
HoST – Journal of History of Science and Technology

Vol. 20, no. 1, June 2026, pp. 1–17

doi: 10.2478/host-2026-0001

· THEMATIC DOSSIER ·

ZOOLOGY AND COMMERCE

ACCLIMATISING THE USEFUL ANIMAL IN THE IBERIAN WORLD AND BEYOND

Introduction

New Histories of Acclimatization. The Iberian World and Beyond

Oliver Hochadel

Institució Milà i Fontanals (CSIC), Barcelona

oliver.hochadel@imf.csic.es

Acclimatization is, and always has been, a fuzzy term. The idea of systematically introducing animals and plants from their original habitats to different, often far-away geographical locations had been discussed in naturalists' circles at least since the mid-eighteenth century, but the term "acclimatization" only entered the French language in the late eighteenth century and English in the 1820s.¹ Acclimatization "generally denoted an intended and 'scientifically' mediated transplantation of organisms"² as opposed to the rather unregulated, opportunistic movement of species seen during the Columbian Exchange. In this way, the transplanted species should get "acclimatized" to the new conditions, prosper and reproduce. The objective was to derive economic benefit

¹ Jean-Marc Drouin, "Le 'moral' des plantes. Introductions, hybridations et monstruosités végétales au XIXe siècle," *Journal d'agriculture traditionnelle et de botanique appliquée* 37, no. 1 (1995): 5–16, 7–8.

² Michael A. Osborne, "Acclimatizing the World: A History of the Paradigmatic Colonial Science," *Osiris* 15 (2000): 135–51, 135.

from the acclimatized creatures. In the case of animals, commercially viable products might include new sources of food (meat, eggs, milk), basic materials for clothing (pelts, feathers), or new draught or transport animals.

This broad definition of acclimatization leaves many questions open. The historical actors grappled with practical issues: How different could the new habitat be from the original one? Would it have to be very similar “climatically” (temperatures, seasons, terrain/landscape, altitude) to the original one? Or could the transplanted organism “get used to” the different conditions in the following generations? How could the acclimatizers facilitate this? And then there were rather theoretical questions that the historical actors (and historians) asked: What kind of enterprise was acclimatization? Was it an economic activity or a science? If the latter, what was its scientific basis? As the “malleability” of species was very much discussed throughout the nineteenth century (Lamarckism, fixism, Darwinism, etc.), zoologists and practitioners (government officials, breeders, farmers) fiercely debated the limits of acclimatization.

Contemporaries were already aware of the vagueness of the term “acclimatization” and argued with each other about its precise meaning.³ “Enthusiasts often used the term ‘acclimatization’ interchangeably with ‘naturalization’ or ‘domestication,’ and definitions varied with cultural, temporal, and geographical context.”⁴ In a strict sense, acclimatization referred to the survival, reproduction, and physiological adaptation of an exotic species to a new environment. Naturalization denoted the establishment of acclimatized species in the wild, independent of human husbandry, often in connection with hunting, fishing, or the exploitation of free-ranging populations. Domestication, by contrast, involved a much longer process of human selection aimed at enhancing traits valued for production or for facilitating handling and use.

In practice, these processes often followed more complex patterns. A species might acclimatize successfully without becoming domesticated, or it might already be fully domesticated in its place of origin yet fail to adapt to a

³ Denis Diagre-Vanderpelen, “The National Sericultural Utopia and Debates on the Acclimatization of Plants in New-born Belgium (1830–1865),” *HoST – Journal of History of Science and Technology* 15, no. 1 (2021): 71–106; Takashi Ito, *London Zoo and the Victorians, 1828–1859* (Woodbridge: Boydell, 2014), 160.

⁴ See Osborne, “Acclimatizing the World,” 137. For the nuances of the discussion in the Belgian case see Diagre-Vanderpelen, “The National Sericultural.”

new environment. Likewise, a species could become naturalized without undergoing domestication, but neither naturalization nor domestication in the new territory could occur without prior acclimatization. As a result, acclimatization became an umbrella concept encompassing several distinct forms of human intervention and species adaptation, generating much of the semantic ambiguity and controversy that characterized nineteenth-century debates.

This thematic dossier will not attempt to clarify the fuzziness of the term acclimatization. Ambiguity, vagueness, and flexibility are crucial aspects of its history. With its four articles, the dossier would rather like to complicate these ongoing historiographical discussions. It will enrich the current research by broadening the geographic and chronological focus, turning to the Spanish-speaking world and extending the temporal limits to the eighteenth and early twentieth centuries. Before outlining in more detail the specific contributions the thematic dossier aims to make, this introduction will review the current historiography on the animal acclimatization movement.

The Two Waves of Acclimatization Historiography

Critical interest in the acclimatization movement of the nineteenth century largely dates to around 1990. The topic moves across the fields of science and empire, human-animal studies, and the history of zoological gardens, all of which began to flourish before the turn of the millennium. Harriet Ritvo's work might be the best example of this confluence of different research lines.⁵ The most influential historian of the acclimatization movement of this first wave is Michael Osborne.⁶ He showed the primordial position of the French acclimatization movement and the leading role of Isidore Geoffroy Saint-Hilaire (1805–1861) as both a major theoretician and propagandist. Osborne underlined the central connection between the Société zoologique d'acclimatation (1854) and French emperor Napoléon III, thus placing the movement within the colonial agenda of the Second Empire. Other historians examined the acclimatization movement in Great Britain, emphasizing the contrast

⁵ Harriet Ritvo, *The Animal Estate. The English and Other Creatures in the Victorian Age* (Cambridge (Mass.): Harvard University Press, 1987); for a later summary of the scholarship see Harriet Ritvo, "The World as Zoo: Acclimatization in the Nineteenth Century," in *The Ark and Beyond: The Evolution of Zoo and Aquarium Conservation*, ed. Ben A. Minteer, Jane Maienschein, and James P. Collins (Chicago: University of Chicago Press, 2018), 27–38.

⁶ Michael A. Osborne, *Nature, the Exotic, and the Science of French Colonialism* (Bloomington: Indiana University Press, 1994); Michael A. Osborne, "Acclimatizing the World."

between the French acclimatization movement (state-backed, believing in the adaptability of organisms to prosper in different climates) and the British one (institutionally weak, depending on individual initiative, rather fixist).⁷

Osborne and others have shown that the acclimatization movement was part and parcel of the colonial outreach, the attempt to incorporate natural resources from the colonies into European economies, guided and assisted by zoology and other fields of knowledge. Osborne called acclimatization the “paradigmatic colonial science” and pointed out how similar the acclimatization movements of the French colony of Algeria and the British colony of Australia were.⁸ That “these attempts to acclimatize new species went hand in hand with European colonial expansion was not coincidental but rather an illustration of the growing linkage of biological and cultural processes as well as the domination of nature and society.”⁹ In settler colonies such as Australia and New Zealand (and to a lesser degree in the United States and Canada), the white colonizers introduced many of the species they knew from their European homelands. As Thomas Dunlap argued, the “craze for animals and birds drew, at the deepest level, on a powerful and enduring idea: that people are related to the land on which they live.”¹⁰

The agenda of the acclimatization movement was thus multi-fold: it promised economic benefits for the national economies through what we might call today “bioprospecting” (the identification of useful species), the strengthening of the colonial enterprise, transforming the colonies into “home,” the spread of “civilization” and science, as well as the appropriation of the exotic. In this complex endeavor, the zoo played a crucial role. The history of modern zoological gardens is generally considered to begin in the first half of the nine-

⁷ Particularly insightful on this issue is Warwick Anderson, “Climates of Opinion: Acclimatization in Nineteenth-Century France and England,” *Victorian Studies* 35, no. 2 (1992): 135–57; see also Osborne, “Acclimatizing the World,” 137.

⁸ Osborne, “Acclimatizing the World,” 135; Michael A. Osborne, “A Collaborative Dimension of the European Empires: Australian and French Acclimatization Societies and Intercolonial Scientific Co-operation,” in *International Science and National Scientific Identity: Australia between Britain and America*, ed. Sally Gregory Kohlstedt and R.W. Home (Boston: Kluwer Academic, 1991), 97–119.

⁹ Dorothee Brantz, “The Domestication of Empire: Human-Animal Relations at the Intersection of Civilization and Acclimatization in the Nineteenth Century,” in *A Cultural History of Animals in the Age of Empire*, ed. Kathleen Kete (Oxford: Berg Publishers, 2007), 73–93, 92.

¹⁰ Thomas R. Dunlap, “Remaking the Land: The Acclimatization Movement and Anglo Ideas of Nature,” *Journal of World History* 8, no. 2 (1997): 303–19, 318.

teenth century, with the founding of zoos in Paris (1793), London (1828), Amsterdam (1838), and Berlin (1844), to mention but a few of the major ones. In the mission statements of these early zoos (often run by scientific societies), the acclimatization of useful animals was routinely declared to be one of their goals.¹¹ Yet only with the inauguration of the Jardin d’acclimation in Paris in 1860 by the Société zoologique d’acclimation did the close connection between the two movements become part of a practical agenda. This new zoo “gave acclimatization a cultural presence not seen in other European capitals.”¹²

Apart from its colonial agenda, acclimatizers such as Isidore Geoffroy Saint-Hilaire and the gentlemen of the Acclimatisation Society of the United Kingdom promised benefits for domestic politics in the 1850s and 1860s. The products of acclimatization, for example, meat from “exotic” animals such as the tapir, could alleviate growing urban poverty. Historians have doubted, though, whether this was meant seriously or rather as a show of pompous rhetoric.¹³

Many historians of acclimatization of this first wave argued that (unlike with plants) the project of introducing new species of useful animals to Europe did not live up to its promise and was therefore abandoned after 1870.¹⁴ With the formula “Applied Science out, Popular Ethnography in,” Osborne captured the “re-orientation” of the Jardin d’acclimation in Paris toward entertainment for the broad public after France’s defeat against Prussia in 1870 and the end of the Second Empire.

¹¹ Oliver Hochadel, “Science at the Zoo. An Introduction,” *Centaurus* 64, no. 3 (2022): 561–90, 568.

¹² Osborne, “Acclimatizing the world,” 144.

¹³ Isidore Geoffroy Saint-Hilaire, *Acclimation et domestication des animaux utiles* (Paris: La Maison Rustique, 1861), 372, 484; Anita Guerrini and Michael A. Osborne, “Animals in Circulation: The ‘Prehistory’ of Modern Zoos,” in *The Ark and Beyond: The Evolution of Zoo and Aquarium Conservation*, ed. Ben A. Minteer, Jane Maienschein, and James P. Collins (Chicago: University of Chicago Press, 2018), 15–26, 24; Ito, *London Zoo*, 158.

¹⁴ Christopher Lever, *They Dined on Eland: The Story of the Acclimatisation Societies* (London: Quiller Press, 1992), 110 (for Australia); Anderson, “Climates of Opinion,” 151–53; Osborne, *Nature, the Exotic*, 127; Brantz, “The Domestication,” 91. For the British case, in particular the acclimatization efforts of the Zoological Society London in the 1850s and 1860s, see Ito, *London Zoo*, 138–161; for the ephemeral acclimatization attempts in Germany, also coming to a complete halt after 1870, see Iris Borowy, “Akklimalisierung. Die Umformung europäischer Landschaft als Projekt im Dienst von Wirtschaft und Wissenschaft, 1850–1900,” (2009) www.europa.clio-online.de/essay/id/fdae-1493 (last accessed 15 June 2026).

This was, in fact, the perception of contemporaries. In 1881, Albert Geoffroy Saint-Hilaire, director of the Jardin d'acclimatation founded by his father Isidore, held a hearing with the Paris Municipality. He admitted that “we have not been able to obtain any agricultural results so far,” citing a lack of money and space and requesting more funding. In 1887, a commentator in *Nature* lamented that “no addition of any practical importance has been made to our stock of truly domestic animals since the commencement of the historic period of man’s life upon the earth.” If the criterion of success was the permanent introduction of “exotic” animals in Europe, with a substantial impact on the national economy, then it was indeed hard to name any good examples.

Yet in the last two decades, a second wave of publications has painted a more complex picture.¹⁵ This “revisionist” historiography claims that the acclimatization movement did not end in 1870, despite the reorientation of many zoos (away from applied natural history) and the apparent decline of many acclimatization societies. This second wave proposes a much broader geographical and chronological scope, attempting to give voice to a wider range of historical actors.

In a “longue-durée” history of the French acclimatization movement, Rémi Luglia has shown how the Société zoologique d'acclimatation evolved from its original objective (acclimatizing economically useful species) to an agenda of nature protection, disassociating itself from the Jardin d'acclimatation around 1900.¹⁶ This shift from acclimatization to nature conservation may still warrant further attention from historians.

Outside Europe, there were of course a number of well-known “successes” in introducing animals from different climatic zones. Many histories of acclimatization for instance note how rabbits became an “invasive species” in Australia.¹⁷ Yet there are other examples that might be considered as successes

¹⁵ For an early review, including some information on the German acclimatization movement see: Borowy, “Akklimatisierung.”

¹⁶ Rémi Luglia, *Des savants pour protéger la nature: La Société d'acclimatation (1854–1960)* (Rennes: Presses Universitaires de Rennes, 2015).

¹⁷ Anderson, “Climates of opinion,” 153; Harriet Ritvo, “Going Forth and Multiplying: Animal Acclimatization and Invasion,” *Environmental History* 17 (2012): 404–14; Ritvo, “The World as Zoo,” 35; Simon Farley, “‘The Menace of Acclimatization’: the Advent of ‘Anekeitaxonomy’ in Australia,” *Historical Records of Australian Science* 36, no. 1 (2025), 1–11, points out that in the Australian case historians have exaggerated the resistance against acclimatization (and the damage it purportedly did). There was virtually no resistance or criticism in the nineteenth century; it only started in the

by the acclimatizers' criteria, such as the ring-necked pheasant in the United States and the zebu in Brazil. From the 1880s onwards, the ring-necked pheasant (imported from East Asia, originally called the "Chinese pheasant") was first introduced in Oregon (to be hunted) and now populates forty-seven states in the United States.¹⁸ The large-scale introduction of the zebu from India to Brazil, starting in the 1890s, has marked cattle husbandry in many Brazilian provinces to this present day. The zebu could adapt much better to the extreme heat, parasites and low-quality pasture than previously imported cattle from Europe.¹⁹

Particularly in the case of working animals, expertise in their management is crucial. Animals used in agriculture or transport should be understood as part of a technological assemblage that requires skilled humans to handle them. The second half of the nineteenth century saw numerous attempts in different parts of the world to introduce camels to facilitate the transport of goods and people. In the 1850s, Brazil (assisted by the French Société zoologique d'acclimatation) introduced dromedaries from Egypt in regions lacking basic transport infrastructure to aid export-oriented agriculture. The attempt eventually failed, underscoring "the difficulty of transmitting knowledge across different languages, wide geographic distances, and cultural barriers."²⁰ There were also several large-scale endeavors to acclimatize the camel in the European part of Russia in the late nineteenth century. These attempts depended on tapping into the practical knowledge of nomads from Central Asia, experts in camel husbandry.²¹ The success of transplanting animals into a distinct environment often depended on moving experienced animal handlers as well, or on passing these practical skills on to local people. In the late nine-

1930s.

¹⁸ Barrie Ryne Blatchford, "'Make the desert blossom like the rose': Animal Acclimatization, Settler Colonialism, and the Construction of Oregon's Nature," *Oregon Historical Quarterly* 122, no. 3 (2021): 214–49.

¹⁹ Robert Wilcox, "Zebu's Elbows: Cattle Breeding and the Environment in Central Brazil, 1890–1960," in *Territories, Commodities and Knowledges: Latin American Environmental Histories in the Nineteenth and Twentieth Centuries*, ed. Christian Brannstrom (London: Institute of Latin American Studies, 2004), 218–46, 223.

²⁰ David Francisco de Moura Penteado, "Brazilian Dromedaries: A History of Acclimatization, Agricultural Modernization, and Camelids, 1857–1867," *Isis* 115, no. 2 (2024): 241–66, doi.org/10.1086/730460, 266.

²¹ Anna Olenenko, "Camels in European Russia. Exotic Farm Animals and Agricultural Knowledge," in *Thinking Russia's History Environmentally*, eds. Catherine Evtuhov, Julia Lajus and David Moon (New York/Oxford: Berghahn, 2023), 151–73.

teenth century, over four thousand Afghan handlers came to Australia and taught Aborigines how to manage camels in the outback.²² Australia, to this day, still holds the largest population of wild camels worldwide, an estimated one million, which go back to imported animals that escaped or were released in the early twentieth century. British “alpaca importers relied heavily on the knowledge and experience of indigenous Peruvians, whose long contact with the animals made them experts on their needs and behaviour.”²³

The history of the acclimatization movement was by definition part of colonial history, a tool of empire, as mentioned above. The second wave of historiography has added new perspectives, in tune with recent trends in transnational and global history. First, the history of the acclimatization movement needs to be decentralized.²⁴ The above-mentioned attempt to introduce dromedaries in Brazil “offers the perspective of a noncolonial enterprise in a country far from the traditional centers of knowledge production.”²⁵ Second, empires were anything but omnipotent, discovering their limits of influence and their dependence on the knowledge and support of “subaltern” actors in acclimatization schemes, e.g., when trying to import llamas from the Andes to Great Britain.²⁶ Third, colonial subjects, e.g., in Australia, shaped acclimatization projects to suit their own interests.²⁷ Historians have pointed to the intrinsic political dimension of the acclimatization movement, particularly in the context of settler colonialism. In the Australian case this could mean the “identification with native biota and [the] rejection of most neobiota as tactics of self-indigenisation.”²⁸ Or rather the opposite, as in the case of the United

²² Pushkar Sohoni, “Translocated Colonial Subjects in Collaboration. Animals and Human Knowledge,” *Transfers* 8, no. 1 (2018): 1–14, 5.

²³ Helen Cowie, “From the Andes to the Outback: Acclimatising Alpacas in the British Empire,” *The Journal of Imperial and Commonwealth History* 45, no. 4 (2017): 551–79, doi.org/10.1080/03086534.2017.1353260.

²⁴ Osborne had already pointed out that “events on the periphery rather than at the center provoked the intellectual construction of a scientific research program,” yet his reference frame remained the French Empire; Michael A. Osborne, “The Société zoologique d’acclimatation and the New French Empire. Science and Political Economy,” in *Science and Empires. Historical Studies about Scientific Development and European Expansion*, ed. Patrick Petitjean, Catherine Jami and Anne Marie Moulin (Dordrecht/ London: Kluwer Academic, 1992), 299–306, 301.

²⁵ De Moura Penteado, “Brazilian Dromedaries,” 266.

²⁶ Cowie, “From the Andes,” 562.

²⁷ Peter Maxwell Minard, *All Things Harmless, Useful, and Ornamental: Environmental Transformation through Species Acclimatization, from Colonial Australia to the World* (Chapel Hill: The University of North Carolina Press, 2019).

²⁸ Farley, “The Menace,” 2.

States. Coupled with supremacist ideologies, schemes to acclimatize animals served to make the new territory “our own.” The introduction of the ring-necked pheasant reflected very much the power of local elites who loved to hunt (as opposed to farmers whose crops suffered from the introduced species), and thus “epitomizes the way social power becomes inscribed in nature.”²⁹

In this dossier, we focus on the acclimatization of animals. Yet it is crucial to mention that toward the end of the nineteenth century and into the twentieth century, acclimatization increasingly also referred to human beings. The rise of “scientific racism” and the pressing issue of how white men could adapt to the often-harsh climatic conditions in the colonies endowed the term acclimatization with a new shade of meaning.³⁰

The numerous contributions to the history of the acclimatization movement demonstrate the topic’s enormous potential. One aspect that has receded in importance compared with the first wave of acclimatization historiography is the zoo’s role as a central institutional actor. It seems that both waves of acclimatization historiography agree that, after 1870, the role of zoos diminished rapidly. This dossier seeks to question this.

Shifting the Perspective – The Contribution of this Dossier

The four articles in this thematic dossier shift the focus to acclimatization initiatives on the Iberian Peninsula and in Latin America, areas largely absent from the existing literature. Discussions of the Spanish-speaking world have generally been limited to noting that the French acclimatization movement strongly influenced the Spanish one.³¹ Drawing on hitherto little-known sources and extending the focus beyond the Iberian Peninsula to Latin America (Argentina), this dossier will show that a number of acclimatization initiatives have so far escaped the attention of historians. These endeavors are all

²⁹ Blatchford, “Make the Desert,” 242.

³⁰ See David N. Livingstone, “Human Acclimatization: Perspectives on a Contested Field of Inquiry in Science, Medicine and Geography,” *History of Science* 25, no. 4 (1987): 359–94; Pascal Grosse, “Turning Native? Anthropology, German Colonialism, and the Paradoxes of the ‘Acclimatization Question,’ 1885–1914,” in *Worldly Provincialism: German Anthropology in the Age of Empire*, ed. H. Glenn Penny and Matti Bunzl (Ann Arbor: University of Michigan Press, 2003), 179–97, 181.

³¹ Santiago Aragón, “Le rayonnement international de la Société zoologique d’acclimatation: Participation de l’Espagne entre 1854 et 1861,” *Revue d’histoire des sciences* 58, no. 1 (2005): 169–206, doi.org/10.3406/rhs.2005.2242.

quite different and thus highlight the diverse panorama of the acclimatization movement.

Chronologically, the first article, “Spaces of Acclimatization” by Nuria Benítez Prián and Manuel García-Espantaleón Artal, focuses on the Spanish *Reales Sitios*, a network of royal estates in and around Madrid. It covers the period before the foundation of the Jardín de Aclimatación in Madrid in 1859. The (short) history of this acclimatization garden and its *spiritus rector*, Mariano Graells, is well known. By contrast, the roughly one hundred years between the 1750s and 1850s have hardly been studied in this respect. The authors show how the Spanish Crown attempted to introduce numerous “exotic species” from the American colonies, as well as from Africa, Asia and even Australia. The sheer number of initiatives and the variety of species are astonishing. Imports included Asian buffalo and bison, camels and dromedaries, Andean camelids (llamas, vicuñas, and alpacas), Angora goats, gazelles (*Gazella dorcas*), kangaroos, and even fireflies. Among exotic birds, ratites (ostriches, rheas and emus) were particularly prominent. The products included meat, milk (and cheese), leather, wool, feathers and traction force.

The authors offer a context-sensitive, multicausal explanation for why numerous acclimatization efforts ultimately failed to establish useful new species in Spain. Political instability in the first half of the nineteenth century (wars, civil wars, revolutions and the loss of the South American colonies) was only one factor. The historical actors did—despite obvious difficulties—undergo a considerable learning process. Breeding worked at times; some of the aforementioned species were kept on Spanish soil for centuries and reproduced well. Yet the expectations of rapid economic utility from the imported animals were largely unmet. In the end, already established agricultural species maintained their dominance. The authors caution, though, against speaking of a history of “failure”; this was the rhetoric of Graells to distinguish his own later acclimatization project starting in the 1850s.

The tension between promises and failures is also central to the second article by Laura Valls Plana. “Glamorous Feathers for the Metropolis” examines the acclimatization of the ostrich in the French colony of Algeria (1854–1914). The initiative sought to build a domestic feather industry capable of challenging British dominance of the international market, based on their successful production in the Cape colony. Yet French efforts to mass-produce

ostrich feathers repeatedly faltered. Successfully adapting a species required far more than financial resources and scientific expertise. As in the Spanish case, success and failure depended on a multitude of factors, including the location of the farm within the colony (ostriches did not prosper near the Mediterranean coast, where the breeding farms were located), nutrition, and “human factors” such as imperfect equipment or the insufficient skills of caretakers.

In these first two cases, zoological gardens played only a small role. One of the *Reales Sitios*, the Buen Retiro Park, eventually became an institution that displayed exotic animals to the public at large. In the Algerian case, the Jardin d’essai du Hamma on the outskirts of Algiers was a cross between a research station, botanical garden, and zoological garden. Some of the experiments with ostriches were conducted in this Jardin, which also served as a distribution center for the farms. In the following two articles, the zoo was central to the development of the acclimatization initiatives in Catalonia and Argentina.

As Oliver Hochadel argues, Francesc Darder (1851–1918), the first director of the Barcelona Zoo, founded in 1892, conceived of it as a “Centre of acclimatization.” Over almost two decades, Darder launched several acclimatization initiatives both inside and outside the zoo: poultry breeding, a zootechnical museum, and a fish laboratory to promote fish farming in Catalan fresh waters. The results of these attempts to breed useful animals to strengthen the Catalan economy were mixed. Yet the Catalan case shows how closely this applied natural history, spearheaded by Darder and fully supported by the political and economic establishment, was intertwined with local and national politics. Beyond farmers, the breeding initiatives were also directed at the working class, promising affordable food and other benefits—and thus to mitigate the widespread poverty that menaced the social order.

The fourth article is titled “The Buenos Aires Zoological Garden, the Sociedad Rural Argentina, and the Multiple Goals of Argentine Acclimatization.” Ashley Kerr examines two institutions that served as pacemakers of Argentinian acclimatization efforts around 1900: the Sociedad Rural Argentina (SRA) and the Jardín Zoológico. Both institutions were integrated into transnational networks of exchange, trading specimens and expertise with peers worldwide. Their agendas might be described as complementary, both in terms of animals and “target audience.” The SRA concentrated on acclimatizing purebred cattle

for large-scale ranchers, working with government institutions, local and foreign scientists, and other acclimatization-minded groups. Many of their projects focused on eliminating obstacles to successful acclimatization, including tick-borne illness. In contrast, the Buenos Aires Zoo, under the directorship of Clemente Onelli (1864–1924), explored a broader faunal spectrum to benefit small-scale farmers and the urban working class. Zoo discussions of animal acclimatization also took on metaphorical resonances, extending the discussion of the value of “natives” and “exotics” to the contemporary issue of human immigration.

After summarizing the content of the four articles, we shall now identify some of their connections and common threads that allow us to address some overarching issues. Knowledge and politics may be the two common denominators that best allow for a transversal discussion of the case studies.

Gathering and Communicating Knowledge

The capture, transfer, and subsequent keeping of animals for acclimatization were always made extremely challenging by the practical difficulties and the lack of knowledge about the vital needs of the transplanted animals. The death rates of many shipments to the Spanish *Reales Sitios* ranged from fifty to nearly one hundred percent. The acclimatizers had to answer numerous questions: Which pasture was proper for the Andean camelids on the Spanish peninsula? Why did so many of the young ostriches suffer from rickets and break their legs in French Algeria? What treatments and vaccinations could save cattle in the Argentine Northwest from *tristeza*, the often-deadly cattle disease transmitted by infected ticks and the parasites they carry? How did artificial insemination work with exotic species of fish to be released in Catalan rivers and lakes? Facing these challenges, the acclimatizers had to play a dual role as both generators and distributors of this practical knowledge.

At the *Reales Sitios*, the court personnel responsible for livestock adapted to the imported species the knowledge and practices they had gained from their experience with common domestic livestock. Their considerable success in breeding many new species stemmed from their care and skills, as well as the large aristocratic estates at their disposal. Later, Graells complained that the lack of these resources—vast spaces, financial means, and skilled personnel—significantly hampered his own acclimatization efforts in Madrid.

The zoos, model farms and other sites these four articles deal with should be understood as experimental spaces. The practical knowledge of the acclimatizers was always limited, and they had little choice but to act in a trial-and-error manner and to improvise.³² On occasion there were more systematic efforts. The French acclimatizers in Algeria, for example, gathered information from indigenous communities (hunters and herders) through a survey. This *questionnaire* included questions regarding the migratory patterns of ostriches, their physical features and measurements, food preferences, sexual behavior and reproductive care.

As noted above, the effective communication of practical knowledge could determine whether an acclimatization scheme flourished or failed. A major reason the successful breeding at the *Reales Sitios* did not spread to other sites was that the practical knowledge generated did not circulate much beyond the estates of the Crown themselves. This knowledge remained within elite royal institutions and among aristocratic landowners, not reaching ordinary farmers and smallholders. In the other three case studies, chronologically later, the acclimatizers in French Algeria, Buenos Aires, and Barcelona were keenly aware of the need to reach broader audiences. The Société zoologique d'acclimatation published a monthly *Bulletin*; the SRA the monthly *Anales*; Onelli his *Revista del Jardín Zoológico de Buenos Aires*; and Darder a number of journals and booklets. Public talks on the merits of aviculture and demonstrations of skills or technologies were also part of the outreach activities of the acclimatizers in Buenos Aires and Barcelona. Exhibitions were crucial media in these three case studies, oscillating between propaganda and information and using appealing exhibits, such as stuffed ostriches at the Algerian section of the 1867 Paris Exposition, or a stuffed whale at the Pisciculture Exhibition in Barcelona's Parc de la Ciutadella in 1912/13.

The three post-1850 case studies also illustrate the growing importance of new technologies (broadly understood) in acclimatization efforts: vaccinations and improved veterinary care, artificial incubators for eggs, milk bottles for calves and artificial insemination of fish eggs, to name but a few. The *questionnaires* used to gather and systematize knowledge about ostriches in Algeria may be considered a modern knowledge technology.

³² This often-opportunistic trial-and error approach was also typical of zoological research in the nineteenth-century zoo; Hochadel, "Science at the Zoo," 569–70.

Political Animals

The four articles in this dossier address many of the issues that arose in the discussion of the secondary literature. The acclimatization movement needs to be firmly embedded in the colonial outreach of the European powers, but, as the more recent historiography shows, this colonial dimension may take on more complex and multidirectional forms than a simple transfer of potentially useful animals from a colony to the metropole.

The case of the *Reales Sitios* may be surprising, as many of the imported animals did not come from any of the numerous colonies of the Spanish Empire. The bison, camels, gazelles and kangaroos shipped to the Iberian Peninsula from Australia, Africa and Asia were living proof of the transimperial nature of the acclimatization movement, revealing the numerous networks of the Spanish Crown. Although the European empires are generally seen as fiercely competing with one another, they also collaborated on numerous levels. This is clearly the case with the acclimatization movement as well. Although practical knowledge was not always shared, there was, as mentioned above, a kind of common public sphere created by numerous publications and international exhibitions. Across all four articles, there are instances of a transnational movement of ideas, knowledge, technologies, actors, and animals.

Being, in a sense, a “post-colonial” case, since Spain had just lost its last colonies in 1898, the Barcelona Zoo adds an interesting variation to the connection between colonialism and acclimatization. Darder’s agenda of applied natural history promoted self-sufficiency and autarchy, maximizing Catalonia’s natural resources, with the zoo serving as the logistical center for the breeding initiatives. These initiatives, backed by the bourgeois elites, seemed necessary to provide the lower classes with additional food sources, mitigating the strong social tensions in Barcelona around 1900 and stabilizing society. The Argentine case provides an instructive example of acclimatization projects less marked by European colonialism. Argentina was an independent nation-state with no colonies but with vast swaths of territory in its interior to “conquer,” that is, to render productive in terms of agriculture and husbandry. The French-Algerian ostrich case provides an in-depth study of an empire trying to extract the maximum of natural resources from a colony. It was as much an economic as a socio-political venture. As Laura Valls argues, the acclimatizers

tried not only to acclimatize the ostrich but also to domesticate the flightless bird as part of an overarching mission to spread French *civilisation*. Conducting a “civilizing mission” was a mainstay of acclimatization rhetoric (regardless of whether French or not) from the 1850s well into the twentieth century. In the Catalan case, the introduction of exotic fish species in the 1910s went along with the imperative to adopt “civilized” fishing methods.³³

The Argentinian case also shows how closely debates on acclimatization were connected with broader discussions about national identity. The large number of European immigrants arriving in Buenos Aires around 1900 sparked public controversy over what constituted “Argentineness.” In these debates, Onelli tried to define through the prism of the Buenos Aires Zoo and its animals (who had also “migrated” to Argentina) who was a “good” (welcome) and who a “problematic” immigrant.

The Catalan and the Argentine case studies show that the acclimatization movement, in Europe and South America, continued well after its alleged demise around 1870. In fact, in both cases it only gathered momentum around 1900. In connection with urban zoos, the movement could take on new forms, shaped by the social and political conditions of its local and national contexts. Darder and Onelli took up the ideas of the French and British acclimatizers of the 1850s and 1860s, who sought to create new sources of cheap food to attenuate social tensions and tried to put them into practice. In the zoos of Barcelona and Buenos Aires, poultry breeding was pursued systematically, and schools of aviculture were founded in association with the zoos. Both zoo directors saw no contradiction at all between the two different agendas, education and profit-oriented acclimatization. At least in their rhetoric, the zoos addressed the public at large, including farmers and entrepreneurs, and dealt with a wide range of animal products. Learning about “exotic” animals also could include learning about their potential economic benefit.

The four articles of this dossier show that acclimatized animals were closely interwoven with politics at different levels: municipal, national and international, and both symbolically (questions of national identity and *civilisation*)

³³ Laura Valls Plana, “Tràfic global de peixos. Piscicultura al Zoo de Barcelona a principis de segle XX,” *Actes d’Història de la Ciència i de la Tècnica* 16 (2023): 71–93.

and in practical ways. Ostriches, camels, bison and chickens were political animals.

Future Avenues of Research

This dossier has made some first inroads into the little-studied history of the acclimatization movement in the Spanish-speaking realm. Yet many avenues in the Luso-Iberian world remain unexplored. The history of zoos in Mexico before the opening of the Zoológico de Chapultepec in Mexico City in 1923 clearly warrants further study. There were several earlier attempts to found zoos, often framed by the mold and rhetoric of the acclimatization movement. Baron Otto von Brackel-Welda (1830–1903), a German-born military and diplomatic officer, came to Mexico with the French army that supported Emperor Maximilian of Habsburg in the 1860s. In the mid-1870s, Brackel-Welda proposed founding an acclimatization zoo focused on birds. His proposal received widespread support, most importantly from the leading scientific societies in Mexico. Whether this acclimatization zoo was actually established is part of ongoing research.³⁴

The Lisbon Zoo opened in 1884 and was initially called Jardim Zoológico e de Aclimação em Portugal. It was modeled after the Paris Jardin d’acclimatation and benefited from the extraction of fauna from Portugal’s African colonies. Nonetheless, there are very few publications on the history of the Lisbon Zoo and none address any role the zoo might have played within the acclimatization movement.³⁵ Other areas ripe for exploration include expanding knowledge of Latin American acclimatization projects (Cuba, Venezuela, Uruguay, and Chile are among the countries that actively experimented), tracing networks in the Spanish-speaking world and, as previously mentioned, analyzing how later acclimatization projects interacted with emerging conservation movements.

Dismissing the acclimatization movement of the nineteenth century as a “failure” that yielded no tangible results for national economies would be a

³⁴ Ongoing research by Patricia Guerrero-Medrano.

³⁵ Ana Duarte Rodrigues, “Da Recreação à Ciência: Paisagem, Arquitetura, Coleção e uso da Quinta das Laranjeiras enquanto Zoo. From Recreation to Science: Landscape, Architecture, Collection and use of Quinta das Laranjeiras as a Zoo,” in *Laranjeiras: Teatro e Jardins. Laranjeiras: theater and gardens*, ed. Luís Soares Carneiro, Margarida Elias and Raquel Medina Cabeças (Lisbon: Autónoma Edições, 2024), 136–63, 323–49.

missed opportunity. The recent literature on acclimatization cited above, the articles in this thematic dossier, and potential future case studies clearly demonstrate the value of a renewed, readjusted focus on the acclimatization movement in sharpening our understanding of the interplay between politics, the economy, and the zoological sciences around the world.

Acknowledgements

I would like to thank all the authors of this dossier as well as Benedetta Piazzesi for their encouragement, much-needed help and constructive feedback. This article is part of the project I+D+i PID2020-112514GB-C21, financed by AEI/10.13039/501100011033.