



## **La Puna argentina: naturaleza y cultura [The Argentinian Puna: Nature and Culture]. Edited by H. Ricardo Grau, M. Judith Babot, Andrea E. Izquierdo, and Alfredo Grau**

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Ricardo Grau, M. Judith  
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and Alfredo Grau**

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Conservación de la Naturaleza 24.  
Free download at <http://www.lillo.org.ar/revis/cnaturaleza/2018-scn-v24.pdf>, ISBN 978-950-668-032-9.

This comprehensive book in Spanish attempts to bring together everything that is known about the Argentinian Puna, which covers the provinces of Jujuy, Salta, Tucumán, and Catamarca. This extremely dry high-altitude environment harbors a unique biodiversity and has been home to human cultures that have developed complex management systems over the millennia. It was highly populated at the time of the Spanish conquest but has now become socioeconomically marginal. Both its natural and social systems are currently threatened by external pressures and dynamics related to land-use changes and new economic trends, including the lithium mining industry.

The impressive 500-page volume, edited by well-established researchers from the National Council for Scientific and Technical Research of Argentina (CONICET), consists of 23 chapters and approximately 30 boxes written by almost 100 authors. It is freely available online.

The book starts with an expressive prologue that somewhat contrasts with the scientific tone of the rest of the volume, and shows the editors' passion for this fascinating region. Next, the 4 parts of the book take the reader systematically through the physical (eg geology, paleoecology, climate, wetlands), biological (eg

flora, fauna, paleodiversity, and bacterial diversity), social (from a historical perspective), and land use (eg livestock, mining, tourism, conservation) characteristics of the Puna. The volume appropriately concludes with an integrative chapter, which places the Puna ecoregion in the national and global context. Rather than being a self-reflecting synthesis, this final chapter interestingly analyzes the interactions between the Puna and other social-ecological systems over time.

Each chapter is written by experts in the field and includes abstracts in Spanish and English; the body text is accompanied by clear and often colored figures and a list of references. Each chapter thus stands on its own and can be read as a separate paper. While some chapters present primary research, others offer a synthesis of existing studies on a topic.

Boxes by invited authors provide deeper insight into specific themes. They are more diverse in style and content than the chapters, ranging from short case studies to accounts that are more personal. They use colloquial language, with no or only few references to the literature, and bring a lively touch to the volume, in contrast with the more encyclopedic style of the chapters. The reader may, for example, learn about fossil bird prints, the llama caravans during the pre-Hispanic era, the potential of geothermic energy, or the medicinal uses of the Punaean flora. I especially appreciated the interview with Lucas Soriano, a local agronomist born in the late 1950s, and the portrait of Ángel Cabrera, one of the most important Argentinian botanists of last century. I wish that there could have been more such boxes that give a voice to the diverse people of the Puna.

This is a very important contribution, as it is the first attempt to compile the existing—previously dispersed and localized—knowledge on the Puna ecoregion. It does so from a multidisciplinary and

interdisciplinary perspective, thereby providing the reader with an understanding of the complex interactions between the biophysical environment and human dynamics in this unique mountain context. As Ricardo Grau, one of the coeditors, highlighted in an interview, one strength of the book is that it brings together all researchers and disciplines that have contributed to knowledge about the Puna landscapes (Martínez 2019).

Another highlight of the volume is that it depicts the current threats to the Puna's ecosystems and presents suggestions for their conservation and sustainable management. This is especially the case in some of the chapters on biodiversity (eg chapter 8 on birds and chapter 9 on mammals), and, most prominently, in the last section of the book on current uses of the region.

Last but not least, the editors and authors have combined scientific rigor (all chapters were peer reviewed) with accessible language that is free of unnecessary technical jargon. They achieved their objective of making it appealing for a broad Spanish-speaking audience, including both fellow researchers and educated laypersons.

With some exceptions, the sections and chapters are surprisingly coherent, given the high number of contributors and the different disciplinary perspectives they represent. While there are many cross-references between chapters, these were not inserted systematically (eg the paragraphs on protected areas and the conservation of birds in chapter 8 do not make reference to chapter 22 on protected areas).

The last part of chapter 5, on wetlands, focuses on ecosystem services and human uses, while all the other chapters of the first section of the book refer only to the physical environment. While I welcome this interdisciplinary and applied approach, one would have expected this information to be presented in the last section of the volume on the

present and future uses of the ecoregion or, alternatively, in a box.

The boxes are usually well placed, but some do not illustrate the chapter in which they are inserted (eg a box on arthropods is inserted in chapter 11 on aquatic macroinvertebrates, a box on fishes of the Puna in chapter 10 on reptiles and amphibians, and a box on plant uses in chapter 18 on livestock).

A further shortcoming of *La Puna argentina: naturaleza y cultura* is that, despite its title, it does not offer the same systematic overview of present-day sociocultural dimensions of the Puna as of its biodiversity and physical environment. The section on social systems over time includes only 1 chapter on current population dynamics and poverty; the other chapters of this section are dedicated to past societies. In the last section, the human aspects of current Punaean systems are analyzed through the lenses of land use rather than the main human activities: livestock, mining, tourism, and nature

conservation. It would have been very interesting, for example, to have papers on cultural or governance characteristics of the Puna. However, this omission probably reflects the lack of studies in these fields, since most of the social sciences research on the region has concentrated on archaeological and historical topics.

Nevertheless, *La Puna argentina: naturaleza y cultura* constitutes an excellent work. The editors and authors have succeeded in producing the reference book for anyone who is interested in discovering this captivating region or the Andean landscapes more broadly or anyone who is simply curious about mountain dryland systems and their complex social-ecological interactions over time.

Besides gaining a better understanding and scientific knowledge on the Puna, the reader will undoubtedly gain the contagious attachment to this region that these Argentinian researchers have developed over years of work.

Knowledge and caring are crucial elements that lead to collective action for the protection and more sustainable management of this fragile landscape. As Grau states, “[We have to] work all together with an integrative viewpoint in order to preserve this fascinating ecoregion” (Martínez 2019).

#### REFERENCE

**Martínez J.** 2019. “*La Puna argentina: naturaleza y cultura*”, a book to start loving dry landscapes. <https://www.conicet.gov.ar/la-puna-argentina-naturaleza-y-cultura-a-book-to-start-loving-dry-landscapes/>; accessed on 16 July 2019.

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