ABSTRACT

This text examines selected writings produced by four leading Brazilian conservation scientists active in the 1920s, 1930s, and 1940s. Alberto José Sampaio (1881-1946), Armando Magalhães Corrêa (1889-1944), Cândido de Mello Leitão (1886-1948), and Frederico Carlos Hoehne (1882-1959) were prominent members of a “second generation” of Brazilian conservationists. Although they died on the average about sixty years ago, they have receded from memory and their publications have become all but inaccessible. We argue that their ideas, research, and institution-building efforts were highly pertinent and influential in their own time and remain valuable today as building blocks of Brazilian conservation awareness and policies. This article brings together biographical and professional data about each author and examines the texts that best illustrate their range of concerns, their sources, and their priorities in the field of nature conservation.

THE TITLE OF THIS ARTICLE refers to Roderick Nash’s classic Wilderness and the American Mind. This implies both an homage to Nash and our goal of contributing to the understanding of the concepts and the sensibility of a few Brazilian scientists who, in their own way, expressed an early and deep concern with the conservation of “wild” nature in Brazil. It is fair to admit, however, that the Portuguese language (spoken in Brazil) has no word that conveys the meaning of wilderness. Sertão is the one that comes closest. It denotes various and not mutually consistent perceptions of places and conditions that are paradise, hell, or purgatory.

In this sense, the word expresses tensions also denoted by the word wilderness. Sertão, used commonly since early colonial times by Portuguese explorers, clergy, and administrators, designated far away and isolated places, sometimes uncharted or savage, but sometimes inhabited, even if sparsely, in contrast with cities or densely settled rural areas (located mostly along Brazil’s Atlantic
In its negative meaning, *sertão* meant a place of violence, lawlessness, backwardness, lack of security, a desolate outback. The positive meaning conveyed peace of mind, simple habits, beauty, and untouched nature. These extremes evolved into other polar pairs that crept even into academic analyses—coast/interior, modern/archaic, “the two Brazils”, civilized/uncivilized, and progress/stagnation. However wilderness and *sertão* have in common the perception of the existence of “new lands” suitable to be occupied, areas in which the relation of humans and nature is different from the same relation in settled areas.

The Brazilian conservationists examined here worked mostly with the positive meaning of *sertão*, even when they did not use the word. They were concerned with the vast sections of the Brazilian territory where European presence was sparse and in which the inhabitants lacked basic governmental services and protection. They felt the national state should intervene in the *sertão* in order to help build a harmonious relationship between Brazilians and nature, and that this relationship would add a special character to the Brazilian national identity.

This article discusses the ideas and proposals of four Brazilian scientists—Alberto José Sampaio (1881-1946), Armando Magalhães Corrêa (1889-1944), Cândido de Mello Leitão (1886-1948), and Frederico Carlos Hoehne (1882-1959)—local forerunners in the matter of nature protection. It is important and even urgent to examine their writings. Their work and activism, besides being influential in the realm of Brazilian science and in conservation policy, made them prominent members of a second generation of conservation-minded Brazilians, active roughly from the 1920s to the 1980s.

The urgency is related to the fact that this group seems to be falling quickly into oblivion. A more remote “first generation” of Portuguese and Brazilian-born colonial and Imperial government administrators and publicists, reaching far back into the late eighteenth century and running up to the late nineteenth century, had been mostly forgotten by the 1920s, when our authors were active. José Augusto Pádua had to study the ideas of fifty of those earlier pioneers using mostly archival materials, unpublished manuscripts, and rare booklets and pamphlets shelved in a few libraries. The members of the “second generation” examined here do not seem to have been directly inspired or influenced by that first generation. In other words, oblivion has happened before in the field of Brazilian conservation ideas.

In the mid-1980s, there emerged in Brazil a “third generation” of conservation-minded Brazilians, this time sharply divided into two strands, “preservationists” and “socioenvironmentalists.” Otherwise a mostly positive development, the emergence of this new generation unfortunately has had the side effect of contributing to unmerited criticism or outright dismissal of our four authors (who died, on average, only sixty years ago). The research results, scientific findings, policy contributions, and institution-building efforts of the second generation often are ignored even by well-informed Brazilian conservationists of today.

This displacement is aided by the fact that the longer lasting biologists and other natural scientists that our authors helped to train reached the end of their
careers in the 1980s. Starting from the 1950s, some of them—such as Alceo Magnanini, Adelmar Coimbra Filho, Harold Edgard Strang, Luiz Emygdio de Mello Filho, José Cândido de Melo Carvalho, Wanderbilt Duarte de Barros, Augusto Ruschi, Paulo Nogueira Neto, and a few others—became active in conservation issues, engaged in field work, published their scientific findings, and were fairly well known by the small Brazilian conservationist community. Today, only a handful of them are alive, and they no longer hold positions that allow them to be influential or even to rescue the memory of their mentors. Besides, the careers of many of the “disciples” were not necessarily focused on conservation, as the developments in the field of biology opened other branches and niches for their professional advancement.5

Therefore, Sampaio, Corrêa, Mello Leitão, Hoehne, and their contemporaries now are being remembered mostly by unfair and uninformed criticism made by members of the third generation of Brazilian conservationists, many of whom have never read them. This criticism pertains almost solely to their conservative or authoritarian political positions, although such positions are only weakly related to their sound ideas and findings about conservation.

A leading contemporary author who has contributed to this devaluation or misunderstanding of the members of that generation of Brazilian conservationists is Antônio Carlos Diegues. His focus on “traditional populations” who live in or near conservation units has prompted him to write scathingly about them and their “preservationist” followers: “Concern with ‘traditional populations’ who live in conservation units is relatively recent in Brazil, and until recently (and until this day, in the case of classic preservationists) they were considered ‘a matter for the police,’ because they should be expelled from the lands that they always lived in to allow for the creation of parks and preserves. This ‘pure’ preservationist outlook—in opposition to another outlook, which sees conservation units as integrated with society—reflects the very origin and history of Brazilian conservation thought, which prevailed in private nature conservation organizations such as the ‘Arbor Society,’ created in 1931, and the ‘Society for the Protection of Flora and Fauna,’ created in 1927 in the state of São Paulo.”6

At about the same time as Diegues, Eduardo Viola wrote another derisive comment on this generation and their immediate followers (grouped in an influential environmental NGO created in the 1950s): “Some of these naturalist-activists, together with well-to-do individuals with a philanthropic purview, got together, in 1958, in the Fundação Brasileira para a Conservação da Natureza [Brazilian Foundation for Nature Conservation], with headquarters in Rio de Janeiro. This foundation (linked to the International Union for the Conservation of Nature, founded in Switzerland, in 1947) is part of the pre-history of Brazilian the ecological movement, as its goals and mode of operation were strictly conservationist, very much like the humane societies that emerged in several countries in the 19th century.”7 Such evaluations have contributed to the mistaken concept that these conservationists were concerned only with plants, animals, and landscapes, and not with people, society, and nation. As we will see, the truth is quite different.
However, it must be admitted that such evaluations are not easily refuted. Currently, not a single book or article written by the four authors examined here is commercially available, making them hard to access, even by informed researchers and specialists. Their writings are available only in a few libraries. We are aware of no plans to reissue any of their texts. Their followers are no longer able to spread the words of their mentors. As this second generation is being forgotten, we cannot avoid recalling how the founders of this generation had to build up conservation ideas and movements almost from scratch in the 1920s, with little or no reference to the first generation unearthed recently by Pádua. Oblivion is repeating itself, as history sometimes does.

A last introductory matter is to explain why we deal with the issue of national identity. From the 1920s to the 1940s, many influential Brazilian intellectuals took on the role of building a national identity and adequate political institutions for the country. They considered that at most the Brazilian national identity existed in a dormant state of sparse cultural traits, not too different from the perception about the richness of the national territory. They argued that such richness should be protected as a major means of supporting the task of nation building.

However, such cultural traits and the natural richness were not considered enough for the political organization of Brazil. There was also a need for strong political institutions adapted to “Brazilian reality,” as opposed to the liberal institutions mimicked by the founders of the Brazilian Republic. Many of these intellectuals were sympathetic to national-socialist and fascist institutions and most of them supported Getúlio Vargas’s authoritarian “Estado Novo” regime. Some dealt with Brazil’s cultural heritage, others with educational reform, others with labor laws, others still with political institutions. Our authors, last but not least, focused on the protection of nature. Their signature concern was the protection of nature as a step toward the building of a national identity. A common thread among all of them was the belief in a strong, interventionist national state (in opposition to laissez faire), in the superior importance of national needs (as opposed to regional ones) and in the need of a ruling elite, responsible for guiding the nation.

This article is part of an ongoing effort to aid in a revival of the contributions of these four authors to the fields of conservation, preservation, history of science, and institution building. We examine, one at a time, their professional trajectories, their scientific interests and findings, and their policy proposals as expressed in some of their major publications.

**ALBERTO JOSÉ SAMPAIO**

ALBERTO JOSÉ SAMPAIO was born in Campos dos Goytacases, in the state of Rio de Janeiro, in 1881. He died in 1946, probably in the city of Rio de Janeiro. In 1905, at the age of 24, he became assistant botanist in the Museu Nacional do Rio de Janeiro—(MNRJ) [National Museum of Rio de Janeiro], one of Brazil’s major natural science institutions. In 1912, at 31, he began to work as a professor and
chief of the museum’s Botany Section, a position he retained until his retirement, in 1941. When he started to work at the MNRJ, Sampaio interrupted his studies in medicine, which he concluded many years later. Although medical school gave him a scientific background, it was his practical work at the MNRJ that made him a botanist, one of the most important ever in Brazil and the most important of his time.10

Sampaio applied himself, at first, to the study of orchids, and later, of filicineae and bignoniaceae. In 1916 he published an encompassing study about the native flora of the remote state of Mato Grosso, which he dedicated to the botanists who traveled with the Rondon Commission—a federal venture in charge of building telegraph lines in remote areas of Brazil, under the leadership of the Brazilian Army officer Cândido Mariano da Silva Rondon.11 In this study, Sampaio gathered all available information about the flora of the remote and enormous state, produced by national and foreign researchers. He mapped the local flora, including algae and fungi. This was the birth of his ambitious, enduring, and influential project to build a phytogeographical classification of all Brazilian regions.

Sampaio later joined a Rondon Commission expedition when it explored the even more remote Tumucumaque Range, located in the current state of Amapá (in the Amazon region), between August of 1928 and January of 1929. This gave him materials for many publications about the flora of the Cuminá river basin and rich entries in his journals.12

Sampaio also engaged in institution building. He was a long-time member of the Academia Brasileira de Ciências [Brazilian Academy of Sciences], having held the general secretariat from 1933 to 1935 and the vice-presidency from 1939 to 1941. He published regularly in all the important Brazilian journals, such as the Revista Brasileira de Geografia, Revista Nacional de Educação, Boletim do Museu Nacional and Archivos do Museu Nacional. He also participated, as a corresponding member, in the Office Internationale pour la Protection de la Nature, an international clearing-house institution focused on nature protection legislation, through its periodical Revue Internationale pour la Protection de la Nature.

Sampaio’s ideas on nature protection were closely linked to the nationalistic perspective. He sought institutional solutions for the problems related to the natural world, solutions that he thought could come only from a reformed, strong, centralized national state. Among his generation of conservationists, Sampaio was the one who designed a specific and detailed project uniting concerns about the natural world with “nation-building” ideas. In this respect, he strongly echoed...
concerns of earlier Brazilian conservationists—such as Alberto Loefgren (1854-1918), Herman Von Ihering (1850-1930), and Alberto Torres (1865-1917).

Sampaio was an early proponent of the reforestation of degraded areas and the creation of natural reserves. He had a prominent role in the conception of the first pieces of national legislation about natural resources. He was a member of the commission that drafted Brazil’s first Forest Code (1934). He also supported the Serviço Florestal do Brasil [Brazilian Forest Service], created on December 21, 1921 (Federal Decree 4.421), but regulated only in 1925 (Federal Decree 17.042).

We will examine the three texts by Sampaio that best express his range of concerns and research. The first one is O Problema Florestal no Brasil em 1926 [The Forest Problem in Brazil in 1926]. It is a report presented to the International Silvicultural Conference, held in Rome, in 1926. It defended the concept of tree planting in Brazil and supported the related efforts of the Serviço Florestal do Brasil. Sampaio thought that the agency should be in charge of research, control and implementation of commercially planted forests—probably the first Brazilian to defend this notion.

Sampaio thought that the Serviço Florestal do Brasil also should create and manage parks and reserves intended to conserve native fauna and flora. At that time, however, this matter was not central in Sampaio’s thought, concerned as he was with “productive” or commercial forests. His concept included the use of exotic species. He wanted to organize a rational plan for the production of forest goods, guaranteeing that the present generation would profit from forest riches without damaging them or depriving future generations of them. Sampaio thought the agency should be in charge of the transition that had to be made from empirical logging of native forests to the systematic harvesting of homogeneous, planted forests. Sampaio was quite sure that this would bring about a new age, distinguished by “rational tree planting,” making Brazil a “center of world prosperity.”

Sampaio’s second text was entitled Phytogeographia do Brasil [Phytogeography of Brazil], published in 1934. By then the topic of nature protection had gained greater importance in Sampaio’s thinking. Native trees and the Brazilian flora and fauna as a whole were prominently discussed. Sampaio tried to give a strong legitimacy to his ideas on nature protection by referring to forerunners, such as conservation-minded writers such as José Bonifácio and Alberto Torres. In the biological sciences, Sampaio quoted Alexander von Humboldt, Friedrich Philipp von Martius, Stephan Ladislaus Endlicher, August Wilhelm Eichler, Ignatz Urban, Alphonse Pyrame de Candolle, Adolf Engler, Eugene Warming, Andreas Franz Wilhelm Schimper, Carl Georg Oscar Drude, Charles Henri Marie Flahault, and Frederic Edward Clements, authors involved in the development of phytogeography and ecology. This shows how up-to-date Sampaio was with the best natural science practiced around the world.

Sampaio sought to develop solid knowledge about the floral regions of Brazil, so that nature protection efforts could be effective. Indeed, he made a detailed description of all types of Brazilian floral communities, their interrelations with climate and soils, and of the human interventions in each region. He produced a
quite accurate “floral geography” of Brazil, probably the first to combine accuracy with broad geographical extent. Considering the available information, the obstacles to the organization of scientific expeditions, and that the Brazilian territory still had huge and sparsely inhabited sections, his map of Brazilian vegetation was highly precise. Although there has been great scientific progress, besides changes in the classification of the Brazilian flora over the last decades, with the help of more systematic field research and of aerial and remote sensing images, his 1934 synthesis had enduring influence.

Sampaio’s third work, published in 1935, *Biogeographia Dinâmica* [*Dynamic Biogeography*], begins with an optimistic note, for the author understood that the issue of nature protection was becoming more visible to important sectors of Brazilian society. He thought that biogeography should be the starting point of an accurate understanding of Brazilian nature and people and of an effective nature protection program. The goal was to reach a better integration between humans and the natural world, by means of a broad educational program that would circulate the pertinent information. This educational effort should inculcate ethical values and stimulate people to love nature.

Sampaio’s insight that nature conservation should be a concern of all levels and branches of the government was ahead of its time. This simple, single-page, black-and-white sketch is unassuming, but it was one of the first maps of its kind to be published and was influential for decades, until aerial photography and, later, orbital images became available, and still impresses current experts on account of its high degree of accuracy. For newer generations of scientists, it has been hard to find, as the book is out of print.
type of concern was retrieved under the quite recent concept of “transversalidade” (cross-section perspective) adopted in Brazilian environmental policies after 2002. The emphasis on education—rather than relying solely on law enforcement—is another remarkable aspect of Sampaio’s thinking, as well as the idea that private businesses also should be responsible for nature protection. These views somewhat mitigated his belief in the need for a strong and centralized state.

ARMANDO MAGALHÃES CORRÊA

ARMANDO MAGALHÃES CORRÊA was born in Rio de Janeiro, in 1889 and died there in 1944. He was a sculptor, sketch artist, professor, and writer. He began his higher education at the Army’s Realengo Military School, an officer training academy located in the outskirts of Rio, transferring later to the Escola Nacional de Belas Artes (Brazil’s major fine arts school), also in Rio, at which he studied sculpture. In 1912 Corrêa won an important prize that included support for him to study abroad. He improved his sculpting techniques in Paris. Returning to Brazil, he participated regularly in artistic exhibits, including the ones held in his alma mater, and received several awards and prizes. Corrêa was one of the creators of the Society of the Friends Alberto Torres, a civic organization involved in conservation efforts, in which he taught painting and decorative arts.

Corrêa contributed frequently to the important Rio de Janeiro newspaper as a writer and illustrator. He wrote regularly about the past and present of the city of Rio de Janeiro, adding his own illustrations to the texts. The chapters of his major book were published originally as articles. Two other series of texts published in the same newspaper were (on urban aspects of Rio) and (on the islands of Guanabara bay). Corrêa wrote at least one other book about historical aspects of Rio de Janeiro, focusing on the city’s water fountains. For this book he used at least some of the articles from the series.

Corrêa was also a self-taught naturalist. In this condition he worked many years as a curator in the Natural History Section of the MNRJ, becoming a colleague of Sampaio. He learned on his own how to draw plants and animals, a

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![Figure 3. Giant Anteater (Myrmecophaga Tridactyla).](image-url)
skill highly valued by botanists and zoologists, at a time in which the photographic recording of specimens, communities, and landscapes was still limited. His self-taught knowledge of natural history and his talent for producing images made him a professor of the MNRJ and of the Escola de Belas Artes do Rio de Janeiro.

After dozens of field trips to Jacarepaguá, Barra da Tijuca, Guaratiba, and the slopes of the Pedra Branca massif, all of them in the outskirts of Rio, Corrêa bought a small farm in Jacarepaguá and went to live there. Based at this farm, he would spend weekends and longer periods hiking and taking notes on the natural and human aspects of those then semi-rural places, at the periphery of the immense Rio de Janeiro urban maze.

O Sertão Carioca is the book by Corrêa that we have chosen to examine here. It originated from a series of articles published in the Correio da Manhã, in 1931 and 1932, collected and edited into a book. It is based almost entirely on primary information gathered in the late 1920s and early 1930s, during the author’s numerous field trips along trails, roads, farms, beaches, lagoons, aqueducts, dams, and bridges. Corrêa took notes, talked to locals, wrote journal entries, and drew excellent illustrations of landscapes, objects, houses, and the human types he encountered.

Corrêa sought to call attention to what he considered the major problem faced by Brazil, i.e., the lack of governmental assistance to the people living in the immense Brazilian sertão or wilderness. He wanted to show that the problems of that huge sertão and of its dwellers were not remote from the national capital. They started only a few dozen miles from Rio’s noisy downtown streets. These sections of the sertão were, in Corrêa’s eyes, a genuine sample of the conditions prevailing in most of Brazil. The very title of the book, although copying an expression recorded in old maps and documents, was intended to create a paradoxical effect, as it combined two opposite notions. Sertão was juxtaposed to carioca, a word used to identify the urban dwellers of Rio de Janeiro, a cosmopolitan metropolis that had been colonial, and imperial, and was still the republican capital and largest city in the country.

Corrêa described the natural and built environment and the daily life of the dwellers of this not so remote sertão, unsuspected by many cariocas. There were many human types—fishermen, hunters, collectors of forest products, loggers, charcoal manufacturers, brick makers, crafts persons (makers of ax and hoe handles, baskets, brooms), and even aqueduct and dam workers, besides small farmers—all of them quite different in occupation and status from the people living in the suburbs and central neighborhoods of Rio. From that sertão, many types of street vendors made their way on foot or mules to Rio’s streets, supplying all sorts of rustic goods to urbanites, such as live animals, foodstuffs, charcoal, brooms, baskets, and firewood.

Corrêa paid special attention to the natural components of the landscape—animal and plant species, floral formations, mountains, shores and beaches, lagoons, rivers (some of them quite important to the city’s water supply), and so on. However, he had a keen eye also for humans and their artifacts—aqueducts and dams, abandoned fortresses, roads and trails, farm houses, livestock, canoes
and boats, carts and other means of transportation, charcoal and brick-making areas, logged areas, household craft shops and the simple machines and tools used by the various artisans (such as looms and woodwork instruments).

The author’s general impression was that the withdrawal of raw materials from the woods, beaches, and mangroves was impoverishing the environment and jeopardizing the very livelihoods of the locals. The lack of foresight was not recent and urgent precautions were necessary, since the flora had been “devastated by man since colonial times, for construction, firewood or charcoal, turning the lavish secular vegetation into second growth brush.”

Corrêa defended reforestation with native species and considered that the eucalyptus—used in the first large-scale reforestation efforts in Brazil—dried and sterilized the earth. It should be planted only in swamps and along railroads. Corrêa considered the experience of replanting Rio’s Tijuca Forest, initiated in the early 1860s, a reason for “nationalistic pride” and “naturalist joy.” However, even in the Tijuca Forest hunters roamed freely, complained Corrêa, undisturbed by the personnel of Rio’s Water and Sewer services responsible for the area. From Barra da Tijuca to Sernambetiba, in the forests of the Pedra Branca range, Corrêa protested that the native fauna was also hunted.

Corrêa displayed empathy for the inhabitants of Rio’s sertão. He used them as guides and informants and described their work and habits. But he did not spare them of their share of responsibility for the environmental degradation that he denounced. He argued that they too were agents of devastation, even though they needed to use the land and its resources for their livelihood. They were not aware of the damage they caused: “These poor workers do not reckon the harm they do to themselves and their descendents. The Northeast [of Brazil] had woods in the past and today is a desert because of its dwellers.”
Contrary to what is commonly said today about his generation of “nature protectors,” Corrêa was therefore quite sensitive to the so-called “social issues” present in the sertão of Rio. He related directly the weakness of nature protection in the area to the precarious living conditions of its dwellers, who degraded natural resources but were not to blame for their dire situation. Nevertheless, Corrêa did not idealize the hard life of these people, nor did he exaggerate their “environmental” merits. They lacked almost everything modern: sanitation, schools, medical attention, means of transportation and communication, personal documents, and land tenure. Their work (even in something as vital as water storage and distribution systems) was poorly compensated by the state and their farm and craft productions generated profits only for middlemen and land leasers.

Corrêa believed that the inhabitants of the sertão could be transformed into protectors of their environment if the authorities provided them with the necessary assistance and if there were adequate laws. He defended, for instance, the idea that the Marapendi lagoon should be “given over to the protection of the Fisherman Confederation of Brazil ..., since the directors of this institution are truly patriots, on account of the moral and material aid they give to this righteous cause of Nature Protection.” Indeed, Corrêa saw these “traditional” people and their activities as potential protectors of the natural patrimony, decades before this type of proposal was made by Brazilian “socioenvironmentalists” of the 1980s and 1990s, who thought it was originally theirs.

In a more general view, Corrêa defended, years before the creation of the first Brazilian national park, the need to protect some areas more strictly. He argued that there should be efficient regulations that guaranteed the survival of the unique aspects of Brazilian nature. Corrêa believed Brazilians were lagging behind in nature protection. National parks had to be created to protect areas that could allow the advancement of scientific knowledge, of esthetic
appreciation, and of national identity, while other sections could fulfill productive roles. Therefore, Corrêa proposed in the 1930s that a conserved landscape should have two major dimensions, corresponding to what Brazilian park and reserve policies of the 1970s called “direct use” and “indirect use” of natural resources.

Like others in his generation of conservationists, Corrêa thought that nature protection went much beyond setting aside natural areas—it should be part of a wider project of nation building. He argued that Brazilian society should develop according to an original political project that included the uniqueness of its natural endowment, “source of all riches and the beauty of our people.” Corrêa liked to quote Alberto José Sampaio, his colleague at the MNRJ, on this issue. He considered Sampaio to be the most important authority in nature conservation issues in Brazil.

O Sertão Carioca ends with a call for an “unselfish effort of the true patriots” who wish to make Brazil a stronger society and to protect its natural endowment. Corrêa lists many proposals for a complex program of reforms aiming at the integration of humans, especially those living in the sertão, to the environment.

CÂNDIDO DE MELLO LEITÃO

THE ZOOLOGIST CÂNDIDO DE MELLO LEITÃO (1886-1948) was a professor at the MNRJ, like Sampaio and Corrêa, sharing many of their concerns about nature protection. Born in Campina Grande, in the state of Paraíba, Leitão graduated in 1909 from the Medical School of Rio de Janeiro. He taught medicine at universities in Rio de Janeiro and Belo Horizonte. His passion for zoology, however, overcame his training as a physician. In 1913 he began teaching zoology in Rio’s School of Agriculture and Veterinary Medicine. Later he became professor and researcher at the MNRJ.

Mello Leitão was also active in institution building. He was vice-president (1937-1939) and president (1943-1945) of the Brazilian Academy of Sciences. He wrote several books and published extensively in journals. In the 1930s and 1940s, he participated in and presided over the National Hunting and Fishing Council and was a consultant to the National Geographical Council. Leitão’s friendship with Fernando de Azevedo, editor of the distinguished series Coleção Brasiliiana of the Companhia Editora Nacional, led to several of his books being published in that collection.

Mello Leitão was also a pioneer in Brazil in the use of the radio to broadcast his knowledge and ideals in biology and nature protection. Besides exercising personal influence in important political and academic environments, he helped train new scientists at the MNRJ. These former students helped shape Brazilian research standards in the fields of zoology and botany. Besides studying spiders, his specialty, Leitão studied ecology, the geographical distribution of animals, their behavior, and their habitats. A man of impressive erudition, he also wrote an encompassing review of the history of biological knowledge about Brazil, since early colonial times.27

We will examine four of his books: A Biologia no Brasil [Biology in Brazil], A Vida Maravilhosa dos Animais [The Marvelous Life of Animals], A Vida na Selva
A Biologia no Brasil is a learned, ambitious review of just about every book written on Brazilian nature since the 1500s, covering the entire breadth of biological knowledge produced in and about Brazil. The author goes beyond the review and argues keenly that biology helped shape the very image of Brazil, among both Brazilians and non-Brazilians. Covering the early chroniclers and missionaries and the long list of nineteenth-century traveling naturalists, reaching all the way up to the first Brazilian, self-trained biologists of the early twentieth century, Leitão expounded on biological research and knowledge, in a manner that has not been matched until this day. He also studied the few institutions in which some of them worked. Although the book is not centered on nature protection, Leitão argued convincingly about the bond among investments in science, the appreciation of nature, and the rise of a Brazilian national consciousness.

In A Vida Maravilhosa dos Animais and A Vida na Selva, Leitão targeted a nonspecialized public. Both books nonetheless reveal how the author approached the natural world—his preferred route was the interpretation of the behavior and the forms of organization of animals. He studied life as an evolutionary process, in which cooperation was considered the central aspect. To Leitão, survival depended largely on the ability to articulate cooperative bonds. He saw an organic balance in the natural world and every being was part of this balance. Tensions and conflicts were solved in the general structure of habitats. Therefore, the study of the relations among beings that live in the same region allowed the scientist to “find all degrees [of dependence], from the most complete indifference to the most narrow dependence, whether to the benefit of one and to the more or less serious damage to the other [animal]–parasitism, predation—, whether to the benefit of both–mutualism, symbiosis.”

Biology allowed the unveiling of the secrets of a natural world that was basically harmonious. Mello Leitão thought that the development of biological science increased the value of living beings. Beyond the appeal to the technical rationality of scientists, he appealed to the sensitivity in relation to the esthetic aspects of the natural world. Research would reveal how nature works, in order to allow us to use it in a better way, but in this process the researcher would learn to admire nature’s refinement.

A Vida na Selva, according to the author himself, is an extension of A Vida Maravilhosa dos Animais. However, it stands out because of the systematic arguments in favor of nature protection. It is concerned with the creation of parks
Leitão uses now classic rationales for nature conservation initiatives: economic interest, the advancement of science, esthetics (protection of beauty), and even ethics (animals have the right to live).

According to Mello Leitão, only after situations become critical are measures taken to guarantee the survival of wild animals: “For about 30 years there have been meetings and conferences on nature protection, defending natural beauties against self-seeking human achievements, almost always oblivious to esthetic values. These congresses and conferences try to stop mankind, whose means of action and destruction multiply with progress, from disrupting the balance of the three kingdoms of nature in exchange for temporary profit.”

Mello Leitão considered national parks and reserves crucial to the perpetuation of floral and faunal species. He thought that a precise definition of the terms “national park” and “natural reserves” was established for the first time in the Conference for the Protection of African Fauna and Flora, held in London, in 1933. He wrote about existing parks and reserves—notably Yellowstone National Park—and about their contributions to the preservation of faunal species. Leitão also mentioned the existence of the first three Brazilian national parks created between 1937 and 1939. He noted that they were not receiving appropriate support in terms of infrastructure, management, and research.

Mello Leitão was a harsh critic of the pragmatic and near-sighted practices of many Brazilians responsible for the destruction of their natural patrimony. He believed the state had the responsibility to control the uses of private property in order to protect that patrimony. He warned about the need to change habits, something that had to be achieved through public education, investments in research, management, and improved techniques in productive activities.

Zoogeografia do Brasil had two editions. In the prologue of the first edition, in 1937, Leitão linked his text to the efforts of Sampaio and other MNRJ colleagues in the field of phytogeography, revealing the existence of a concerted research program. As pointed out earlier, this group of scientists thought that the country’s natural patrimony should be thoroughly studied in order to be used rationally and to be conserved for future generations. In the prologue to the second edition, in 1943, Leitão declared that his views had evolved considerably, especially because he followed the output of North American zoologists. Therefore, he warned that he had felt the need to update this still recent book.

The book studied the distribution of animals throughout Brazil, in correspondence with their distribution around the planet. Also, Mello Leitão considered zoogeography to be a part of the still emerging field of biogeography. He started with the definition of zoogeography: “the scientific study of animal life, concerning environmental influences, mutual relations between animal species and their distribution throughout the land, not only in the present time but also during the geological eras.” Mello Leitão thought that animals “are more or less in a narrow state of dependence of the environment, by their natural constitution and nutritional needs; each habitat has a peculiar animal or faunal community.”

Mello Leitão approached biomes as intricate sets of relations between living beings and their environment. He defined this environment as “a complex of
physical and chemical factors that operate upon a community.” According to Mello Leitão, the basic contribution of ecology to zoogeography was the analysis of the role of these factors and of their interrelations. This kind of perception about the organization of life placed Leitão within the perspective developed by North American ecologists such as A. G. Tansley, Frederic Clements, and Victor Shelford, according to whom nature was as a “living superorganism,” able to “self-regulate” itself through the interactions of its many components.34

Mello Leitão’s definition of zoogeographical regions was based on the work of Alfred Russell Wallace, who based his classification on mammals. He also quoted Trouessart to explain why vertebrates were used in zoogeographical classification. His outlook included “the influence of mankind on the distribution of fauna, whether as an element of disturbance or conservation of species threatened with extinction.”35 He believed that mankind, on a global scale, usually had a disastrous influence on the fauna. In many cases, the extinction of species was deliberate; in others, however, it was unconscious and full of unforeseen results. He argued that it was especially important to study the zoogeographical consequences of alien fauna deliberately or accidentally introduced, the extinction of unwanted species, and hygienic measures. Prime topics to be addressed should be the total or partial extinction of animal species (especially birds and mammals), the role of parks and reserves, the effects of agricultural techniques in the distribution of animals and the cosmopolitan character of the urban fauna. Mello Leitão thought that mankind contributed to the disappearance of some of the most characteristic faunal components of many regions of the planet, or at least it helped reduce their populations drastically.36

Nature conservation was, therefore, of great and immediate importance to the fauna. He considered that tree planting and forested reserves were important alternative conservation strategies, since “in modern times they reestablished forests in process of disappearing and allowed the settlement of their natural inhabitants, which had already become rare.”37

Mello Leitão wished to combine reason and sensitivity as guides to research programs capable of generating knowledge that would aid in bringing humans closer to nature. His work also illuminated how strongly biological research had historically been a basic source of knowledge about Brazil and the source of many deeply ingrained concepts held by Brazilians about the country and about themselves. He was also one of the first Brazilian scientists to suggest how biology— and conservation in particular—could help overcome the short-sighted and predatory view about nature prevalent among the majority of Brazilians.

FREDERICO CARLOS HOEHNE

FREDERICO CARLOS HOEHNE was one of the first Brazilian scientists to undertake systematic, encompassing, and long-term studies about the native flora and associated subjects, such as biogeography and ecology. Although an indirect heir of the many foreign “traveling naturalists” who had traversed the Brazilian territory, most of them in the nineteenth century, Hoehne was decidedly different
from them in several aspects. First of all, he was a first-generation Brazilian (born to German parents). Second, he spent his whole life in Brazil. Third, he dedicated his entire career to the examination of the Brazilian flora, alternating field trips with extensive periods engaged in labs, floral collections, and research work in scientific institutions, while most foreign travelers/scientists engaged in a single collection trip to Brazil. Fourth, Hoehne created collections that remained in the country and were available to other local scientists. Fifth, he worked or directed Brazilian scientific institutions, at a time of very scarce investments in science. In other words, Hoehne combined extensive field experience—the hallmark of so many foreign naturalists who studied Brazil—with the creation of plant collections that allowed him and his Brazilian colleagues and disciples to produce numerous and influential publications.

Hoehne (1882-1959) was raised in a small rural community near the industrial city of Juiz de Fora, in the Atlantic Forest biome. The forest formations he knew since his childhood were probably quite disturbed and fragmented by the wave of coffee plantations and by the businesses, roads, and railroads that followed them. In his father’s small farm, on which he was raised, there were stretches of well-preserved forests, however, providing wood, fruit, and other goods. Hoehne wrote that in his childhood he had “countless opportunities to observe the phenomena of nature.”

Early in his childhood he made contact with the first plant collection of his life, as he helped his father care for a “rustic” collection of orchids located in the farm’s orchard. The collection attracted visitors. Some of the orchids were sold and helped support the modest family. At the age of eight, Hoehne organized his own collection of orchids, in another corner of his father’s farm. According to Hoehne, that was “the foundation for [my] interest in botany.”

Hoehne finished high school in 1899. He had no access to a university course in the field of his interest. At 17, he was an accomplished, self-taught plant collector and breeder, supporting himself partially with orchid sales. He studied botany on his own, reading books ordered from Rio de Janeiro. He extended his plant collection by means of short field trips and exchanges with other collectors. He struggled to identify and classify many kinds of plants, as he sought to discover new species. His plant collection surpassed his father’s and became locally renowned. Young Hoehne became an expert and was regularly visited or consulted by scholars and plant collectors.

In 1907, at the age of 25, he took the big step that launched his career as a professional researcher and scientist. With the help of a Juiz de Fora politician,
this “country boy” without any scientific training was surprisingly appointed to be the chief-gardener of the MNRJ, Brazil’s most important scientific institution. From those early days of his career, Hoehne recalled “the guidance offered at the MNRJ by his senior colleague, Alberto José Sampaio.39

In 1908, only a few months later, Hoehne was already a member of a long-course field trip of MNRJ naturalists, in one of Cândido Mariano da Silva Rondon’s expeditions to the state of Mato Grosso. This was to be the first of Hoehne’s numerous extensive field trips around Brazil. In late 1909 Hoehne returned to Mato Grosso for a second extended field trip, from which he brought a collection of more than two thousand plants, added to the MNRJ’s herbarium, under his responsibility. He sent flower specimens to Germany, for identification. His plant drawings were highly appreciated and printed in Germany. Later, they were attached as illustrations to the official report of the botany expedition. In 1910, Hoehne again went to Mato Grosso, for a third expedition. In 1912, Hoehne was member of another Rondon expedition, traveling this time to the states of Mato Grosso and Amazonas. In 1913 he was appointed botanist of the so-called (Theodore) Roosevelt-Rondon mission and again engaged in fieldwork in Mato Grosso.40 In a little more than five years, therefore, Hoehne, as a MNRJ scientist, had completed five long scientific exploration trips to remote areas of the country, in an era when Brazilian scientists had very scarce support for such efforts.

Hoehne made his second crucial career move in 1917, when he transferred to São Paulo, by invitation of the state government. It was in this agitated city—on its way to become Brazil’s foremost commercial, industrial, and financial center—that he set down his professional roots and developed a systematic, long-term career in science and conservation. His career was linked to the rise of the Instituto de Botânica do Estado de São Paulo [São Paulo State Botanical Institute], which he headed for decades, while it gained new names that indicated its growing status as a scientific institution. Hoehne worked at the Institute until 1952, when he retired.

Between 1908 and 1945, Hoehne participated in fifteen scientific expeditions throughout Brazil and neighboring countries, making a name for himself as a field researcher. His travels took him to the states of Mato Grosso, Amazonas, Minas Gerais, São Paulo, Rio de Janeiro, Paraná, and Santa Catarina, and to the southern coast of Brazil. He used his field notes to write extensive travel reports, as well as the numerous scientific articles about landscapes, plant collections, and discoveries. He used the expeditions to collect plants and to enlarge the collections under his responsibility, on which he worked intensively between field trips. He regularly published articles, inventories and notes based on these collections, besides working with identification, classification, breeding, and exchange. He therefore combined field research, extensive lab and library work, and scientific writing, not to mention the direction of scientific institutions.

In those expeditions, Hoehne and his collaborators collected at least ten thousand floral specimens, corresponding to at least four thousand different species. Hoehne fulfilled his youthful dream of discovering plants, as approximately two hundred of those species were new to science. He went further:
dozens of plants of the Brazilian native flora were named after him, an honor he received from many colleagues, assistants, and admirers.

Hoehne wrote more than six hundred scientific and journalistic articles, not only about the plants collected in his trips, but also on other subjects, such as deforestation, reforestation, landscaping, introduction of exotic plants, use and cultivation of medicinal plants, agriculture, plant breeding and collection, protected areas, and research stations. He contributed special lectures, booklets for children, and many texts of local circulation. Hoehne was concerned with the preservation of species and biological diversity. From the early stages of his career he had defended the need to create reserves for the native flora and fauna. In a 1937 text, he presented a full list of the dozens of texts he had published on the subject since 1917. There were articles about forest reserves and biological stations, urban parks and urban landscaping with native species, reforestation (also with native species), forest protection, and control of forest fires. This vast work received much recognition, even internationally. Hoehne was honored by many institutions, more notably by the invitation to become an honorary member of the American Orchid Society. Göttingen University, in Germany, awarded him with a *honoris causa* title, in 1929.

Nature protection was a constant theme in Hoehne’s texts throughout his entire career. His perception of the natural world was closely connected to a moral view that articulated utility and esthetics. In such a view, it was essential that humans treat nature with care. It was an organicist perspective, in which the use and transformation of the natural world should obey natural laws. Hoehne was also a nationalist and perceived Brazilian nature as particularly prodigal and worthy of pride and praise. In 1930, he published volume I of *As Plantas Ornementaes da Flora Brasílica* [Ornamental Plants of the Brazilian Flora]. He wished to “awaken, in the minds and hearts of the countrymen, interest and love for the most beautiful and exciting things that Brazilian nature produces and offers.”

According to Hoehne, there already was a strong concern about the “lives of our people” and about “their habits,” but he thought that it was still necessary to “start loving our plants, animals and all of Brazil’s natural wonders, in order to use them to create the environment that can make us happy and satisfied.”

The need for this change was urgent, since “we had been destroying forests, driven by the impetus to denude the soil, without realizing that these forests nourish the productive lands that we cultivate so easily, without noticing the thousand other valuable things that exist in the forests besides wood and firewood—valuable things that offer many advantages and provide other indirect benefits.”

According to Hoehne, not only forests, but also other floral formations of the Brazilian flora should be studied and protected. Referring to the Brazilian cerrados [savannas], Hoehne complained: “these rustic fields ... never deserved our attention. The flames devoured them and we did not realize how admirable, rich and generous they are.” Wild animals should also be objects of greater concern—“as forests and prairies were destroyed, we also exterminated insects, birds and thousands of other animals that are our helpers, our friends. And, in
such a manner, we caused our own ruin.” Hoehne was deeply concerned, therefore, with the destruction of a natural patrimony that was diverse, scarcely known and destructively used, as a result of the lack of awareness about the enormous potential to be revealed by more accurate studies.

In *As Plantas Ornamentaes da Flora Brasílica*, Hoehne had two goals. First, he wanted to “show a part of the interesting and diverse things that our indigenous flora has to offer, for street, park and garden landscaping, for greenhouses, for living rooms and for arts and poetry.” He maintained that “the trees of our forests and fields should always be favored, especially when we plant trees in our streets and parks.” The second objective was “to show the advantage of natural forests over artificial ones for the development of arts. By this we mean the awakening of the defenders of these forests, so that in the centuries to come the children of our country may be inspired by them and find elements to understand the great wonders that the Creator cast over our homeland.” Pragmatically, he explained that “[w]e need defenders of the country’s nature. Now that we hear so much about societies of friends of the cities, the schools, the arts and literature, it is about time to think about the creation of a society of friends of nature, which would be the best and most patriotic of all.” These words express the recurring theme of equating nature protection with nation building.

The *Sociedade de Amigos da Flora Brasílica* [Society of Friends of Brazilian Flora] was founded in São Paulo, in 1939, under Hoehne’s inspiration. This society, along with the São Paulo State Botanical Institute, organized public lectures and tried to influence public opinion in favor of biological preserves and reforestation. In the small city of Limeira, the organization established a “Biological Park,” a place to conduct research on the conservation of native flora and fauna, an early experiment in private preservation and research.

Knowledge was a fundamental aspect of Hoehne’s notion of nature appreciation. He and his research teams dedicated themselves mainly to the research and mapping of the Brazilian flora. His greatest ambition was to publish a vast treatise, an update of the magnificent *Flora Brasiliensis* compiled over several decades by the Austrian botanist Carl Friedrich Philipp von Martius.

The mere production of knowledge, however, was not enough for Hoehne—it had to be circulated. This was his permanent concern, since he saw nature destruction as the result of ignorance, stubbornness, and selfishness on the part of those who sought immediate profit. Therefore, information on nature conservation had to be made readily available to the broadest possible public. Laws that would submit private interests to the public good were also needed.

Hoehne attained a degree of influence in federal and state governmental spheres. In the realm of the federal government, his ideas contributed to the creation of Brazil’s first national parks. Through Fernando Costa, secretary of agriculture, industry and commerce of São Paulo, minister of agriculture, and governor of São Paulo, Hoehne influenced scientific research and conservation policies in the rich state of São Paulo. Costa supported Hoehne’s projects, like the creation of São Paulo’s Botanical Garden and several protected areas, besides urban and rural landscaping.
Hoehne was not strictly a preservationist. He defended the rational use of natural resources, combined with the esthetic fruition of nature and with scientific research. Therefore, Hoehne was not “against people,” as he and his generation of scientists are frequently portrayed in the current literature. Hoehne was in favor of production, in a way we would today call sustainable. He envisioned cities filled with parks, gardens, flowers, and trees; roads should be juxtaposed to forest reserves. In his travel notes, Hoehne commonly identified wild” sections that he thought fit to be put into production, setting them apart from other sections that would best become nature preserves. Concerned with the frenetic rhythm of progress, Hoehne always sought ways to make it more harmonious with natural settings.

Hoehne’s travels around Brazil, as well as his knowledge and concerns about native flora and fauna, were summarized in his Iconografia das Orchidáceas do Brasil.52 It contains a curious chapter, titled “Mental Excursion around the Country,” taking the reader for an imaginary trip to all places in Brazil where orchids could be found. However, many other phytogeographical and nature protection issues are discussed in the remaining chapters.

Hoehne recognized and approved of the notion that orchids could be raised for commercial purposes, which to him was much better than the totally irrational way in which they were harvested in the wild. With proper care and solid knowledge, orchids could and should be collected, cultivated, and even improved. With his pragmatic concern with the economic value of selected plants and with the possible extinction of orchids and other species, Hoehne displayed and praised the esthetic rewards involved in the study and breeding of orchids and of plants in general. He was, at the same time, a man of science and a romantic, in love with the colors and harmonies of the natural world.

Hoehne defended the right of future generations to enjoy both the utility and the beauty of a shared natural patrimony, using an argument very similar to the current appeals to “sustainability” and “intergenerational solidarity.” In his words, “man has the right to use all the gifts of nature. This privilege was given to him by God himself on the day man became an animal endowed with a psychological life, with a spiritual dimension. We should not forget, however, that together with privilege comes responsibility and duty.”53

Along with his conception of nature as a web of multiple interdependencies among beings there was a hierarchical perspective, in which the supreme Creator entrusted humans, as the superior creature, with the management and care of all other beings. This reasoning is similar to the ones analyzed by a number of scholars of contemporary environmental thinking in many countries.54

In Plantas Ornamentais, Hoehne tried to define in a more complete way esthetics in its relation with nature. He quoted Plato, Aristotle, Kant, and Schelling to argue that esthetic appreciation was a finer feeling, one that could awaken a consciousness of transcendence in humans. Living in touch with nature provided the feeling of uniqueness and harmony and this model of perfection should guide and conduct humanity in its quest for pleasure and joy. Hoehne’s romantic spirit made him a good observer of both local diversity and the distinctive features of
Brazil’s flora and fauna. In the case of Brazil, human adaptation should not be detrimental to such a rich natural environment. Brazilians should realize that they live in a land with multiple aspects, its variations corresponding to “earthly and atmospheric influences. According to variations in the appearance, the density and the height of the vegetation, floral and fauna species also varied.”

Hoehne was concerned also with the productive use of natural resources. This made his thinking objective and pragmatic. However, his most important arguments in defense of nature were esthetic. Immersed in the natural world, humans and each and all of the other parts, all interconnected, were, according to him, worthy both in themselves and for being a part of the whole. This position is quite close to what is known nowadays as deep ecology.

In the Relatório Anual do Instituto de Botânica, dated June 1951, in an article entitled “Reforestation,” Hoehne discussed the issue of the permanence or impermanence of Brazil’s extensive forest cover. He noted that “the floral physiognomy of a country should be perpetuated as a peculiar characteristic, so that the faunal aspects could continue to exist and the biota could be maintained.” He thought that farmers should be careful about the choice of species for cultivation, should abandon the broad use of the ax and fire and put an end to the careless destruction of firewood and timber. The problem was not caused only by rich farmers who produced commercially, since poor subsistence farmers also destroyed forests in order to plant food, abandoning their croplands after only a few harvests. Scientific studies of the flora could aid in halting forest destruction.

Hoehne’s pragmatic vein was clear in his arguments in favor of the scientific study of the native flora. He considered protecting nature to be important for the better use of its resources. He stressed, for example, that he was not against the introduction of exotic tree species. However, he thought that such commercially valuable species should be planted only in areas already cleared. Still, Hoehne preferred the use of native species, since they could compose adequate environments for local fauna. To him, tree planting could generate both profits and the joy stemming from esthetic appreciation.

Concerning the Brazilian fauna in general, Hoehne was well aware that its reproduction required extensive forested areas. He thought, however, that such areas could exist even in settled places, if neighboring farmers spared sections of forests in their properties. Therefore, reforestation appeared in Hoehne’s work as more than an economic activity. It also was a way to create stronger bonds between humans and nature, involving emotional experiences and the possibility of moral and spiritual growth.

Besides being a dedicated and recognized scientist, he was a devoted communicator of ideas concerning the protection of nature. He warned, in 1927, “that which nature created, once destroyed, can never be fixed artificially and … in wild forests and fields we still possess thousands and thousands of plants and animals which we do not know and which one day perhaps may become very important and useful to us.” Hoehne argued that preserved forested areas provided habitats for birds, insects, and other animals that protected crops from...
predators and parasites. Today, these perspectives are commonplace in any conference on biodiversity or on the preservation of the natural environment.

Hoehne’s nationalism expressed his belief in the possibility that Brazil would move in the direction of nature protection. He believed that the rich countries did not necessarily have a leading role in the matter of nature conservation. At best, they served as signs of alert—“having stripped their soil of their primitive and native forests, today they try to reestablish their biota and optimal conditions through natural forests, without ever succeeding.”

Hoehne expected Brazilians to decide to care about the nation’s natural patrimony. In 1924, he suggested that “man has every right to dispose of trees, as of everything that nature offers him, as he thinks best, but even we cannot bestow private rights upon private persons while causing damage to collectivity.”

CONCLUSION

AS WE ARGUED early in the text, a more encompassing perspective that brings together these authors is that they wanted nature to be protected so that it could be construed and remain as a central part of the Brazilian national identity. They did so by combining science (biology, ecology, biogeography etc.), romanticism, and nationalism. Sampaio, Corrêa, Mello Leitão, and Hoehne opened the way for modern conservation efforts (intellectual, institutional, and scientific) that are now a part of the public agenda and are slowly creeping into popular consciousness.

However, it must be added that while they were alive, they were probably frustrated by how weakly political institutions and mainstream Brazilian society absorbed their proposals. The diverse coalitions in power since 1930 turned out to be solidly “developmentalist” (“desenvolvimentistas”), in the worst environmental sense possible. Parties, regional interest groups, and representation of different segments of the Brazilian society were shuffled and reshuffled in 1930 (a national revolution), in 1937 (the creation of the Estado Novo), in 1945 (end of the Estado Novo), and again in 1964 (military coup and start of a twenty-one-year dictatorship). However, “development at all costs” (including environmental costs) was the unofficial consensus that glued together these coalitions, internally and to each other. This consensus all but silenced the voices of Sampaio, Corrêa, Mello Leitão, and Hoehne, confining them to the narrow ranks of environmentally concerned scientists and citizens.

Even the more recent process of political “redemocratization,” started in 1985 and now almost twenty-five years old, has not sufficed to cut deeply through this “developmentalist” consensus. The process has been undoubtedly positive and is by now quite stabilized, leading to deep improvements in citizenship institutions and organization and opening the path for a vast array of environmental policies and environmentally oriented citizens’ groups. From our point of view, however, the durable prodevelopment consensus and the lack of political freedom during most of the years between 1930 and 1985 had the striking effect of forging the third generation of current Brazilian environmentalists in a manner that made them unaware or excessively critical of the second generation studied here.
Brazilian society and institutions over the last eighty years were not deeply reformed in the direction of nature protection and of making Brazilian nature a central part of its identity. Even some of our authors’ scientific findings, however tentative or dated they may be by now, are neglected by many scientists. We argue that a better knowledge of the ideas and scientific findings of our authors can aid in the formation of a more influential and solid environmental movement, bringing together public and private institutions, scientists, managers, activists, the media, and even businesses.

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**NOTES**

This is the first of two related articles accepted for publication in *Environmental History*. The two essays examine the role of a selected group of Brazilian scientists, active from the 1920s to the 1940s, who extensively researched Brazilian natural features and advocated the protection of Brazilian natural resources and landscapes as a step toward nation building. This article focuses on the scientific and esthetic contributions of these authors. The second article, to be published in a future issue, is entitled “Wilderness and the Brazilian Mind (II)—The First Brazilian Conference on Nature Protection (Rio de Janeiro, 1934).” Its focus falls on an early science and policy meeting. The scientists examined in this article helped organize this meeting and some of them participated in it.

2. On these matters, see Gilmar Arruda, *Cidades e Sertões: entre a História e a Memória* (Bauru: EDUSC, 2000); Victor Leonardi, *Entre Árvores e Esquecimentos: História Social nos Sertões do Brasil* (Brasília: UnB/Paralelo 15, 1996); Lúcia Lippi de Oliveira,

3. This “first generation” was masterfully studied by José Augusto Pádua, Um Sopro de Destruição—pensamento político e crítica ambiental no Brasil escravista (1786-1888) (Rio de Janeiro: Jorge Zahar Editor, 2002). It is noteworthy that Padua’s research was in part inspired by Richard H. Grove’s findings about the early environmental concerns expressed by European colonial officers stationed in several parts of the world. See his Green Imperialism—Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860 (Cambridge: Cambridge University Press, 1995).

4. To our knowledge, the first and still only general secondary analysis published about the work and accomplishments of this “second generation” is found in a short section of a chapter of Warren Dean’s With Broadax and Firebrand: The Destruction of the Brazilian Atlantic Forest (Berkeley and Los Angeles: University of California Press, 1995), chapter 11—a specifically valuable asset in this otherwise important text.

5. Augusto Ruschi (1915-1986), trained by Sampaio and Mello Leitão, gained a sudden but lasting notoriety as an environmental activist in the late 1970s and the 1980s, as he boisterously protested the expansion of eucalyptus plantations in the state of Espírito Santo. However, he spent almost his entire career “quietly” researching the flora and fauna of the Atlantic Forest, having become Brazil’s utmost expert in hummingbirds and orchids. Curiously, he is claimed as a forerunner by both preservationists and socioenvironmentalists, each exalting his distinct traits as a researcher and as an activist, respectively. A Ruschi biography was written by Rogério Medeiros, Ruschi: O Agitador Ecológico (Rio de Janeiro: Record, 1995). Ruschi is mentioned many times by Dean, With Broadax.


8. We use the word intellectual to indicate a broad range of writers, professors, technicians, scientists, and professionals, most of them employed by government institutions.


de História da ANPUH-MG (Juiz de Fora, Minas Gerais, July 2004). See also Carolina Marotta Capanema, “A Natureza no Projeto de Construção de um Brasil Moderno e a obra de Alberto José Sampaio,” (Masters’ thesis, History Department, Universidade Federal de Minas Gerais, 2006). See also http://www.abc.org.br/historia/academioletra.asp?letra=A.

11. Sampaio’s research about the flora of Mato Grosso was published as Alberto José Sampaio, “A Flora de Mato Grosso—Memória em homenagem aos trabalhos botânicos da Comissão Rondon,” in Archivos do Museu Nacional 19 (1916): 1-126. Rondon’s expeditions, biography, and role in nation building recently have been the object of Todd Diacon, Stringing Together a Nation—Cândido Mariano da Silva Rondon and the Construction of a Modern Brazil, 1906-1930 (Durham, NC: Duke University Press, 2004). Hoehne was a scientific member of several Rondon expeditions in Mato Grosso.


13. About these other authors, see José Luiz de Andrade Franco and José Augusto Drummond, “Preocupações com a proteção à natureza e com o uso dos recursos naturais na Primeira República brasileira,” Textos de História—Revista da Pós-Graduação em História da UnB, 12, 1/2, 2004, 145-65.

14. On this agency, see Osny Duarte Pereira, Direito Florestal Brasileiro (Rio de Janeiro: Borsoi, 1950), 131-32. See also Dean, With Broadax, 257, in which he stresses the weakness of the agency even after the 1925 decree. Despite its ambitious name, the agency focused on planting trees in the streets of Rio de Janeiro, although it also protected a substantial area of watersheds that supplied the national capital.

15. Published as a special issue of Archivos do Museu Nacional 28 (March 1926).


18. Among many other recent documents issued by the Brazilian Secretariat for the Environment that use this concept, see Ministério do Meio Ambiente, Vamos Cuidar do Brasil: Deliberações da Conferência Nacional do Meio Ambiente e da Conferência Infanto-Juvenil pelo Meio Ambiente—2003 (Brasília: Ministério do Meio Ambiente, 2004).


21. O Sertão Carioca was published as a special issue of the periodical Revista do Instituto Histórico e Geográfico Brasileiro, vol. 167 (Rio de Janeiro: Imprensa Nacional, 1933). However, it was printed only in 1936.

22. Corrêa, O Sertão Carioca, 73.

23. On the history of eucalyptus plantations in Brazil, see Regina Machado Leão, A Floresta
26. Ibid., 153.
33. Ibid., 22.
36. Ibid., 583.
37. Ibid., 596.
40. Todd Diacon, *Stringing Together a Nation—Cândido Mariano da Silva Rondon and the Construction of a Modern Brazil, 1906-1930* (Durham, NC: Duke University Press, 2004), provides a valuable overview of Rondon’s expeditions, including the one with Theodore Roosevelt, but he mentions Hoehne only in passing.
41. Frederico Carlos Hoehne, *Resenha Histórica para a Comemoração do Vigésimo Aniversário da Seção de Botânica e Agronomia Anexa ao Instituto Biológico de São
Paulo (São Paulo: Secretaria de Agricultura, Indústria e Comércio, 1937).
43. Ibid., 34.
44. Ibid., 4.
45. Ibid., 4.
46. Ibid., 4.
47. Ibid., 6, 10.
48. Ibid., 12.
50. *Flora brasiliensis* is a multivolume, multiauthor work produced between 1840 and 1906 by Carl Friedrich Philipp von Martius, August Wilhelm Eichler, and Ignatz Urban, with the participation of dozens of specialists of several nationalities. It was based on materials collected by the Austrian botanist von Martius during his extensive, three-year expedition throughout Brazil, between 1817 and 1820. It deals with the taxonomy of more than 22,000 species of plants, mostly angiosperms, collected throughout Brazil. At least fifteen volumes were published, adding up to more than ten thousand pages. See *Projeto Flora Brasiliensis revisitada* (http://flora.cria.org.br/). The narrative written by von Martius and his Austrian traveling partner Johann Baptist von Spix is arguably the classic among the numerous scientific-travel narratives written by foreigners who visited Brazil. See Johann Baptist von Spix and Carl Frederich Phillipp von Martius, *Viagem pelo Brasil, 1817/1829* (Belo Horizonte: Itatiaia; São Paulo: Editora da Universidade de São Paulo, 1981), 3 v. Hoehne published at least twenty-five volumes of his projected follow-up to von Martius’s work, under the general title *Flora Brasílica*, the first one in 1940.
57. Ibid., 41, 43, 44.
59. Ibid., 259.
60. Ibid.