Grünwald and Jason M. Jones. (2008). *Micrurus distans oliveri* (Western Mexican coral snake). Herpetological Review, 39(4), 485.
- [4] Reyes-Velasco, Jacobo, Christoph I. Grünwald and Jason M. Jones. (2008). *Tropidodipsas annulifera* (Western snailsucker). Herpetological Review, 39(4), 487.
- [3] **Reyes-Velasco, Jacobo**, Christoph I. Grünwald and Jason M. Jones. (2008). *Crotalus pusillus* (Tancitaran dusky rattlesnake). Herpetological Review, 39(2), 240.
- [2] **Reyes-Velasco, Jacobo**, Christoph I. Grünwald and Jason M. Jones. (2008). *Dipsas gaigeae* (Gauge's thirst snake). Herpetological Review, 39(2), 241.
- [1] Ahumada-Carrillo, Ivan T., Octavio Vazquez-Huizar and **Jacobo Reyes-Velasco**. (2007). *Manolepis putnami* (Ridgehead snake). Herpetological Review, 38(4), 488.

Book chapters

- [1] Schield, Drew R., Daren C. Card, **Jacobo Reyes-Velasco**, Audra L. Andrew, Cassandra A. Modahl, Stephen P. Mackessy, David D. Pollock, Todd A. Castoe. 2016. "A role for genomics in rattlesnake research – current knowledge and future potential". In: Rattlesnakes of Arizona, G.W. Schuett, L.W. Porras, and R.S. Reiserer (Eds.), Eco Books.

Other publications

[3] Walsh, Melissa, et al. 2014. Laboratory manual, Intro Biology for Majors. University of Texas at Arlington.

[2] Hermosillo-Lopez, Alexander, Jacobo Reyes-Velasco. 2003. "Guide for the conservation and sustainable use of the mud turtle, *Kinosternon integrum*". Privately printed. Colima, Mexico.

[1] Reyes-Velasco, Jacobo. Alexander Hermosillo-Lopez. 2002. "The freshwater turtles of Colima, Mexico". Privately printed. Colima, Mexico.

Conferences & Presentations

2018

- Evolution Conference. Society for the study of Evolution. Montpellier, France. "Transcriptome sequencing reveals adaptations to high elevations in Ethiopian frogs". Research Poster.
- Society for Molecular Biology and Evolution. Yokohama, Japan. "Transcriptome sequencing reveals adaptations to high elevations in Ethiopian frogs". Research Poster.

2017

- CGSB Conference VII. NYU Abu Dhabi, UAE. "Evolution and Diversity in the rooftop of Africa: Studying the frogs of the Ethiopian highlands". Research Poster.
- New York University Abu Dhabi Biology Seminar Talk. Abu Dhabi, UAE. "Evolution and Diversity in the rooftop of Africa: Studying the frogs of the Ethiopian highlands". Research talk.
- Evolution Conference, Society for the study of Evolution. Portland, Oregon, USA. "Evolution of a Subterranean Lifestyle in an Arboreal Frog Lineage Limits Dispersal and Enhances Genetic Diversification". Research talk.

2016

- Evolution meeting, Society for the study of Evolution. Austin, Texas, USA. "Phylogenetic relationships of frogs of the genus *Leptopelis* in the highlands of Ethiopia". Poster.
- "Molecular systematics of coralsnakes of the *Micrurus diastema* species group". Research talk.

2014

- Evolution Conference, Society for the study of Evolution. Raleigh, North Carolina, USA. "Expression of venom gene homologs in diverse python tissues suggests a new model for the evolution of snake venom". Research talk.
- Biology of the Pit Vipers 2. Tulsa, Oklahoma, USA. "The Burmese python genome provides insights into the evolution of snake venoms". Research talk.

2013

- Evolution Conference, Society for the study of Evolution. Snowbird, Utah, USA. "Phylogenetic relationships of the enigmatic Long-Tailed Rattlesnakes". Research talk.

2012

- National Meeting of the Mexican Society of Herpetology. Tuxtla Gutierrez, Chiapas, Mexico. "The conservation status of several endemic Mexican Kinosternid turtles". Research talk.

2008

- National Meeting of the Mexican Society of Herpetology. Pachuca, Hidalgo, Mexico.
- Annual Meeting of the Kansas Herpetological society. Wichita, Kansas. "New State Herpetofaunal Records for Colima, Mexico". Research talk.

2006

- National Meeting of the Mexican Society of Herpetology. Monterrey, Nuevo Leon, Mexico.
- Annual Meeting of the Southwestern Association of Naturalists. Colima, Colima, Mexico. “The herpetofauna of the state of Colima, Mexico: New state records and range extensions”. Poster.

2004

- National Meeting of the Mexican Society of Herpetology. Villahermosa, Tabasco, Mexico.

Undergraduate Mentoring

2018 - Present

(11) Marcin Falis – New York University Abu Dhabi

Research title: Pending.

(10) Imtiyaz Hariyani – New York University Abu Dhabi

Research title: “Using high throughput transcriptome sequencing to detect adaptation to high elevation in African tree frogs (*Leptopelis*).

2016 - 2018

(9) Jigar Govind – New York University Abu Dhabi

Research title: “Impact of habitat on the gut and skin microbiome of Ethiopian frogs”

(8) Sudikchya Shrestha – New York University Abu Dhabi

Research title: “Identification of Transposable Elements in *Leptopelis gramineus* - Insights into evolution of TE composition in Amphibians”

(7) Mona Nehme – New York University Abu Dhabi

Research title: “Adaptations to high elevations at the mitochondrial level in Ethiopian frogs”

(6) Victor Okoth – New York University Abu Dhabi

Research title: “Systematics of the frog genus *Phrynobatrachus* in Ethiopia”

(5) Ryan Brown – New York University Abu Dhabi

Research topic: “Amplicon sequencing of Ethiopian frogs of the genus *Leptopelis*”

2015

(4) Peter Nguyen – University of Texas at Arlington.

Research topic: “Evolution of color polymorphism in snakes of the genus *Micrurus*”.

(3) Augusto Torres – University of Texas at Arlington.

Research topic: “Evolution of color polymorphism in snakes of the genus *Micrurus*”.

2013

(2) George Tsai – University of Texas at Arlington.

Research topic: “Systematics of the long-tailed rattlesnakes”.

2012

(1) Reem Abuhandara – University of Texas at Arlington.

Research topic: “Systematics of the long-tailed rattlesnakes”.

Graduate Students Mentoring

2016 - Present

(1) Joseph Jayalo – Masters of Science. University of Nairobi (Kenya) & New York University Abu Dhabi.

Research title: “Effect of environmental factors on skin and gut bacterial community in Tadpoles.

Teaching Experience

2014 – 2015

Introduction to Biology for Majors – University of Texas, at Arlington.

2013 – 2014 (summer)

Anatomy and Physiology – University of Texas, at Arlington.

2012 (summer)

Biostatistics – University of Texas, at Arlington.

2010 – 2013

Introduction to Biology for Non-Majors – University of Texas, at Arlington.

Field Research Experience

2015 – Present

“Population genomics and phylogeography of east African amphibians”. Ethiopia – Dr. Stephane Boissinot, New York University, Abu Dhabi.

2013

“Evolution of dwarfism and gigantism in insular speckled rattlesnakes, *Crotalus mitchelli*”. Baja California, Mexico. Field assistant under Dr. Jesse Meik & Dr. Sarah Shaak, Tarelton State University and Reed College.

2010

“Ecology of the lesser Antillean Iguana, *Iguana delicatissima*”. Dominica, Western Antilles. Field Assistant under Dr. Charles Knapp, Shedd Aquarium.

2008

“Herpetofauna of northern and western Mexico”. Field and lab assistant under Dr. Eric N. Smith & Dr. Jonathan A. Campbell, University of Texas at Arlington.

2003 - Present

The herpetofauna of Colima and western Mexico.

2003

“Ecology of *Homopus signatus*, the world’s smallest tortoise”. South Africa. Field assistant under Dr. Victor Loher.

Community Outreach & Nonprofit Organizations

2017 – Present

Co-founder and President of **Herp.mx A.C.**, a non-for-profit organization focused on promoting research and conservation of native amphibians and reptiles in Mexico.

<http://www.herp.mx/>

2009 – Present

Co-founder and member of the board of **Entorno Biotico A.C.**, a non-for-profit organization focused on promoting sustainable development in the state of Colima, Mexico.

Alongside this NGO we have obtained multiple grants to carry out the following projects, including:

[1] Promoting alternative tourism in the rural community of El Terrero, Colima, Mexico (2009-2012). \$251,049 Mexican Pesos.

[2] Conservation of Mexican Psittacid birds in the state of Colima, Mexico. (2010-2012). \$340,679 Mexican Pesos.

[3] Cultivation of organic vegetables and installation of bio-digesters for the production of gas in rural communities. (2011-2012). \$276,918 Mexican Pesos.

[4] Implementation of two sustainable, community operated farms for the production of vegetables, rabbit meat, chickens and eggs. (2013-2016). \$265,000 Mexican Pesos.

2001 – 2009

Cofounder of **Tortugas-Colima**, a non-for-profit organization involved in the research and conservation of fresh water turtles in Mexico.

With Tortugas-Colima we have accomplished the following projects:

[1] Published a guide for the sustainable use of the mud turtle, *Kinosternon integrum* in captivity. The goal was to produce an easy to follow guide for breeding a local species of turtle in rural areas, with the intension of commercializing it for the pet trade or for human consumption, which is a tradition in several regions of Mexico.

[2] We created the first freshwater turtle-breeding center in the state of Colima, and one of the few of its kind in Mexico.

Both of these projects received considerable local, national and international attention and obtained several awards, including the National Youth Award on environmental causes, presented by the then president of Mexico, Vicente Fox Quezada.