Marlon E. Cobos, Ph.D.

Postdoctoral Fellow

Ecology and Evolutionary Biology Department and Biodiversity Institute, University of Kansas
Address: 1345 Jayhawk Blvd Lawrence, KS 66045, USA
Email: manubio13@gmail.com Phone: +1 (785) 330 6628 Website: marlonecobos.github.io
ORCID: 0000-0002-2611-1767; *Researcher ID:* I-1647-2019; *Google Scholar:* Marlon E. Cobos

Research Interests

My research centers on data integration and ecological modeling, with the overarching objective of comprehending ecological and biogeographic patterns, as well as the potential impacts of global change on biodiversity. My research focuses in three areas: (1) biogeography with emphasis on disease dynamics and risk mapping; (2) methods and tool development for predictive modeling; and (3) integration of evolutionary principles in predictive modeling.

Appointments and Professional Experience

Postdoctoral Fellow. *Department of Ecology and Evolutionary Biology & Biodiversity Institute. University of Kansas*. 2023–present, Lawrence, KS, USA

Environmental Consultant. *IMPROYAM Environmental Consulting Company.* 2013-2014, Zamora, ZCh, Ecuador

Technician of Planning and Land Management. *El Guismi Decentralized Autonomous Government*. 2012-2013, El Pangui, ZCh, Ecuador

Education

Ph.D. Ecology and Evolutionary Biology with Honors, University of Kansas, USA 2023
M.Sc. Zoology and Animal Ecology, Universidad de La Habana, Cuba 2016
B.Sc. Environmental engineering, Universidad Nacional de Loja, Ecuador 2012

Research Experience

Postdoctoral Researcher

Project: **NSF PIPP-Predictive Intelligence for a Pandemic Prevention (2100955). Center for Emerging Pathogen Prediction and Integration**. *Advisor:* Jocelyn P. Colella, PhD. Department of Ecology and Evolutionary Biology & Biodiversity Institute, *University of Kansas*. 2023–present. *Main Activities:* data analysis, ecological modeling, grant-proposal development, student mentoring.

Graduate Research Assistant

Project: **NSF EPSCOR (OIA-1920946). Marshaling Diverse Big Data Streams to Understand Risk of Tick-Borne Diseases in the Great Plains**. *Advisor:* A. Townsend Peterson, PhD. Biodiversity Institute, *University of Kansas*. 2020–2023. *Main Activities:* field work for tick collections, data analysis, ecological modeling, AI implementations for automated identification of species.

Research Assistant

Project: **Potential distribution of Cuban biota: Assessing the impact of climate change (National Climate Change Program)**. *Advisor:* Carlos A. Mancina, PhD. *Institute of Ecology and Systematics*. 2016–2017. *Main Activities:* guiding methodological choices.

Project: **Bases for conservation of the most endangered Cuban toad, *Peltophryne florentinoi*.** *Advisor:* Roberto Alonso-Bosch, PhD. Museum of Natural History "Felipe Poey", *Universidad de La Habana*. 2015–2017. *Main Activities:* surveying species populations and habitats, data analysis, and statistical modeling.

Associated Researcher

Project: **Ecological bases for restoration of degraded ecosystem biodiversity and functionality in southern Ecuador, in the face of potential global environmental changes.** *Advisor:* Nikolay Aguirre, PhD. Programa de Inves- tigación de la Biodiversidad y Servicios Ecosistémicos, *Universidad Nacional de Loja*. 2016–2017. *Main Activities:* project design, data collection, data analysis, ecological modeling.

Undergraduate Research Assistant

Project: **Characterization, conservation and sustainable use of native animal species of South-Ecuadorian Amazon.** *Advisor:* Katiusca Valarezo-Aguilar, PhDC. Museum of Zoology "LOUNAZ", *Universidad Nacional de Loja*. 2011. *Main Activities:* field work to register species of interest and their habitats, data analysis, and mapping information.

Project: **Trophic niche overlap and disease transmission between the American Bullfrog (*Lithobates catesbeianus*) and native frogs of South-Ecuadorian Amazon.** *Advisor:* Katiusca Valarezo-Aguilar, PhDC. Museum of Zoology "LOUNAZ", *Universidad Nacional de Loja*. 2011. *Main Activities:* field work and lab work to generate data.

Publications

(45 total published - Google Scholar citations: 1,498; h-index: 14; i10-index: 25)

Journal Articles

45 Bernardinis, G., **Cobos, M. E.**, Brum, F. T., Marques, M. C. M., Peterson, A. T., Carlucci, M. B., & Zwiener, V. P. (2023). Ecological restoration and protection of remnants are key to the survival of the critically endangered Araucaria tree under climate change. *Global Ecology and Conservation,* 47, e02668. https://doi.org/10.1016/j.gecco.2023.e02668

44 **Cobos, M. E.**, Nuñez-Penichet, C., Campbell, P. D., Cooper, J. A., Machado-Stredel, F., Barve, N., Ashraf, U., Alkishe, A. A., Ng'eno, E., Raveendran, R. N., Atauchi, P. J., Adeboje, A., & Peterson, A. T. (2023). Effects of occurrence data density on conservation prioritization strategies. *Biological Conservation*, 284, 110207. https://doi.org/10.1016/j.biocon.2023.110207

43 **Cobos, M. E.**, & Peterson, A. T. (2023). Broad-scale factors shaping the ecological niche and geographic distribution of *Spirodela polyrhiza*. *PLoS ONE*, 18, e0276951. https://doi.org/10.1371/journal.pone.0276951

42 Colella, J. P., **Cobos, M. E.**, Salinas, I., Cook, J. A., & The PICANTE Consortium. (2023). Advancing the central role of non-model biorepositories in predictive modeling of emerging pathogens. *PLOS Pathogens*, 19, e1011410. https://doi.org/10.1371/journal.ppat.1011410

41 Ashraf, U., Peterson, A. T., Chaudhry, M. N., & **Cobos, M. E.** (2023). Global ecological niche conservatism and evolution in *Olea* species. *Saudi Journal of Biological Sciences*, 30(1), 103500. https://doi.org/10.1016/j.sjbs.2022.103500

40 Alkishe, A., **Cobos, M. E.**, Osorio-Olvera, L., & Peterson, A. T. (2022). Ecological niche and potential geographic distributions of *Dermacentor marginatus* and *Dermacentor reticulatus* (Acari: Ixodidae) under current and future climate conditions. *Web Ecology*, 22(2), 33–45. https://doi.org/10.5194/we-22-33-2022

39 Busby, W. H., Barve, N., **Cobos, M. E.**, & Peterson, A. T. (2022). Effects of landscape history on current geographic distributions of four species of reptiles and amphibians in Kansas. *The Southwestern Naturalist*, 66(2), 157–165. https://doi.org/10.1894/0038-4909-66.2.157

38 **Cobos, M. E.**, Barve, V., Barve, N., Jiménez-Valverde, A., & Nuñez-Penichet, C. (2022). rangemap: An R package to explore species' geographic ranges. *Biodiversity Informatics*, 17, 59–66. https://doi.org/10.17161/bi.v17i.16271

37 **Cobos, M. E.**, & Peterson, A. T. (2022). Detecting signals of species' ecological niches in results of studies with defined sampling protocols: Example application to pathogen niches. *Biodiversity Informatics*, 17, 50–58. https://doi.org/10.17161/bi.v17i.15985

36 Contreras-Díaz, R. G., Falconi, M., Osorio-Olvera, L., **Cobos, M. E.**, Soberón, J., Townsend Peterson, A., Lira-Noriega, A., Álvarez-Loayza, P., Luis Gonçalves, A., Hurtado-Astaiza, J., Gonzáles, R. del P. R., Zubileta, I. S., Spironello, W. R., & Vásquez-Martínez, R. (2022). On the relationship between environmental suitability and habitat use for three neotropical mammals. *Journal of Mammalogy*, 103(2), 425–439. https://doi.org/10.1093/jmammal/gyab152

35 Machado-Stredel, F., Freeman, B., Jiménez-Garcia, D., **Cobos, M. E.**, Nuñez-Penichet, C., Jiménez, L., Komp, E., Perktas, U., Khalighifar, A., Ingenloff, K., Tapondjou, W., de Silva, T., Fernando, S., Osorio-Olvera, L., & Peterson, A. T. (2022). On the potential of documenting decadal- scale avifaunal change from before-and-after comparisons of museum and observational data across North America. *Avian Research*, 13, 100005. https://doi.org/10.1016/j.avrs.2022.100005

34 Nuñez-Penichet, C., **Cobos, M. E.**, Soberón, J., Gueta, T., Barve, N., Barve, V., Navarro-Sigüenza, A. G., & Peterson, A. T. (2022). Selection of sampling sites for biodiversity inventory: Effects of environmental and geographical considerations. *Methods in Ecology and Evolution*, 13(7), 1595–1607. https://doi.org/10.1111/2041-210X.13869

33 Peterson, A. T., Aiello-Lammens, M., Amatulli, G., Anderson, R., **Cobos, M. E.**, Diniz-Filho, J. A., Escobar, L., Feng, X., Franklin, J., Gadelha, L., Georges, D., Guéguen, M., Gueta, T., Ingenloff, K., Jarvie, S., Jiménez, L., Karger, D., Kass, J., Kearney, M., Loyola, R., Machado-Stredel, F., Martínez-Meyer, E. Merow, C., Modelli, M. L., Moratara, S., Myers, C., Naimi, B., Noesgaard, D., Ondo, I., Osorio-Olvera, L., Owens, H., Pearson, R., Pinilla-Buitrago, G., Sánchez-Tapia, A., Saupe, E., Thuiller, W., Varela, S., Warren, D., Wieczorek, J., Yates, K., Zhu, G., Zuquim, G., Zurell, D. (2022). ENM2020: A free online course and set of resources on modeling species' niches and distributions. *Biodiversity Informatics*, 17, 1–9. https://doi.org/10.17161/bi.v17i.15016

32 Banks, W. E., Moncel, M.-H., Raynal, J.-P., **Cobos, M. E.**, Romero-Alvarez, D., Woillez, M.-N., Faivre, J.-P., Gravina, B., d'Errico, F., Locht, J.-L., & Santos, F. (2021). An ecological niche shift for Neanderthal populations in Western Europe 70,000 years ago. *Scientific Reports*, 11(1), 5346. https://doi.org/10.1038/s41598-021-84805-6

31 **Cobos, M. E.**, Cheng, Y., Song, G., Lei, F., & Peterson, A. T. (2021). New distributional opportunities with niche innovation in Eurasian snowfinches. *Journal of Avian Biology*, 52(12), e02868. https://doi.org/10.1111/jav.02868

30 Deraad, D. A., **Cobos, M. E.**, Alkishe, A., Ashraf, U., Ahadji-Dabla, K. M., Nuñez-Penichet, C., & Peterson, A. T. (2021). Genome-environment association methods comparison supports omnigenic adaptation to ecological niche in malaria vector mosquitoes. *Molecular Ecology*, 30(23), 6468–6485. https://doi.org/10.1111/mec.16094

29 Gonzalez, V. H., Cobos, M. E., Jaramillo, J., & Ospina, R. (2021). Climate change will reduce the potential distribution ranges of Colombia's most valuable pollinators. Perspectives in Ecology and Conservation, 19(2), 195–206. https://doi.org/10.1016/j.pecon.2021.02.010

28 Machado-Stredel, F., **Cobos, M. E.**, & Peterson, A. T. (2021). A simulation-based method for identifying accessible areas as calibration areas for ecological niche models and species distribution models. *Frontiers of Biogeography*, 13(4), e48814. https://doi.org/10.21425/F5FBG48814

27 Nuñez-Penichet, C., **Cobos, M. E.**, Checa, M. F., Quinde, J. D., Aguirre, Z., & Aguirre, N. (2021). High diversity of diurnal Lepidoptera associated with landscape heterogeneity in semi-urban areas of Loja City, southern Ecuador. *Urban Ecosystems*, 24(6), 1155–1164. https://doi.org/10.1007/s11252-021-01110-w

26 Nuñez-Penichet, C., **Cobos, M. E.**, & Soberón, J. (2021). Non-overlapping climatic niches and biogeographic barriers explain disjunct distributions of continental *Urania* moths. *Frontiers of Biogeography*, 13(2), e52142. https://doi.org/10.21425/F5FBG52142

25 Nuñez-Penichet, C., Osorio-Olvera, L., Gonzalez, V. H., **Cobos, M. E.**, Jiménez, L., Deraad, D. A., Alkishe, A., Contreras-Díaz, R. G., Nava-Bolaños, A., Utsumi, K., Ashraf, U., Adeboje, A., Peterson, A. T., & Soberon, J. (2021). Geographic potential of the world's largest hornet, *Vespa mandarinia* Smith (Hymenoptera: Vespidae), worldwide and particularly in North America. *PeerJ*, 9, e10690. https://doi.org/10.7717/peerj.10690

24 Raghavan, R. K., Koestel, Z., Ierardi, R., Peterson, A. T., & **Cobos, M. E.** (2021). Climatic suitability of the eastern paralysis tick, *Ixodes holocyclus*, and its likely geographic distribution in the year 2050. *Scientific Reports*, 11(1), 15330. https://doi.org/10.1038/s41598-021-94793-2

23 Simões, M. V. P., Saeedi, H., **Cobos, M. E.**, & Brandt, A. (2021). Environmental matching reveals non-uniform range-shift patterns in benthic marine Crustacea. *Climatic Change*, 168(3), 31. https://doi.org/10.1007/s10584-021-03240-8

22 Soberón, J., **Cobos, M. E.**, & Nuñez-Penichet, C. (2021). Visualizing species richness and site similarity from presence-absence matrices. *Biodiversity Informatics*, 16, 20–27. https://doi.org/10.17161/bi.v16i1.14782

21 Vignoles, A., Banks, W. E., Klaric, L., Kageyama, M., **Cobos, M. E.**, & Romero-Alvarez, D. (2021). Investigating relationships between technological variability and ecology in the Middle Gravettian (ca. 32–28 ky cal. BP) in France. *Quaternary Science Reviews*, 253, 106766. https://doi.org/10.1016/j.quascirev.2020.106766

20 Alkishe, A., **Cobos, M. E.**, Peterson, A. T., Samy, A. M. 2020. Recognizing sources of uncertainty in disease vector ecological niche models: An example with the tick *Rhipicephalus sanguineus sensu lato*. *Perspectives in Ecology and Conservation*. https://doi.org/10.1016/j.pecon.2020.03.002

19 Mazón, M., Nuñez-Penichet, C., **Cobos, M. E.** 2020. Relationship between body mass and forewing length in Neotropical Ichneumonidae (Insecta: Hymenoptera). *Neotropical Entomology*. https://doi.org/10.1007/s13744-020-00784-9

18 Owens, H. L., Ribeiro, V., Saupe, E. E., **Cobos, M. E.**, Hosner, P. A., Cooper, J. C., Samy, A. M., Barve, V., Barve, N., Muñoz-R, C. J., Peterson, A. T. 2020. Acknowledging uncertainty in evolutionary reconstructions of ecological niches. *Ecology and Evolution*, 10(14), 6967–6977. https://doi.org/10.1002/ece3.6359

17 Simões, M., Romero-Alvarez, D., Nuñez-Penichet, C., Jiménez, L., **Cobos, M. E.** 2020. General theory and good practices in ecological niche modeling: A basic guide. *Biodiversity Informatics*, 15(2), 67–68. https://doi.org/10.17161/bi.v15i2.13376

16 **Cobos, M. E.**, Peterson, A. T., Osorio-Olvera, L., Jiménez-García, D. 2019. An exhaustive analysis of heuristic methods for variable selection in ecological niche modeling and species distribution modeling. *Ecological Informatics*, 53, 100983. https://doi.org/10.1016/j.ecoinf.2019.100983

15 **Cobos, M. E.**, Peterson, A. T., Barve, N., Osorio-Olvera, L. 2019. kuenm: An R package for detailed development of ecological niche models using Maxent. *PeerJ*, 7, e6281. https://doi.org/10.7717/peerj.6281

14 Nuñez-Penichet, C., **Cobos, M. E.**, Barro, A., Soberón, J. 2019. Potential migratory routes of *Urania boisduvalii* (Lepidoptera: Uraniidae) among host plant populations. *Diversity and Distributions*, 25(3), 478–488. https://doi.org/10.1111/ddi.12881

13 Peterson, A. T., Anderson, R. P., Beger, M., Bolliger, J., Brotons, L., Burridge, C. P., **Cobos, M. E.**, Cuervo-Robayo, A. P., Minin, E. D., Diez, J., Elith, J., Embling, C. B., Escobar, L. E., Essl, F., Feeley, K. J., Hawkes, L., Jiménez-García, D., Jimenez, L., Green, D. M., Knop, E., Kühn, I., Lahoz-Monfort, J. J., Lira-Noriega, A., Lobo, J. M., Loyola, R., Nally, R.M., Machado-Stredel, F., Martínez-Meyer, E., McCarthy, M., Merow, C., Nori, J., Nuñez-Penichet, C., Osorio-Olvera, L., Pyšek, P., Rejmánek, M., Ricciardi, A., Robertson, M., Rojas-Soto, O., Romero-Alvarez, D., Roura- Pascual, N., Santini, L., Schoeman, D.S., Schröder, B., Soberón, J., Strubbe, D., Thuiller, W., Traveset, A., Treml, E.A., Václavík, T., Varela, S., Watson, J.E.M., Wiersma, Y., Wintle, B., Yanez- Arenas, C., Zurell, D. 2019. Open access solutions for biodiversity journals: Do not replace one problem with another. *Diversity and Distributions*, 25(1), 5–8. https://doi.org/10.1111/ddi.12885

12 Peterson, A. T., Anderson, R. P., **Cobos, M. E.**, Cuahutle, M., Cuervo-Robayo, A. P., Escobar, L. E., Fernández, M., Jiménez-García, D., Lira-Noriega, A., Lobo, J. M., Machado-Stredel, F., Martínez-Meyer, E., Nuñez-Penichet, C., Nori, J., Osorio-Olvera, L., Rodríguez, M. T., Rojas-Soto, O., Romero-Álvarez, D., Soberón, J., Varela, S., Yañez-Arenas, C. 2019. Curso modelado de nicho ecológico, version 1.0. *Biodiversity Informatics*, 14, 1–7. https://doi.org/10.17161/bi.v14i0.8189

11 Raghavan, R. K., Barker, S. C., **Cobos, M. E.**, Barker, D., Teo, E. J. M., Foley, D. H., Nakao, R., Lawrence, K., Heath, A. C. G., Peterson, A. T. 2019. Potential spatial distribution of the newly introduced Long-horned tick, *Haemaphysalis longicornis* in North America. *Scientific Reports*, 9(1), 498. https://doi.org/10.1038/s41598-018-37205-2

10 Raghavan, Ram K., Peterson, A. T., **Cobos, M. E.**, Ganta, R., Foley, D. 2019. Current and future distribution of the Lone Star Tick, *Amblyomma americanum* (L.) (Acari: Ixodidae) in North America. *PLoS ONE*, 14(1), e0209082. https://doi.org/10.1371/journal.pone.0209082

9 Ramírez-Gil, J. G., **Cobos, M. E.**, Jiménez-García, D., Morales-Osorio, J. G., Peterson, A. T. 2019. Current and potential future distributions of Hass avocados in the face of climate change across the Americas. *Crop and Pasture Science*, 70(8), 694–708. https://doi.org/10.1071/CP19094

8 **Cobos, M. E.**, Alonso Bosch, R. 2018. Breeding sites of a narrowly distributed amphibian, a key element in its conservation in the face of global change. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 28, 1089–1098. https://doi.org/10.1002/aqc.2967

7 **Cobos, M. E.**, Jiménez, L., Nuñez-Penichet, C., Romero-Alvarez, D., Simoes, M. 2018. Sample data and training modules for cleaning biodiversity information. *Biodiversity Informatics*, 13, 49–50. https://doi.org/10.17161/bi.v13i0.7600

6 Peterson, A. T., **Cobos, M. E.**, Jiménez-García, D. 2018. Major challenges for correlational ecological niche model projections to future climate conditions. *Annals of the New York Academy of Sciences*, 1429(1), 66–77. https://doi.org/10.1111/nyas.13873

5 Torres-Porras, J., **Cobos, M. E.**, Seoane, J. M., Aguirre, N. 2017. Large and medium-sized mammals of Buenaventura reserve, southwestern Ecuador. *Check List*, 13(4), 35–45. https://doi.org/10.15560/13.4.35

4 **Cobos, M. E.**, Alonso Bosch, R. 2016. Recent and future threats to the Endangered Cuban toad *Peltophryne longinasus*: Potential additive impacts of climate change and habitat loss. *Oryx*. https://doi.org/10.1017/S0030605316000612

3 **Cobos, M. E.**, Cruz, D. D., Hernández, M. 2016. Análisis multitemporal del Índice Normalizado de Diferencia de Vegetación (NDVI) en Cuba. *Revista Del Jardín Botánico Nacional*, 37, 15–18.

2 **Cobos, M. E.**, Nuñez-Penichet, C., Valarezo-Aguilar, K. 2016. First record of an American Bullfrog (*Lithobates catesbeianus*) population in Loja, Ecuador. *IRCF Reptiles and Amphibians*, 22(1), 46–48.

1 Nuñez-Penichet, C., **Cobos, M. E.**, Gutiérrez, J. E., Barro, A. 2016. Distribución potencial del género *Omphalea* (Euphorbiaceae) en Cuba: Aproximación a su distribución real. *Revista Del Jardín Botánico Nacional*, 37, 165–175.

Books

1 Aguirre, N., Mazón, M., and **Cobos, M. E.** 2019. *Comunicar y divulgar la ciencia. Redacción y publicación de trabajos científicos y divulgativos*. EDILOJA. Loja, Ecuador.

Other Publications

3 **Cobos, M. E.** 2023. Integrating Multiple Approaches for Comprehensive Correlative Ecological Niche Modeling. Doctoral Thesis. University of Kansas.

2 **Cobos, M. E.** 2016. Posibles implicaciones del cambio climático sobre la distribución de las especies del género *Peltophryne* (Anura: Bufonidae) en Cuba. *Master's Thesis*. Universidad de La Habana.

1 **Cobos, M. E.** 2012. Distribución potencial de la rana toro (*Lithobates catesbeiana*, Anfibia: Anura) y su relación con la fragmentación de hábitats en Zamora Chinchipe, Ecuador. *Bachelor's Thesis*. Universidad Nacional de Loja.

Articles In Prep., Pre-prints, In Review, and In Press *(mentees: * undergraduate, ** graduate)*

14 **Cobos, M. E.**, Augusto, F., Wearing, H., Cook, J. A., & Colella, J. P. In prep. Accounting for temporal and spatial pathogen prevalence patterns in assessments of public health risks: A case study with Hantavirus and its wildlife reservoirs in Panama.

13 Yumiseva, C., Villasis, J. F.*, Aguayo, S.*, **Cobos, E.**, Colella, J. P., & Villacis, A. G. In prep. Current and future potential distribution of the Chagas disease vector *Rhodnius ecuadoriensis.*

12 Haddock, J. B.**, Nuñez-Penichet, C., **Cobos, M. E.**, & Colella, J. P. In prep. Leveraging historical occurrence data to assess change in mammal diversity across space and time.

11 **Cobos, M. E.**, Winters, T.*, Martinez, I.*, Yao, Y., Xiao, X., & Peterson, A. T. In prep. Time-specific ecological niche models to assess spatio-temporal activity of *Amblyomma americanum* in the central Great Plains.

10 Ng'eno, E., Alkishe, A., Romero-Alvarez, D., Sundstrom, K., **Cobos, M. E.**, …, & Peterson, A. T. In review. Complex phenology of five tick species in the central Great Plains. *PLoS ONE*.

9 Barve, N., Ashraf, U., Barve, V., **Cobos, M. E.**, Nuñez-Penichet, C., & Peterson, A. T. In review. Revisiting plant hardiness zones to include multiple climatic stress dimensions. *Ambio.*

8 Peterson, A. T., Yao, Y., **Cobos, M. E.**, & Xiao, X. In review. Correlative ecological niche model applications to predicting landscape-scale woody plant encroachment in Kansas tallgrass prairie systems. *PLoS ONE*.

7 Arias-Giraldo, L. F.**, **Cobos, M. E.**, & Peterson, A. T. In review. enmpa: An R package for ecological niche modeling using presence-absence data and generalized linear models. *Biodiversity Informatics*

6 DeRaad, D., **Cobos, M. E.**, DeCicco, L., Venkatraman, M. X., Garrett, K. L., …, & Schultz, A. In review. Revealing the source and potential spread of introduced *Zosterops* white-eyes in North America using genomics and ecological niche modeling. *Molecular Ecology*.

5 **Cobos, M. E.**, Owens, H. L., Soberón, J., & Peterson, A. T. In review. Detailed characterizations of non-analogous conditions in multivariate environmental comparisons via the Mobility Oriented Parity metric. *Frontiers of Biogeography*.

4 Machado-Stredel, F., Atauchi, P. J., Nuñez-Penichet, C., **Cobos, M. E.**, Osorio-Olvera, L., Khalighifar, A., Peterson, A. T., Fletcher, R. J. In review. The roles of abiotic and biotic factors in driving range shifts: An invasive Pomacea snail facilitates northward expansion of snail kites in Florida. *Auk.*

3 Peterson, A. T., **Cobos, M. E.**, Sikes, B., Soberón, J., Osorio-Olvera, L., …, & Emmett, A. In review. Relationships among cost, citation, and access in journal publishing by an Ecology and Evolutionary Biology Department at a U.S. University. *PeerJ*

2 Alkishe, A., **Cobos, M. E.**, & Peterson, A. T. In review. Broad-scale ecological niches of pathogens vectored by the ticks *Ixodes scapularis* and *Amblyomma americanum* in North America. *PeerJ*

1 **Cobos, M. E.**, Osorio-Olvera, L., & Peterson, A. T. 2019. Assessment and representation of variability in ecological niche model predictions. *BioRxiv*. https://doi.org/10.1101/603100

Conference Presentations

18 **Cobos, M. E.,** J. L. Dunnum, B. Armién, P. Gonzalez, E. Juarez, J. Salazar, J. A. Cook, and J. P. Colella. Environmental and geographic considerations for comprehensive sampling: An example with Panamanian rodents and their pathogens. *International Mammalogical Congress and American Society of Mammalogists Annual Meeting*; Anchorage, USA. July 2023.

17 **Cobos, M. E.**, C. Nuñez-Penichet, J. Soberón, T. Gueta, N. Barve, V. Barve, A. G. Navarro- Sigüenza, and A. T. Peterson. Selection of sampling sites for biodiversity inventory: Effects of environmental and geographical considerations. *International Biogeography Society - 10th Biennial Conference*. Vancouver, Canada. June 2022.

16 **Cobos, M. E.** Conservación de especies y cambio del clima. *Seminario Internacional Biodiversidad y Cambio Global*. Loja, Ecuador. June 2022

15 **Cobos, M. E.** Diseño de sistemas de monitoreo de la biodiversidad: consideraciones para lograr muestreos más efectivos. *II Seminario de Calidad Ambiental y Biodiversidad*. Loja, Ecuador. February 2022.

14 **Cobos, M. E.** Ecological niche models and climate change: considering variability in data and results. *Congreso Internacional de Variabilidad y Cambio Climático*. Bogotá, Colombia. March 2021.

13 **Cobos, M. E.** A. T. Peterson, C. Nuñez-Penichet, J. Soberón, L. Osorio-Olvera, S. Goodman, and A. P. Raselimanana. Models and simulations to understand biological invasions: the case of *Duttaphrynus melanostictus* invasion in Madagascar. *IBS 2019 Humboldt Meeting and 2nd Latin American Biogeography Meeting*. Quito, Ecuador. August, 2019.

12 Nuñez-Penichet, J. Soberón, and **M. E. Cobos**. Why continental Urania's species have a disjunct distribution? *IBS 2019 Humboldt Meeting and 2nd Latin American Biogeography Meeting*. Quito, Ecuador. August, 2019.

11 Simões, M. V. P., H. Saeedi, **M. E. Cobos**, & A. Brandt. Bottom-up: Exploring climate change effects on habitat suitability for the deep sea fauna of Isopods (Crustacea: Isopoda). *International Biogeography Society Conference*. Malaga, Spain. January 2019.

10 **Cobos, M. E.** and R. Alonso Bosch. Multiscale analyses reveal the importance of breeding sites for conservation of a critically endangered Cuban toad in the face of global change. *Joint Meeting of Ichthyologists and Herpetologists*. Rochester, New York, USA. July 2018.

9 Nuñez-Penichet, C., **M. E. Cobos**, A. Barro, and J. Soberón. Potential migratory routes of *Urania boisduvalii* (Lepidoptera: Uraniidae) among the populations of its host (*Omphalea* spp.). *VI Meeting of Neotropical Lepidoptera*. Concepción, Chile. January 2018.

8 Cobos, M. E., R. Alonso-Bosch. Vulnerabilidad de los bufónidos cubanos al cambio climático: Una evaluación basada en características ecológicas y geográficas de su nicho. Quito, Ecuador. July 2017.

7 Mendoza, C., K. Valarezo-Aguilar, and **M. E. Cobos**. Distribución potencial del Perico Pechi- blanco (*Pyrrhura albipectus*): factores climáticos que determinan su presencia. *V Encuentro Ornitológico Ecuatoriano*. Zamora. Ecuador. August 2016.

6 **Cobos, M. E.**, C. Nuñez-Penichet, C. Mendoza, and K. Valarezo-Aguilar. Impacto del cambio climático en la distribución potencial del Perico Pechiblanco (*Pyrrhura albipectus*). *V Encuentro Ornitológico Ecuatoriano*. Zamora. Ecuador. August 2016.

5 **Cobos, M. E.** and C. Nuñez-Penichet. Pérdidas forestales y cambio climático: búsqueda de posibles sinergias para identificar áreas prioritarias de restauración. *I Congreso Ecuatoriano de Restauración del Paisaje*. Loja, Ecuador. April 2016.

4 **Cobos, M. E.** Avances en métodos para el estudio de la distribución de especies. *Reunión para la Conservación de la Biodiversidad en Cuba-2015*. Havana, Cuba. November 2015

3 Nuñez Penichet, C., **M. E. Cobos**, and A. Barro. Rutas migratorias potenciales de *Urania boisduvalii* (Lepidoptera: Uranidae) en Cuba: conectividad y conservación. *Reunión para la Conservación de la Biodiversidad en Cuba-2015*. Havana, Cuba. November 2015

2 **Cobos, M. E.** and R. Alonso. Efectos aditivos del cambio climático y la pérdida de hábitat en el rango de distribución de un sapo cubano amenazado. *X Convenio Internacional sobre Medio Ambiente y Desarrollo: V Congreso sobre Gestión de Ecosistemas y Medio Ambiente de Biodiversidad*. Havana, Cuba. July 2015

1 **Cobos, M. E.** and R. Alonso. Un hábitat vulnerable para un sapo cubano amenazado. *Reunión para la Conservación de la Biodiversidad en Cuba-2014*. Havana, Cuba. November 2014

Teaching Experience

Graduate Teaching Assistant

Course: **Multivariate Data Analysis**. Department of Ecology and Evolutionary *Biology, University of Kansas. Lawrence, Kansas, USA. Fall 2023.*

Lab: **Human Anatomy, Dissection**. Department of Ecology and Evolutionary Biology, *University of Kansas*. Lawrence, Kansas, USA. 2019-2020.

Lab: **Human Anatomy, Observation**. Department of Ecology and Evolutionary Biology, *University of Kansas*. Lawrence, Kansas, USA. Fall 2018.

Lab: **Introductory Biology**. Department of Ecology and Evolutionary Biology, *University of Kansas*. Lawrence, Kansas, USA. Spring 2018.

Lab: **Chordate Zoology Lab**. Department of Animal and Human Biology, *Universidad de La Habana*. Havana, Cuba. Fall 2015.

Lecturer

Course: **Experimental Design**. *Universidad Nacional de Loja*. Spring 2017.

Course: **Inorganic Chemistry**. *Universidad Nacional de Loja*. Spring 2017.

Instructor

Workshop (Co-organizer): **Developing and Applying Educational Modules that link Museums, Biodiversity Literacy, and Emerging Diseases**. *International Mammalogical Congress and American Society of Mammalogists Annual Meeting.* Anchorage, Alaska, USA. July 2023.

Workshop (Organizer): **GitHub Essentials for Collaborative Research and Development**. *Biodiversity Institute, University of Kansas.* Lawrence, Kansas, USA. April 2023.

Course: **Ecological Niche Modeling Applied to Fossil Data (short course)**, *Geological Society of America (annual meeting)*. Denver, Colorado, USA. October 2022.

Course: **Ecological Niche Modeling for Zoonotic Diseases**. *American Society of Microbiology, and University of Kansas Biodiversity Institute*. Online course. July 2020.

Course: **Ecological Niche Modeling**. Biodiversity Institute, *University of Kansas*. Online. 2020.

Course: **Modelos de Nicho y de Distribución de Especies**. *Instituto Nacional de Ecología*. Jalapa, Veracruz, Mexico. June 2021.

Course: **Curso Avanzado de Modelado de Nichos Ecológicos**. *Instituto Nacional de Ecología*. Jalapa, Veracruz, Mexico. June 2019.

Course: **Modelado de Nicho Ecológico**. Biodiversity Institute, *University of Kansas*. Online. 2018.

Course: **Conectividad de Hábitat**. *Institute of Ecology and Systematics*. Havana, Cuba. Fall 2015.

Mentorship

[URM]under-represented minority, [INT]international, [ONL]online mentorship, *co-authored manuscript(s)

Weverton Trindade[INT]	PhD student at Universidade Federal do Paraná, Brazil. (2023-present) *Routines for ecological niche modeling (ENM) using machine learning.*
Luis F. Arias-Giraldo*[INT]	PhD student at the Spanish National Research Council. (2023-present) *Innovative methods to model and map risks from pathogens.*
Abby Perkins	University of Kansas (KU) Master's student. (2023-present) *Statistical approaches to deal with autocorrelation in ENM*.
Daniel Ibañez IV[URM]	KU Master's student. (2023-present) *Time-specific ENM for a hantavirus host in Panama.*
Alexander Hey	KU Master's student. (2023-present) *Time-specific ENM for a hantavirus host in Panama.*
Janey Bryce*[URM]	KU Post-bachelor. (2022-present) *Assessment of mammal community change in Kansas.*
Ismari Martinez*[URM]	KU College student. (2023-present) *Time-specific ENM of tick activity in the great plains.*
Taylor Winters*	KU College student. (2022-present) *Time-specific ENM for tick pathogens in the great plains.*
Shubert Aguayo*[INT, ONL]	College student at Pontificia Universidad Católica del Ecuador. (2023-present) *ENM for a Chagas disease vector in Ecuador and Peru.*
Francisco Villacis*[INT, ONL]	College student at Pontificia Universidad Católica del Ecuador. (2023-present) *ENM for a Chagas disease vector in Ecuador and Peru.*
Anushka Gupta[INT, ONL]	Student in the Google Summer of Code Program. (2022) *Second phase of rsqliteadmin: A GUI to Manage SQLite Databases.*
Pablo Castillo[INT, ONL]	College student at Universidad Nacional de Loja, Ecuador. (2021-2022) *ENM and conservation areas prioritization of an endangered bird in Ecuador.*
Divyansh Chawla[INT, ONL]	Student in the Google Summer of Code Program. (2021) *rsqliteadmin: A GUI to Manage SQLite Databases*
Yaneliz Marrero[INT]	College student at Universidad de La Habana, Cuba. (2014) *Climate change risks for the distribution of an endemic bird in Cuba.*

Fellowships, Grants, and Awards

PENDING

2024-2025	NIH COBRE CMADP: *Ecological disease pathways of Orthohantavirus in Peromyscus mice and sympatric rodent reservoirs*. **$110,000** (coPI)

FUNDED

2022	Biodiversity Institute, University of Kansas. *Panorama Grant*. **$1,000**
2021	Biodiversity Institute, University of Kansas. *Division of Ornithology Grant*. **$1,000**
2021	Biodiversity Institute, University of Kansas. *Panorama Grant*. **$1,000**
2019	EEB Department. University of Kansas. *Summer research scholarship*. **$2,000**
2018	University of Kansas. *Graduate scholarly presentation travel fund*. **$500**.
2018	EEB Department. University of Kansas. *Summer research scholarship*. **$3,000**
2017	University of Kansas. *Fellowship for graduate studies (Fall semester).* **$9,370**
2014-2016	Ecuadorian National Secretary of Superior Education Science and Technology (SENESCYT). *Scholarship for international graduate studies (M.Sc.).* **$33,297**

Outreach Experience

Microbes on the move
Kansas, USA.
July, 2022
Activities: Review of Spanish translations of existing outreach materials; Spanish translations of social media posts; Facilitate activities with visitors during events including speaking and engaging with public audiences in Spanish and English.
Scope: Three cities in the state of Kansas.
Institution: Biodiversity Institute, University of Kansas.

Battery disposal awareness campaign
Zamora Chinchipe, Ecuador.
2012-2013
Activities: Design of content and teaching materials for primary schools; Presentation of contents and educational activities in primary schools with the involvement of teachers and students.
Scope: Ten rural schools.
Institution: El Guismi Decentralized Autonomous Government.

Plastic bottle recycling campaign
Zamora Chinchipe, Ecuador.
2012-2013
Activities: Design of content and teaching materials for primary schools; Presentation of contents and educational activities in primary schools with the involvement of authorities, teachers, and students. Design of mechanisms to collect, store, and recycle collected materials.
Scope: Ten rural schools.
Institution: El Guismi Decentralized Autonomous Government.

Professional Membership

Society for the Study of Evolution 2022-present
International Biogeography Society 2018-present
Society for the Study of Amphibians and Reptiles 2018

Service

Committees

Diversity, Equity, Inclusion, and Belonging. *Biodiversity Institute*. University of Kansas.
2021-present.

Reviewer for Scientific Journals

Journals listed in alphabetical order:
Aquatic Conservation: Marine and Freshwater Ecosystems (3), Biological Conservation (2), Copeia (1), Ecological Modelling (1), Ecology and Evolution (1), Global Ecology and Biogeography (1), Hydrobiologia (2), Journal of Animal Ecology (1), Journal of Biogeography (3), Journal of Forestry Research (4), Journal of Medical Entomology (1), Mammalian Biology (2), Methods in Ecology and Evolution (1), Nordic Journal of Botany (1), Ornithological Applications (1), Oryx (1), PeerJ (2), Perspectives in Ecology and Conservation (2), PLoS ONE (7), Progress in Oceanography (2), Tropical Medicine & International Health (1), Waterbird (1)

Fieldwork

2023	Kansas, USA	Small mammal survey at KU Field Station, **Field co-lead**
2021-2022	Kansas, USA	Small mammal and tick survey in Public Lands, **Field co-lead**
2021	Kansas, USA	Greater Duckweed sampling across the State, **Field lead**
2020–2022	Kansas, USA	Tick and tick-pathogen survey in Public Lands, **Field lead**
2015	Cuba	Survey of new localities for an endangered toad, **Field assistant**
2012	Ecuador	Surveys of animal species for strategic planning, **Field lead**
2011	Ecuador	Invasive Bullfrog surveys in the Amazon region, **Field assistant**
2011	Ecuador	Surveys of animal species in the Amazon region, **Field assistant**

Open Source Software

enmpa *Ecological Niche Modeling using Presence-Absence Data*. **Contributor**.
R package https://github.com/Luisagi/enmpa
mop *Mobility Oriented-Parity Metric*. **Creator**.
R package https://CRAN.R-project.org/package=mop
biosurvey *Tools for Biological Survey Planning*. **Contributor**.
R package https://github.com/claununez/biosurvey
nichevol *Tools for Ecological Niche Evolution Assessment Considering Uncertainty*. **Creator**.
R package https://CrAN.r-project.org/package=nichevol
grinnell *Dispersal simulations based on ecological niches.* **Contributor**.
R package https://github.com/fmachados/grinnell
ellipsenm *Ecological niche's characterization using ellipsoids*. **Creator**.
R package https://github.com/marlonecobos/ellipsenm
kuenm *An R Package for Detailed Development of Ecological Niche Models Using Maxent*.
R package **Creator**. https://github.com/marlonecobos/kuenm
rangemap *Simple Tools for Defining Species ranges*. **Creator**.
R package https://github.com/marlonecobos/rangemap

Professional References

A. Townsend Peterson, PhD
PhD Advisor

Reference for:
Research, Mentoring, and DEIB

University Distinguished Professor & Curator of Ornithology
Biodiversity Institute
Department of Ecology and Evolutionary Biology
University of Kansas
1345 Jayhawk Blvd, Lawrence, KS 66045, USA
Phone: +1 (785) 312-4909 Email: town@ku.edu

Jorge Soberón, PhD

Reference for:
Teaching and DEIB

University Distinguished Professor
Director of Biodiversity Institute
Department of Ecology and Evolutionary Biology
University of Kansas
1345 Jayhawk Blvd, Lawrence, KS 66045, USA
Phone: +1 (785) 764-2438 Email: jsoberon@ku.edu

Ram Raghavan, PhD

Reference for:
Research

Associate Professor
Department of Veterinary Pathobiology
University of Missouri
209 C Conaway Hall; 1500 Bouchelle Ave, Columbia, MO 65201, USA
Phone: +1 (573) 482-3959 Email: raghavanrk@missouri.edu

Jocelyn P. Colella, PhD
Postdoctoral Advisor

Reference for:
Research, Mentoring, and DEIB

Assistant Professor & Curator of Mammals
Biodiversity Institute
Department of Ecology and Evolutionary Biology
University of Kansas
1345 Jayhawk Blvd, Lawrence, KS 66045, USA
Phone: +1 (512) 567-9843 Email: colella@ku.edu

William E. Banks, PhD

Reference for:
Research

Director of research, Centre National de la Recherche Scientifique
Director of PACEA
Université de Bordeaux
Bâtiment B2, Allée Geoffroy Saint Hilaire, CS 50023, 33600, France
Phone: 011 33 5 40 00 28 40 Email: william.banks@cnrs.fr