
M.Sc. José Rolando Montiel Mora

PhD Student

Department of Ecology
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Research lines: Ecology, Pollution, Environmental Risk Analysis, Environmental Management, Coastal Management, Ecotoxicology, Emerging Contaminants, Continental and Coastal Waters, Water Quality.

Google scholar: <https://scholar.google.com/citations?user=Fltmg4QAAAAJ&hl=es>

ResearchGate: <https://www.researchgate.net/profile/Jose-R-Montiel-Mora/research>

EDUCATION

Current: PhD. Student CZU, Department of Ecology, “Small Mammals as Key Indicators of Environmental Health in Terrestrial Ecosystems”. GACR, project entitled « POLLCHAIN ». (PI: Dr. Markéta Zárbynická).

Thesis

2023: M.Sc. Integrated Management of Tropical Coastal Areas (UCR) **Graduated with Honors.**

Thesis: “Environmental Quality and Management of Three Sandy Recreational Beaches in the North Pacific of Costa Rica”.

2020: Bachelor’s degree in Environmental Health (UCR)

Thesis: “Determination of the Ecotoxicity of Emerging Pharmaceutical Contaminants and Selected Polluted Effluents in Costa Rica through the Application of Bioassays”.

2017: Degree in Environmental Sciences, University of Jaén, Spain (Student Exchange)

EXPERIENCE

Lecturer, Master’s Program in Environmental Management, University of Monterrey, Costa Rica **(2025 – 2026)**

Researcher, Chorotega Regional Campus, National University of Costa Rica **(2025 – 2025)**

Researcher, Institute for Health Research (INISA), University of Costa Rica **(2022 – 2025)**

Lecturer, School of Public Health, Faculty of Medicine, University of Costa Rica **(2023 – 2025)**

Researcher, Center for Research in Environmental Pollution (CICA), University of Costa Rica **(2021-2023)**

Lecturer, Environmental Biotechnology, Faculty of Microbiology, University of Costa Rica **(2023)**

Lecturer, Environmental Health Program, School of Health Technologies, Guanacaste Campus, University of Costa Rica **(2021 – 2022)**

Lecturer, Environmental Health Program, School of Health Technologies, Faculty of Medicine, University of Costa Rica **(2021)**

PUBLICATIONS

19. **Montiel-Mora, J.R.**, Segura-Arroyo, P., Barrantes-Jiménez, K., Mendoza-Guido, B., Chacón-Jiménez, L. (2026). Antimicrobial Resistance in Coastal Waters of Latin America: Current Knowledge and Challenges. *Discovery Health*. [10.1186/s12982-026-01617-7](https://doi.org/10.1186/s12982-026-01617-7)
18. Morales-Mora, E., Rivera-Montero, L., Ramos-Montalvo, N., **Montiel-Mora, J.R.**, Mendoza-Guido, B., Alfaro-Arrieta, E., Rivera-Navarro, P., Barrantes-Jiménez, K., Chacón-Jiménez, L. (2026). Applying weighted quantile sum regression to wastewater surveillance: enteric viral mixtures and diarrheal disease trends in Costa Rica. *Water & Health*. <https://doi.org/10.2166/wh.2026.197>
17. **Montiel-Mora, J.R.**, Rivera-Montero, L., Badilla-Aguilar, A., Barrantes-Jiménez, K., Rivera-Navarro, P., Chacón-Jiménez, L. (2026). Antimicrobial resistance and phylogenetic diversity of *Escherichia coli* isolates from coastal recreational waters in Costa Rica. *Environmental Monitoring Assessment*. <https://doi.org/10.1007/s10661-026-15002-z>
16. **Montiel-Mora, J.R.**, Pérez-Rojas, G., Brenes-Alfaro, L., Rodríguez-Rodríguez, C. E. (2025). Multiple exposure pathways to pesticide residues in tropical agroecosystems: A human health risk assessment in Costa Rica. *Environmental Monitoring Assessment*. <https://doi.org/10.1007/s10661-025-14869-8>
15. **Montiel-Mora, J.R.**, Gómez-Ramírez, E., Irías-Mata, A., Chacón-Jiménez, L., Barrantes-Jiménez, K., & Fuentes-Schweizer, P. (2025). Application of three water quality indices in a tropical river of Costa Rica: the case of the Durazno River. *UNED Research Journal*. 17(1), <https://doi.org/10.22458/urj.v17i1.5921>
14. Mendoza-Guido, B., **Montiel-Mora, J.R.**, Ureña-Salazar, C., Barrantes-Jiménez, K., Chacón-Jiménez, L. (2025). Molecular epidemiology of aquatic environments: challenges from sampling to implementation of surveillance programs. *Antibiotics*. 13, <https://doi.org/10.3389/fpubh.2025.1652535>
13. Barrantes-Jiménez, K., Mendoza-Guido, B., Morales-Mora, E., Rivera-Montero, L., **Montiel-Mora, J.R.**, Chacón-Jiménez, L., Rojas-Jiménez, K., & Arias-Andrés, M. (2025). Influence of Seasonality and Pollution on the Presence of Antibiotic Resistance Genes and Potentially Pathogenic Bacteria in a Tropical Urban River. *Antibiotics*. 14(8), 798. <https://doi.org/10.3390/antibiotics14080798>
12. **Montiel-Mora, J.R.**, Lizano-Fallas, V., Méndez-Rivera, M., Marín-González, A., Cambronero-Heinrichs, J. C., & Rodríguez-Rodríguez, C. E. (2025). Individual and mixture effect of selected high-hazard pharmaceuticals on aquatic primary producers. *Ecotoxicology*. <https://doi.org/10.1007/s10646-025-02885-w>
11. **Montiel-Mora, J.R.**, Gómez-Ramírez, E., Sibaja-Cordero, J. (2025) An analysis of human impact on sandy coasts of the Costa Rican Pacific. *Marine Pollution Bulletin*, 213. <https://doi.org/10.1016/j.marpolbul.2025.117656>
10. Morales-Mora, E., Rivera-Montero, L., **Montiel-Mora, J.R.**, Barrantes-Jiménez, K., Chacón-Jiménez, L. (2024). Assessing Microbial Risk of *Escherichia coli*: A spatial and temporal study of virulence and resistance genes in surface water in resource-limited regions. *Science of The Total Environment*, 958. <https://doi.org/10.1016/j.scitotenv.2024.178044>
9. **Montiel-Mora, J.R.**, Méndez-Rivera, M., Ramírez-Morales, D., Cambronero-Heinrichs, J. C., & Rodríguez-Rodríguez, C. E. (2024). Toxicity of selected pharmaceuticals and their mixtures to the aquatic indicators *Daphnia magna* and *Aliivibrio fischeri*. *Ecotoxicology*. <https://doi.org/10.1007/s10646-024-02798-0>

8. Ramírez-Morales, D., Masis-Mora, M., **Montiel-Mora, J. R.**, Méndez-Rivera, M., Guitérrez-Quiros, J. A., Brenes-Alfaro, L., & Rodríguez-Rodríguez, C. E. (2024). Pharmaceuticals, hazard and ecotoxicity in surface and wastewater in a tropical dairy production area in Latin America. *Chemosphere*, 346. <https://doi.org/10.1016/j.chemosphere.2023.140443>
 7. Méndez-Rivera, M., **Montiel-Mora, J. R.**, Ramírez-Morales, D., Masis-Mora, M., Rodríguez-Rodríguez, C.E. (2023). On-farm Occurrence of Pharmaceuticals and Their Environmental Hazard: Case Study of a Tropical Dairy farm. *Bulletin of Environmental Contamination and Toxicology*, 111(51), <https://doi.org/10.1007/s00128-023-03809-2>
 6. **Montiel-Mora, J. R.**, Gómez-Ramírez, E (2023). Physicochemical and Microbiological Quality of Coastal Water in Nicoya, Costa Rica: Comparison of Three Beaches with Different Tourist Impact and Management. *UNED Research Journal*, 15(2), <https://doi.org/10.22458/urj.v15i2.4763>
 5. Rodríguez-Rodríguez, C. E., Ramírez-Morales, D., Masis-Mora, M., **Montiel-Mora, J. R.**, Soto-Garita, C., Araya-Valverde, E., Cambronero-Heinrichs, J. C., Sánchez-Melsió, A., Briceño-Guevara, S., Balcázar, J. L (2023). Occurrence and risk assessment of pharmaceuticals in hospital wastewater in Costa Rica. *Chemosphere*, 339. <https://doi.org/10.1016/j.chemosphere.2023.139746>
 4. Méndez-Rivera, M., Ramírez-Morales, D., **Montiel-Mora, J. R.**, Rodríguez-Rodríguez, C.E. (2023). Ecotoxicity of pesticide formulations and their mixtures: the case of potato crops in Costa Rica. *Ecotoxicology*, 32(3), 383–393. <https://doi.org/10.1007/s10646-023-02648-5>
 3. Ramírez-Morales, D., Masis-Mora, M., **Montiel-Mora, J. R.**, Cambronero-Heinrichs, J. C., Pérez-Rojas, G., Tormo-Budowski, R., Méndez-Rivera, M., Briceño-Guevara, S., Gutiérrez-Quirós, J. A., Arias-Mora, V., Brenes-Alfaro, L., Beita-Sandí, W., & Rodríguez-Rodríguez, C. E. (2021). Multi-residue analysis of pharmaceuticals in water samples by liquid chromatography- mass spectrometry: Quality assessment and application to the risk assessment of urban-influenced surface waters in a metropolitan area of Central America. *Process Safety and Environmental Protection*, 153, 289–300. <https://doi.org/10.1016/j.psep.2021.07.025>
 2. Ramírez-Morales, D., Masis-Mora, M., Beita-Sandí, W., **Montiel-Mora, J. R.**, Fernández-Fernández, E., Méndez-Rivera, M., Arias-Mora, V., Leiva-Salas, A., Brenes-Alfaro, L., & Rodríguez-Rodríguez, C. E. (2021). Pharmaceuticals in farms and surrounding surface water bodies: Hazard and ecotoxicity in a swine production area in Costa Rica. *Chemosphere*, 272. <https://doi.org/10.1016/j.chemosphere.2021.129574>
 1. Ramírez-Morales, D., Masis-Mora, M., **Montiel-Mora, J. R.**, Cambronero-Heinrichs, J. C., Briceño-Guevara, S., Rojas-Sánchez, C. E., Méndez-Rivera, M., Arias-Mora, V., Tormo-Budowski, R., Brenes-Alfaro, L., & Rodríguez-Rodríguez, C. E. (2020). Occurrence of pharmaceuticals, hazard assessment and ecotoxicological evaluation of wastewater treatment plants in Costa Rica. *Science of the Total Environment*, 746. <https://doi.org/10.1016/j.scitotenv.2020.141200>
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RESEARCH AND SOCIAL ACTION PROJECTS

Principal investigator (PI)

- State of the art on human capital and climate risk in the Chorotega Region, Guanacaste. **Chorotega Regional Observatory, National University.**
- Evaluation of Coastal and Continental Water Quality by Measuring Fecal Indicator Bacteria, Presence of Antibiotics, and Quantification of *Escherichia coli* Resistance Genes by Seasonality in Playa Jacó, **INISA.**

Collaborator investigator

1. Potable Water for Indigenous Communities in the Southern Zone: From their Worldview to Safe Use, **INISA**.
2. WISE-P: Water Impact and Safety Evaluation of Pineapple Pollutants. Environmental and Toxicological Risk Analysis of Organic Contaminants and Design of a Biodegradation System for Pesticides in Pineapple Zones of Costa Rica, **CICA**.
3. Environmental Quality of an Urban Beach in Costa Rica, the Case of Playa Jacó, **School of Chemistry**.
4. Development of a Geospatial Model to Understand the Dissemination of Resistance Genes in Water Bodies, **INISA**.
5. Strengthening Epidemiological Surveillance through the Study of Emerging and Endemic Pathogens Present in Wastewaters of San José, Costa Rica. Collaborative Project for the Development of Technical and Scientific Capacities with the Institute of Virology “Dr. J.M. Vanella”-Faculty of Medical Sciences, National University of Córdoba, Argentina, **INISA**.
6. Monitoring of SARS-COV-2, rotavirus, norovirus, HAV, enterovirus, influenza a, and monkeypox virus in wastewaters to develop a viral pathogens surveillance strategy in Costa Rica, **INISA. Collaborator investigator**.
7. Quantitative risk analysis of diarrheagenic Escherichia coli under an environmental assessment approach in the Virilla River sub-basin, **INISA**.
8. Temporal and spatial analysis of antibiotic resistance and surface water quality in the Durazno River micro-basin, **INISA**.
9. Optimization of a biodegradation system for neonicotinoid insecticides in agricultural wastewater in Costa Rica: use of a microbial degrader consortium for pollinator protection, **CICA**.
10. Ecotoxicology of pharmaceuticals: environmental risk analysis and toxicity of mixtures in wastewater and surface waters of Costa Rica, **CICA**.
11. Bioremediation of organic pollutants in agricultural wastewater: design of eco-friendly strategies for the elimination of emerging contaminants and application of biopurification systems for pesticides, **CICA**.

EXTRACURRICULAR EDUCATION

Conference Attendance and presentations

- XX Latin American Congress of Marine Sciences (COLACMAR), Brazil (2024): Panel: "Environmental Quality of three sandy recreational beaches in the North Pacific of Costa Rica"
- II Meeting of Young Researchers in Environmental Health of Latin America and the Caribbean (2023): Virtual presentation: "Physicochemical and microbiological analysis of three beaches in the North Pacific of Costa Rica"
- XIII International Congress on Training, Knowledge, and Multidisciplinary CIFCOM, Colombia (2023): Presentation: "Environmental Quality of three sandy recreational beaches in the North Pacific of Costa Rica"
- VIII Congress of the Mesoamerican Association of Ecotoxicology and Environmental Chemistry, Mexico (2018).

Non-Degree Courses taken

- Quantitative Microbial Risk Assessment Interdisciplinary Vehicle (QMRA IV) Train the Trainer Program, Michigan State University. (2024)
- Geospatial Analysis with R, International Training in Environmental Health over the Lifespan Project (2023).
- Good Practices in Biomedical Research (Observational and Interventional Research), University of Costa Rica (2022).
- Statistical Analysis with R, National Center for High Technology (2022).
- Data Visualization with R, National Center for High Technology (2022).

- Implications and Interpretation - Environmental Management Systems according to the INTE/ISO 14001:2015 standard (2022).
- FD0340 University Didactics, University of Costa Rica (2021).
- Pesticides: Effect on the Environment and Human Health, AMEQA, Toluca, State of Mexico (2018).

TEACHING AND MENTORING

- Grade thesis reader: Herrera-Calderon, M.A., & Murillo-Pereira, M.P. Human health risk assessment of two water supply systems from the Nimboyores aquifer, Santa Cruz, Guanacaste for the period 2023-2024. University of Costa Rica, San José, Costa Rica.
 - Grade thesis tutor: González-Cordero, C., & Peralta-Pérez, J. Update of the Municipal Solid Waste Integrated Management Plan (PMGIRS) for the Esparza Canton, Puntarenas, for the period 2025 - 2030. University of Costa Rica, San José, Costa Rica.
 - Grade thesis tutor: Quesada, García, N., Segura-Arroyo, P., & Soto-Alfaro. Assessment of environmental and sanitary quality of Playa Jacó, Costa Rica: A seasonal analysis of bacterial contamination, presence of antibiotics and resistance genes in *Escherichia coli*, as well as sediment contamination by waste and microplastics during the period 2024-2025. University of Costa Rica, San José, Costa Rica.
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