

# Luis Amador

Postdoctoral Researcher

**Curriculum Vitae**  
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## Summary

- I am an evolutionary biologist with a strong background in molecular systematics and population genetics. My areas of expertise include phylogenetics, biogeography, taxonomy and bioinformatics.
- My research interests aim at unraveling the basis of the origin and evolution of biodiversity, using an integrative approach to address general conceptual questions in evolutionary biology and ecology.
- Recently, I have been focused on the study of the determinants of amphibian genetic/genomic diversity using Machine Learning with published and new generated molecular, geographic and ecological data.
- I consider myself as an enthusiastic and constant learner and I am open to new questions about the evolution of life.

## Main Skills

- Research: Ability to write scientific manuscripts, apply to grant proposals, experience working remotely and join research collaborations.
- Bioinformatics: Knowledge in Bash (Unix shell), high performance computers cluster environments, Python, R and advanced biostatistics, I have knowledge with several pipelines (e.g., ipyrad, Stacks, GATK).
- Molecular evolution: Computational Molecular Evolution, Comparative genomics and analysis of large genomic datasets, phylogenetic analysis, population genomics analysis, mitogenome phylogenetics, landscape genomics and historical demography.
- Laboratory: I have knowledge in instrumentation and general equipment in molecular biology laboratories, reagent preparation, DNA extraction methods for several tissues, PCR amplification and electrophoresis.
- Other skills: Phylogenetic Comparative Methods, Historical biogeography analysis, geometric morphometric, field-work, GIS.

## Education

2016-21	<b>PhD. Ecology and Evolution</b> Valdivia, Chile	Universidad Austral de Chile
2016	<b>MSc. Natural Resources Management</b> Guayaquil, Ecuador	Universidad de Guayaquil
2005	<b>BSc. Biology</b> Guayaquil, Ecuador	Universidad de Guayaquil

## Postdoctoral Experience

2022 -	<b>Determinants of amphibian genomic diversity: Integrating traits, phylogeny and geography</b> The University of New Mexico, Postdoctoral researcher - NSF Project, PI: Dr. Lisa Barrow
2021 - 2022	<b>Shedding light at the grey zones of the diversification of long-haired mice of the subgenus <i>Abrothrix</i> (<i>Sigmodontinae</i>): species delimitation and speciation genomics</b> Universidad Austral de Chile, Research associate - Project Fondecyt No. 1180366, PI: Dr. Guillermo D'Elía

## Teaching Experience

Sep 2022 - Dec 2022	<b>Teaching Assistant, Biodiversity Informatics Course</b> University of New Mexico	Albuquerque, USA
Aug 2019 - Dec 2020	<b>Teaching Assistant, Advanced Molecular Systematics</b> Universidad Austral de Chile	Valdivia, Chile
Aug 2014 - Apr 2015	<b>Instructor, Basic Statistics</b> Universidad Laica Vicente Rocafuerte de Guayaquil	Guayaquil, Ecuador
Oct 2013 - Feb 2014	<b>Teaching Assistant, Laboratory of Zoology of Vertebrates and Animal Morphology</b> Universidad de Guayaquil	Guayaquil, Ecuador

Aug 2008 - Aug 2010 **Assistant Instructor, Zoology of Vertebrates and Animal Morphology**  
Universidad de Guayaquil

Guayaquil, Ecuador

### Invited Lectures

December 2022	<b>Phylogenetics and Population Genetics in R (a primer)</b> Universidad Espiritu Santo	Ecuador
July 2022	<b>Diversidad genética en Anfibios Neotropicales</b> Universidad Espiritu Santo	Ecuador
July 2021	<b>Anfibios del Occidente de Ecuador</b> Universidad Espiritu Santo	Ecuador

### Publications

undegrad co-authors are indicated in italics and within em dash symbol (—)

1. **Amador, L.**, —*Arroyo-Torres, I.*— & Barrow, L.N. Machine learning and phylogenetic comparative methods identify predictors of genetic diversity and structure in Neotropical amphibians [preprint]. <https://doi.org/10.1101/2023.06.15.545105> Submitted to Journal of Biogeography.
2. **Amador, L.**, Leaché, A.D., Victoriano, P. Hickerson, M. & D'Elía, G. (2022). Genomic scale data shows that *Parastacus nicoleti* encompasses more than one species of burrowing continental crayfishes and that lineage divergence occurred with and without gene flow. *Molecular Phylogenetics and Evolution*, 169, 107443, <https://doi.org/10.1016/j.ympev.2022.107443>
3. Ortega-Andrade, H.M., Rodes, M., Cisneros-Heredia, D.F., Guerra, N., López, K., Sánchez-Nivicela, J.C., Armijos-Ojeda, D., Cáceres, J., Reyes-Puig, C., Quezada, A., Székely, P., Rojas-Soto, O., Székely, D., Guayasamin, J.M., Siavichay, F., **Amador, L.**, Betancourt, R., et al. (2021). Red List assessment for amphibian species of Ecuador: a multidimensional approach for their conservation. *PloS One*, 16(5): e0251027, <https://doi.org/10.1371/journal.pone.0251027>
4. **Amador, L.**, Victoriano, P. & D'Elía, G. (2021). Molecular species delimitation reveals hidden specific diversity within a freshwater burrowing crayfish (Decapoda: Parastacidae) from southern Chile. *Systematics and Biodiversity*, 19. <https://doi.org/10.1080/14772000.2020.1865471>
5. D'Elía, G, Canto, J., Ossa G., Verde-Arregoitia L., Bostelmann E., Iriarte A., **Amador, L.**, Quiroga-Carmona M., Hurtado, N., Cadenillas, R. & Valdez, L. (2020). Lista actualizada de los mamíferos vivos de Chile. *Boletín del Museo Nacional de Historia Natural, Chile*, 69(2): 67-98.
6. —*Cruz-García, K.*—, Cisneros-Heredia, D.F, Sánchez-Nivicela, J.C., **Amador, L.** (2020). New records of four reptile species (Lepidosauria, Squamata) from the province of Guayas, southwestern Ecuador. *Check List*, 16(3): 765-772. <https://doi.org/10.15560/16.3.765>
7. **Amador, L.**, Soto-Gamboa, M., Guayasamin, J.M. (2019). Integrating alpha, beta, and phylogenetic diversity to understand anuran fauna along environmental gradients of tropical forests in western Ecuador. *Ecology & Evolution*, 9: 11040– 11052. <https://doi.org/10.1002/ece3.5593> Featured on the cover.
8. **Amador, L.**, Parada, A., D'Elía, G. & Guayasamin, J.M. (2018). Uncovering hidden specific diversity of Andean glassfrogs of the *Centrolene buckleyi* species complex (Anura: Centrolenidae). *PeerJ* 6:e5856. doi: 10.7717/peerj.5856
9. **Amador, L.**, Ayala-Varela, F. Nárvaez, A.E., —*Cruz, K.*— & Torres-Carvajal, O. (2017). First record of the invasive brown anole *Anolis sagrei* Duméril and Bibron, 1837 (Squamata: Iguanidae: Dactyloinae) in South America. *Check List* 13(3): 2083. doi: <https://doi.org/10.15560/13.3.2083>
10. Escribano-Ávila, G. Cervera, L., Ordoñez-Delgado, L., Jara-Guerrero, A., **Amador, L.**, Paladines, B., Briceño, J., Parés-Jiménez, L., Lizcano, D.J., Duncan, D.H. & Espinosa, C.I. (2017). Biodiversity patterns and ecological processes in tropical dry forest of the Ecuadorian province: the need to connect research & management for long-term conservation. *Neotropical Biodiversity* 3(1): 107–116. doi: <http://dx.doi.org/10.1080/23766808.2017.1298495>
11. **Amador, L.**, —*Gómez, C.*—, —*Londoño-Guarnizo C.*—, —*López-Caro, J.*— & Arteaga A. (2017). Northernmost new records of *Enyalioides touzeti* Torres-Carvajal, Almendáriz, Valencia, Yáñez-Muñoz & Reyes, 2008 (Sauria: Hoploceridae) from Ecuador: altitudinal and latitudinal distribution extension, new provincial and biogeographical record. *Check List* 13(1): 2032. doi: <https://doi.org/10.15560/13.1.2032>
12. Salazar-Valenzuela, D., Martins, A., **Amador, L.** & Torres-Carvajal (2015). A new species and country record of threadsnakes (Serpentes: Leptotyphlopidae: Epictinae) from northern Ecuador. *Amphibian & Reptile Conservation* 8(1) [Special Section]: 107–120 (e89).
13. **Amador, L.** (2015). Fauna urbana de Guayaquil: el caso de los anfibios y reptiles, nuestros vecinos menospreciados. *Revista Científica Yachana*, 4, pp. 181-188.
14. **Amador, L.** & —*Brito, G.*— (2013). Notas sobre la distribución y conservación de *Ceratophrys stolzmanni* (Steindachner, 1882) (Anura: Ceratophryidae) en Ecuador. *Revista Científica Yachana*, 2(2), pp. 119- 122.
15. **Amador, L.** & Martínez, C.C. (2011). Anfibios presentes en cuatro localidades de la Cordillera Chongón Colonche, Ecuador. *Boletín Técnico* 10, Serie Zoológica 7: 55-68.

## Other Publications and Notes

1. Salvatierra B., Ortega J. & **Amador L.** (2010). Evaluación Ecológica Rápida de la Herpetofauna de la Cordillera Chongón-Colonche. Investigación, Tecnología e Innovación. Revista de divulgación de la Dirección de Investigaciones y Proyectos Académicos. Vicerrectorado Académico. Universidad de Guayaquil. Vol. 2. N° 1. 51 -74 p.

## Manuscripts in Preparation

1. **Amador, L.**, Victoriano, P.F., Muñoz-Escobar, C. & D'Elía, G. Molecular systematics and single-locus species delimitation help to discover putative species in the freshwater crayfishes of genus *Virilastacus* Hobbs, 1991 (Decapoda: Parastacidae). Prepared for submit to *Hydrobiologia*.
2. Franco-Mena, D., de la Riva, I., Rojas-Runjaic, F.J.M., Vega-Yáñez, M.A., Batallas-Revelo, D., Reyes-Puig, C., Cisneros-Heredía, D.F., Reyes-Puig, J.P., **Amador, L.** & Guayasamin, J.M. Simplifying the *Centrolene buckleyi* complex: A taxonomic review and description of new species. Prepared for submit to PeerJ.
3. Narváez, A.E., Ayala-Varela, F., Cuadrado S., Cruz-García, K., Yáñez-Muñoz M.H. & **Amador, L.** Expansion of the brown anole distribution range in Ecuador: A case of urban spaces favoring the establishment of an opportunistic exotic species. Prepared for submit to *Biological Invasions*.

## Presentations

### Invited talks

- 2022 **Systematics and population genomics of the burrowing crayfish *Parastacus nicoleti* in Southern Chile**  
The Crustacean Society (TCS) Summer Meeting- Symposium: Integrative Studies of Freshwater Crayfish in South America
- 2021 **Explorando mecanismos de diversificación: biogeografía histórica y límites de especies**  
Invited by the Club Eco-Evo Latinoamérica, Subgrupo de Biogeografía. YouTube link: <https://www.youtube.com/watch?v=4rHDrJ8HEZA>
- 2020 **Especiación y criterios para definir especies**  
Webinar: Transformando ideas en ciencia, mitos y verdades de un posgrado. NEKAMU, Universidad de Guayaquil
- 2015 **Anfibios y Reptiles en el bosque seco de la costa ecuatoriana: diversidad, estado conservación y perspectivas**  
Workshop: Biodiversidad y procesos ecológicos del bosque seco tropical: estado y proyecciones. XXXIX Jornadas Nacionales de Biología. Loja, Ecuador

### Speaker in Recent Seminars

- 2023 **Life-history traits, phylogeny, or geography, what determines intraspecific genetic diversity in Neotropical amphibians?**  
SSB 2023, 5th Standalone Meeting. The Society of Systematics Biologists, UNAM, Mexico City, Mexico
- 2022 **Determinants of intraspecific genetic diversity in Neotropical amphibians**  
2022 Joint Meeting of Ichthyologists and Herpetologists, Spokane, WA
- 2021 **SNPs a escala genómica determinan los límites de especies en el camarón de vega *Parastacus nicoleti* (Decapoda, Parastacidae)**  
Primer Congreso Latinoamericano de Evolución CLEVOL 2021
- 2020 **Diversidad oculta en un hotspot de biodiversidad: Una evaluación basada en ADNmt, SNPs y morfología entre poblaciones de un cangrejo de río excavador sudamericano**  
XLIV Jornadas Nacionales de Biología, Ecuador
- 2020 **El camarón de vega *Parastacus nicoleti* presenta alta diversidad genética estructurada geográficamente: implicancias para la delimitación de especies**  
Reunión anual conjunta. Sociedad Chilena de Evolución, Valdivia, Chile
- 2019 **Diversification in a biodiversity Hotspot: Species discovery and historical biogeography of a burrowing crayfish of southern Chile**  
International Biogeography Society's 2019 Humboldt 250 conference. Quito, Ecuador, Award third best poster
- 2018 **First approach to the population genetic structure of *Parastacus nicoleti* (Decapoda) in southern Chile**  
XXII International Congress of Genetics (ICG), Foz do Iguaçu, Brazil
- 2017 **Aproximación a la biogeografía histórica de los parastácidos de América del Sur (Decapoda: Parastacidae)**  
XI Reunión Anual Sociedad Chilena de Evolución. Puerto Varas, Chile
- 2017 **Explorando la biogeografía histórica de los camarones dulceacuícolas de América del Sur (Decapoda: Parastacidae)**  
XIV Congreso Sociedad Chilena de Limnología. Puerto Montt, Chile
- 2017 **Filogenia y delimitación de especies dentro del complejo de especies *Hyloxalus infraguttatus* (Anura, Dendrobatidae)**  
XI Congreso Latinoamericano de Herpetología. PUCE Ecuador
- 2017 **The Brown Anole (*Anolis sagrei*) an invasive species now in the Southern Hemisphere**  
XI Congreso Latinoamericano de Herpetología. PUCE Ecuador

## Grant, Awards and Fellowships

2020	<b>Scholarship Completion of Doctoral Theses</b> Escuela de Graduados, Universidad Austral de Chile
2019	<b>Internship Abroad Scholarship</b> Beca de Estadía en Centros de Investigación Científica, Tecnológica y Humanística, segundo semestre 2019, Universidad Austral de Chile
2019	<b>Fellowship Doctoral Internships Abroad</b> Comisión Nacional de Investigación Científica y Tecnológica (CONICYT)
2019	<b>Course Scholarship</b> Bursary award towards the registration fee in the Wellcome Genome Campus Advance Course: Computational Molecular Evolution
2019	<b>Fellowship Operational Costs for PhD Thesis Project</b> Comisión Nacional de Investigación Científica y Tecnológica (CONICYT)
2017	<b>Scholarship for PhD students</b> Comisión Nacional de Investigación Científica y Tecnológica (CONICYT)
2014	<b>PhD Scholarship</b> Secretaría Nacional de Educación Superior, Ciencia, Tecnología e Innovación (SENESCYT)
2010	<b>MSc Scholarship</b> Universidad de Guayaquil, Facultad de Ciencias Naturales
2009	<b>Research Grant</b> Conservation of threatened amphibians in the coast of Ecuador. University of Guayaquil, Direction of Investigation and Academic Projects (DIPA)
2008	<b>Research Grant</b> Rapid Ecological Assessment of the Herpetofauna in the Cordillera Chongón Colonche. University of Guayaquil, Direction of Investigation and Academic Projects (DIPA)

## Professional Service

- **Journal reviewer.** Journal of Crustacean Biology, Zootaxa, South American Journal of Herpetology, Zoological Research, Neotropical Biodiversity, Basic and Applied Ecology, Diversity and Distributions, Science of the Total Environment, Biological Invasions.
- **Judge.** Joint Meeting of Ichthyologists and Herpetologists 2022, Spokane, Washington. Research Days 2023, University of New Mexico, Albuquerque, New Mexico. Hamilton symposium, Evolution 2023 (virtual).
- **Amphibian Specialist.** Lista Roja Nacional de Anfibios de Ecuador 2021. Dirección de Biodiversidad. Ministerio del Ambiente y Agua, Ecuador. [http://mesadeayuda.ambiente.gob.ec/Documentacion/Biodiversidad/listaroja\\_añAbios.pdf](http://mesadeayuda.ambiente.gob.ec/Documentacion/Biodiversidad/listaroja_añAbios.pdf)
- **Contributor.** Amphibian Species of the World. Online editions Version 6.0 (2013 to 2020).
- **Amphibian Specialist.** Workshop to establish the IUCN threat categories for Ecuadorian frogs. Amphibian specialist. Ecuador, 2016.

## Professional memberships

Society for the Study of Evolution, Society of Systematic Biology, American Association for the Advancement of Science, American Society of Ichthyologists and Herpetologists, Red Nacional de Investigación sobre Biodiversidad (RedBio).

## Outreach

### Online blog articles

- 2022. Natural history short note: Observation of the attempt of predation of *Thamnophis proximus* on *Pseudacris crucifer*. <https://sites.google.com/view/luisamador/iñAeldwork/iñAeldwork-usa>
- 2022. Predation on *Barycholos pulcher* (Anura: Craugastoridae) by a wolf spider (Araneae: Lycosidae) in a forest in western Ecuador. <https://sites.google.com/view/luisamador/iñAeldwork/iñAeldwork-ecuador>
- 2017. *Anolis sagrei* Now in the Southern Hemisphere, First Record for South America. <https://www.anoleannals.org/author/luisamador/>

### Selected Media Coverage

- 2022. Reptiles y anfibios como mascotas: una cuestión ética y ecológica. This content was published on La Revista, El Universo Newspaper. <https://www.eluniverso.com/larevista/ecologia/reptiles-y-anfibios-como-mascotas-una-cuestion-etica-y-ecologica-nota/>
- 2020. Estudio presenta nueva información y los primeros registros de cuatro especies de reptiles en la provincia del Guayas. Noticias INABIO. <http://inabio.biodiversidad.gob.ec/2020/07/03/estudio-presenta-nueva-informacion-y-los-primeros-registros-de-cuatro-especies-de-reptiles-en-la-provincia-del-guayas/>

- 2017. La Lagartija superinvasora. Expreso Newspaper. <https://www.expreso.ec/actualidad/lagartija-superinvasora-50726.html>
- 2009. Anfibios y reptiles de la Cordillera Chongón-Colonche. El Herald newspaper. Ambato, Ecuador.
- 2009. Investigación en universidades se ajusta a déficit en presupuestos. El Universo Newspaper. Guayaquil, Ecuador.
- 2009. Con estudios, 3 universidades trabajan a favor de la Tierra. El Universo Newspaper. Guayaquil, Ecuador.

### Professional References

- Dr. Lisa N. Barrow. University of New Mexico. Email: [lnbarrow@unm.edu](mailto:lnbarrow@unm.edu). <https://barrowevobio.wixsite.com/lisabarrow>
- Dr. Guillermo D'Elia (PhD Advisor). Email: [guille.delia@gmail.com](mailto:guille.delia@gmail.com). Universidad Austral de Chile. <https://sistemica.cl/>
- Dr. Juan M. Guayasamin (MSc Advisor). Email: [JMGuayasamin@gmail.com](mailto:JMGuayasamin@gmail.com). Universidad San Francisco de Quito. <https://www.usfq.edu.ec/en/profiles/juan-manuel-guayasamin-ernest>