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Editorial

Honoring Dr. Livia León-Paniagua: a life dedicated to Mexican Mammalogy

On September 25th, 2024, Dr. Livia León-Paniagua received the "José Ticul Álvarez Solorzano Award" (Figure 1), presented by the Asociación Mexicana de Mastozoología A. C. (AMMAC) to recognize outstanding academic achievement and exceptional contributions to the study of mammals in Mexico. Nearly two years later, with deep gratitude and admiration, we dedicate this special issue to Livia in recognition of her distinguished career, her unwavering commitment to Mexican and Mesoamerican mammalogy, and her lasting influence as a scientist, mentor, colleague, friend, and human being.

Since childhood in the early 1960's, Livia has been deeply fascinated by nature. Inspired by documentaries and influential teachers, she decided to study Biology at the Universidad Nacional Autónoma de México. It is important to emphasize that she began building her academic career during the 1980's, a period when opportunities for women in science were far from as equitable as they are today. As an undergraduate student, she joined the Museo de Zoología–Facultad de Ciencias (MZFC), initially through her university social service program and later in a part–time position (Figure 2A). Her dedication and talent were quickly recognized by the museum staff, who gradually increased her responsibilities, later supported her appointment as a research technician, and eventually helped her to attain a full professor position years later.

Step by step, Livia built her career through perseverance, discipline, and sustained academic excellence, while simultaneously balancing the demands of being a mother, wife, field biologist, teacher, and researcher. Remarkably, many of her influential scientific and mentoring contributions were achieved long before she formally attained the rank of full professor. Her trajectory, therefore, represents not only a story of scientific achievement but also one of resilience and determination in overcoming the structural gender inequalities that shaped academia throughout much of her career.

During her time at the MZFC, Livia forged a renowned career exploring mammalian diversity, particularly faunistics, systematics, and biogeography, with emphasis on rodents and bats. She contributed to mammal inventories across several Mexican states, and used those data to examine biogeographic patterns at multiple spatial scales (e.g., León-Paniagua and Morrone 2009; Rodríguez-Macedo *et al.* 2014). Her work also helped to clarify the taxonomy of numerous mammalian groups, producing pivotal work on the Rodentia and Chiroptera genera *Baiomys*, *Glossophaga*, *Habromys*, *Neotoma*, and *Peromyscus* (e.g., Ávila-Valle *et al.* 2012; Calahorra-Oliart *et al.* 2021), as well as lagomorphs and brocket deer (Cano-Sánchez *et al.* 2022; Escobedo-Morales *et al.* 2025). In addition, her research contributed to the description of *Habromys schmidlyi* Romo-Vázquez *et al.* 2005, *Cryptotis lacandonensis* Guevara *et al.* 2014, and *Vampyressa villai* Garbino *et al.* 2014.

Livia has also explored the genetic diversity and evolutionary history of rodents, including some species of the genera *Habromys*, *Osgoodomys*, *Peromyscus*, and *Reithrodontomys* (e.g., León-Paniagua *et al.* 2007; Castañeda-Rico *et al.* 2014), as well as from bat genera such as *Desmodus*, *Leptonycteris*, *Noctilio*, and *Sturnira* (e.g., Hernández-Canchola and León-Paniagua 2017; Ospina-Garcés and Léon-Paniagua 2022). Beyond taxonomy and evolution, her research has also contributed to ecology (e.g., Guevara *et al.* 2018; Marines-Macías *et al.* 2018), conservation (e.g., Peterson *et al.* 1993), and emerging topics including biomonitoring (Redón-Lugo *et al.* 2017), viral diseases and bacteria associated with bats and rodents (e.g., Colunga-Salas *et al.* 2021), and supporting the development of taxonomy of ecto– and endoparasites (e.g., Guzmán-Cornejo *et al.* 2012). Her academic legacy includes more than 120 scientific publications and over 50 outreach, communication, and teaching works. In recognition of her contributions to Mexican mammalogy, the species *Corynorhinus leonpaniaguae* López-Cuamatzi *et al.* 2024 was named in her honor.

A defining aspect of Livia's career has been her commitment to teaching and mentorship. Throughout her scientific career, she simultaneously trained students, conducted research, and built institutional projects. She has taught more than 120 undergraduate and

Figure 1. Dr. Livia León-Paniagua at the "José Ticul Álvarez Solorzano Award" ceremony during the XVI National Conference of Mammalogy in Pachuca, Hidalgo, Mexico. From left to right: Dr. Gerardo Sánchez-Rojas, Dr. Livia León-Paniagua, Dr. Cristina Mac Swiney-González, Dr. Jorge Ortega, and Dr. Celia Sélem-Salas. Photo credit: Dr. Giovani Hernández-Canchola.

graduate courses and supervised 43 university social service students, 34 undergraduates, 15 graduates, and 6 postdoctoral researchers. In addition, she has participated in the evaluation of more than 270 students through examinations, candidacy reviews, and thesis committees.

For many of us, her mentorship has been extended far beyond scientific training. Livia consistently encouraged critical thinking, intellectual curiosity, and innovation, but she also reminds us that scientific accomplishment should never come at the expense of kindness, integrity, or personal well-being. One of her most enduring lessons has been that, before being scientists, we should strive to be good people.

Today, Livia remains an active and deeply committed scientist, widely admired for her ability to communicate ideas with clarity and enthusiasm. She continues conducting fieldwork (Figure 3A), mentoring students from undergraduate to postdoctoral levels, leading research projects, participating in institutional committees, and fostering national and international collaborations. Across 43 years, she has earned the respect and affection of generations of students and colleagues through her professionalism, ethics, generosity, and warmth. Her influence endures in the scientists she has trained, the collaborative networks she has strengthened, and the academic community she has helped to build.

As curator of the MZFC mammal collection, Livia transformed a small reference collection of only a few hundred specimens (Figure 2A) into a resource of national and international importance, now housing approximately 20,000 specimens and 10,000 tissue samples (Figure 2B). Notably, she expanded the collection while serving as the sole staff mammalogist at the MZFC. This legacy underpins diverse research projects in several fields, serving past, present, and future generations of students and researchers in Mexico and beyond. In sum, Dr. Livia León-Paniagua has shaped modern Mexican mammalogy through her research, the cultivation of new generations

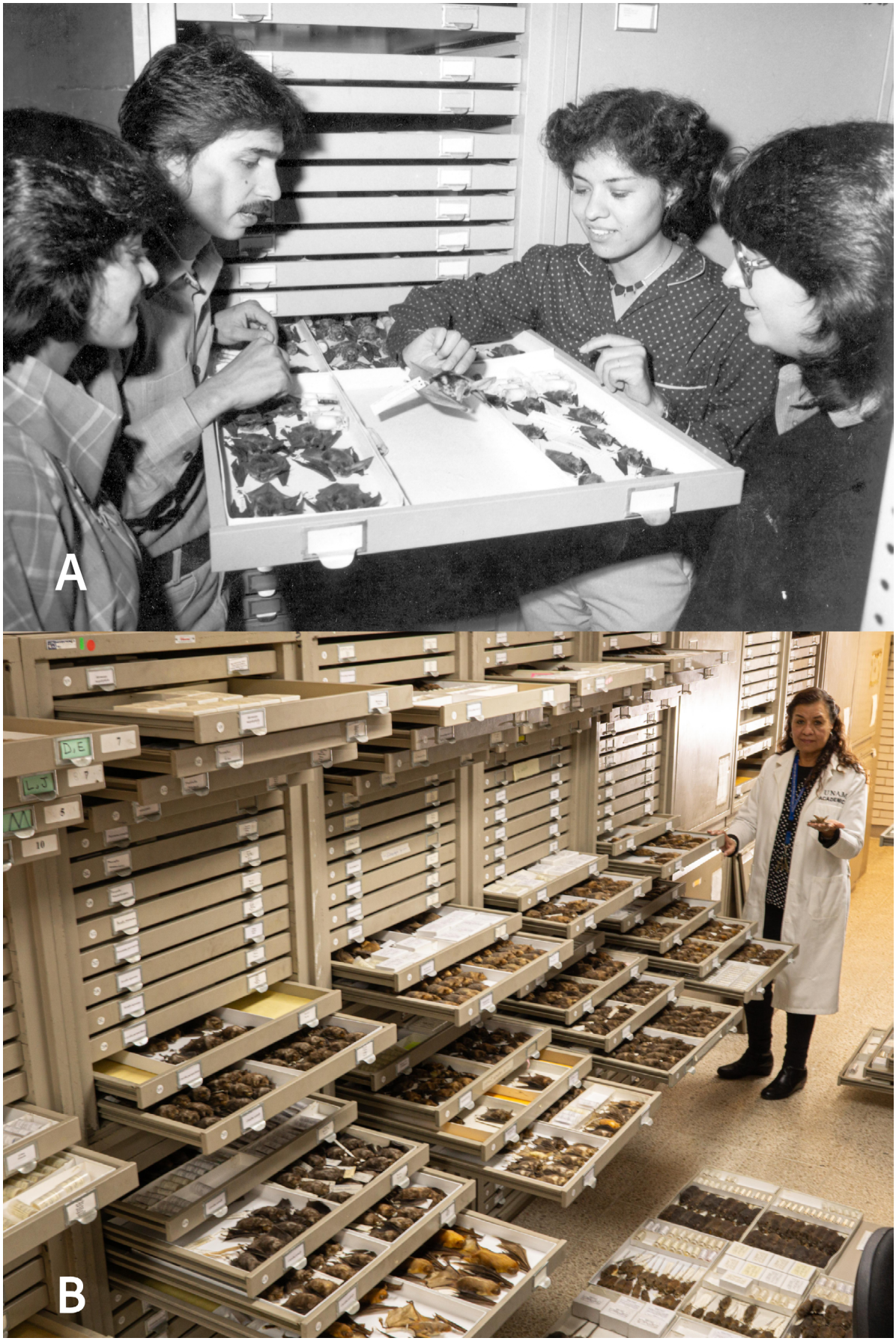

Figure 2. Livia León Paniagua, in the mammal collection at the MZFC, underscores the significant growth of the collection under her leadership. (A) Early in her career (1980's), Livia displays her favorite specimen, *Euderma maculatum* –one of the few collected specimens in Mexico– when the entire collection fit into just two cabinets (at back). From left to right: Teresa Jiménez, Julio Juárez, Livia León, and Esther Romo. (B) More recently, Dr. León-Paniagua stands in a current section of the MZFC, highlighting her key role as curator in transforming a modest set into one of the most important collections in Mexico. Photo credits: (A) MSc. Alejandro Martínez Mena and Dr. Jorge Llorente-Bousquets; (B) Luis Armando Navarro Zarco.

Figure 3. Livia León Paniagua exemplifies her deep commitment to mentoring students and her passion for field biology, demonstrating how she has combined scientific rigor with mentorship to nurture both academic and personal growth. (A) Livia sets a mist net during fieldwork in Perote, Veracruz, Mexico, illustrating her hands-on approach to teaching by example. (B) Livia prepares specimens during a mammal inventory in San Ildefonso Villa Alta, Oaxaca, Mexico. These moments not only provided scientific training but also fostered reflection, learning, and lasting bonds among Livia, students, and colleagues. Photo credits: (A) Dr. Rafael de Villa Magallón; (B) Rodrigo Pilar-Ruiz.

of mammalogists, and the advancement of biological collections. Livia was one of the 14 enthusiastic students – one of the six women– who founded AMMAC in 1984; as a mentor, educator, and collaborator, she set the groundwork for mammalogy in Mexico and has been an example and inspiration for women in science.

The contributions in this special issue reflect the breadth of scientific influence that Livia has explored throughout her career, with studies spanning North, Central, and South America. This issue brings together 56 authors from 31 institutions across seven countries from the Americas, including many of her former students and collaborators. Their contributions address contemporary questions in mammalogy, including the effectiveness of protected areas under climate change, the adaptive potential of threatened species, species delimitation, genomic and morphological variation, host–parasite interactions, and the role of mammals in understanding pathogen evolution. Other studies highlight the use of metadata and genomic resources for conservation and examine ecological and biogeographic patterns across spatial gradients. Together, these contributions demonstrate not only the diversity of topics inspired by Livia's work in the Neotropics and Nearctic regions but also the lasting influence of her scientific visions on contemporary mammalogy.

We would also like to express our heartfelt gratitude for the profound impact Livia has had on generations of students, collaborators, and colleagues. As two of her former students, and on behalf of her alumni, colleagues, and friends, we deeply value not only her extraordinary mentorship and unwavering support for the professional development of everyone who has passed through her laboratory, but also the generosity, trust, warmth, and humanity with which she has accompanied our personal and academic lives, as well as those of our "masto familia". Through her guidance, Livia has created far more than a research group; she has fostered a close and supportive community grounded in friendship, respect, collaboration, and genuine care for one another.

Beyond her role as mentor and colleague, many of us treasure the privilege of her friendship and the countless moments shared alongside her. Conversations with Livia are always thoughtful, engaging, and insightful, unfolding in an atmosphere of openness and mutual respect. During long days of work both indoors and outdoors, shared meals, and late–night conversations, she taught us lessons that extended far beyond science (Figure 3B). Through her example, she showed us the importance of curiosity, resilience, humility, empathy, kindness, and camaraderie, transforming demanding days of work into opportunities for personal growth and human connection. Despite her vast experience and accomplishments, she has always remained approachable, humble, and willing to learn from others, including younger students. Her sincere concern for the well-being and development of her students has left a profound and lasting mark on all of us fortunate enough to know and work alongside her and remains an essential part of the legacy she continues to build.

Finally, we hope that the contributions gathered in this special issue reflect, even if only partially, the admiration, gratitude, and affection felt by many people whose lives and careers have been shaped by Livia's science, mentorship, and humanity. Her influence endures not only in Mexican mammalogy but also among generations of students, colleagues, and friends who continue to learn from her example.

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