

Imperial Stories and Empirical Evidence

THE ENVIRONMENTAL HISTORY of North Africa is a sad tale of deforestation and desertification that has spanned much of the past two millennia. This history of environmental decline has been recounted so often by so many that it is widely accepted without question today. Yet recent paleoecological evidence and new research in arid lands ecology do not support many of these claims regarding deforestation, overgrazing, and desertification. A closer examination of how the environmental history of North Africa has been constructed over time reveals the key roles of French colonial scientists, administrators, military men, and settlers in writing this declensionist narrative. The complex, dynamic and long-standing relationship between French colonialism, environmental narratives, and history in North Africa forms the primary subject of this book.

Scholars of colonialism have effectively documented the multiple ways in which the French administration expropriated land, forests, and other natural resources from North Africans during the colonial period.¹ What has been less well explored, however, is how the French environmental

history of North Africa, and environmental and related laws and policies, were used to facilitate the appropriation of these resources, to transform subsistence production, and to effect social control. By detailing the construction and use of the declensionist environmental narrative, this book tells the story of the French colonial story of nature in the Maghreb.²

The conventional environmental history of North Africa most widely accepted today was created during the French colonial period. Before the conquest of Algeria, North Africa had been most commonly depicted in French and European writings as a fertile land that had lapsed into decadence under the “primitive” techniques of the “lazy natives.” This view changed under French rule of the Maghreb, which began in 1830 with the occupation of Algeria.³ In less than two decades, there emerged a colonial environmental narrative that blamed the indigenous peoples, especially herders, for deforesting and degrading what was once the apparently highly fertile “granary of Rome” in North Africa. The declensionist story that quickly developed was used throughout the colonial period to rationalize and to motivate French colonization across North Africa. This narrative and its utilization reached their apogee between 1880 and 1930, precisely the period during which colonial activities caused the most deforestation. Although the colonial narrative began to take shape first in Algeria, it included the entire Maghreb environment from its inception, and it was quickly applied to the subsequently conquered territories of Tunisia (1881) and Morocco (1912). This story was partly a political history and partly an elaborate environmental history of the preceding two millennia. Classical literary sources, including the writings of Herodotus, Pliny, Procopius, Strabo, and Ptolemy, had formed the basis for French and European views of North Africa as “the most fertile region in the world” long before the French conquest of Algeria.⁴ By the second half of the nineteenth century, the story became firmly entrenched that North Africa had been the granary of Rome. This exaggerated image was reinforced by the archeological examination of many Roman ruins, including aqueducts and other irrigation structures as well as ruined towns and olive presses, which appeared to have supported large and prosperous populations. Orientalist paintings like Victor-Pierre Huguet’s 1868 *The Remains of a Roman Aqueduct in the Region of Cherchell* often represented these traces of the granary of Rome in ways that fed the colonial imagination (see plate 1).

Later in the colonial period, the image of the successful exploitation of the natural fertility of North Africa by the Romans was accompanied

by an image of the subsequent destruction, deforestation, and desertification of the North African environment by hordes of Arab nomads and their ravenous herds. Hints of this transformation in the narrative are evident as early as the 1830s. The major transformation to a declensionist narrative, though, did not appear widely until the 1850s and 1860s. By the 1870s, it was ubiquitous. Many official and popular writers on the Maghreb essentially agreed with the conclusion of the Tunisian Service des Affaires Indigènes, that “the profound convulsions which, since the Roman era, have upset the country: the passage of the Arab armies and later the Hillalian tribal invasion . . . have made of this country a desert strewn with ruins which, however, attest to its ancient prosperity.”⁵

While the French largely drew on classical sources for evidence of North Africa’s former fertility and vast forests, they relied on the writings of medieval Arab historians to support their tale of decline at the hands of Arab nomads and their herds over the prior eight centuries. Small portions of Ibn Khaldoun’s voluminous writings, for example, selectively chosen for their negative view of Arab nomads, became frequently cited sources for many of the French colonial claims of ruin wrought by the Hillalian Arab nomad “invasion” of the eleventh century. Although other Arab writers had been cited often in the first two decades of occupation, after the French translation of Ibn Khaldoun’s *Prologomènes* and *Histoire des berbères* by Baron de Slane in the 1850s most French writing on North Africa quoted Ibn Khaldoun in its descriptions of the widespread destruction caused by the Arab invasion. Many such citations spoke to the destruction of “civilization,” that is, of urban areas and urban-based political and economic systems.

Authors writing in particular about the devastating effects of the Arab invasion on “civilization” did not, or did not often, mention its environmental effects. It is not generally recognized, though, that a few select passages from Ibn Khaldoun on the environmental destruction wreaked by the Hillalian invasion were in fact identified, widely quoted, and in the process reified by those invoking the declensionist narrative. Thus, for the last half of the nineteenth century and the first several decades of the twentieth, Ibn Khaldoun was cited repeatedly for his description of the Arab nomads in the eleventh century as “locusts” who “ruined gardens and cut down all the trees.”⁶ Even widespread forest fires, and thus presumed deforestation, were attributed to the Hillalian nomads based on citations of Ibn Khaldoun.⁷ Ibn Khaldoun was also quoted frequently for irrefutable proof that “the Arab nomads brought

devastation” and that “civilization was ruined and the country was changed into a desert.”⁸

Fears of desertification were extremely widespread throughout the colonial period in the Maghreb. As early as 1834 military officers in Algeria were blaming nomads for destruction of the vegetation and of the soil itself.⁹ Many French colonists were describing Algeria by the 1860s as the “land of thirst,” a land that had been transformed from a former paradise into a sterile, barren desert. The word “desertification,” though, does not appear to have been used until 1927, when Louis Lavauden described the forests of the Sahara as “desertified” and discussed “desertification” as a uniquely human act.¹⁰ As early as 1880, however, direct and detailed blame was being placed on North Africans, especially nomadic pastoralists, for what was later called “desertification.” A quarter of a century later, in 1906, one of the foremost French experts on North Africa exclaimed that, due to burning and overgrazing in Algeria, “the forest gives way to scrub, the scrub to herbaceous vegetation, the herbaceous vegetation to bare soil, that finishes by being detached itself and that becomes the victim of the wind.”¹¹ This description of desertification became increasingly common during the rest of the colonial period and still informs writing on desertification today. Such descriptions often preceded pronouncements about the former fertility of the Roman period and the need for France to resurrect it. One typical narrative, for instance, asserted that “following the prosperous days of the Roman era, Algeria, Tunisia, and Morocco . . . vegetated, barely surviving. . . . All fell into ruin, of the splendid golden age of Roman Mauretania only a charred rocky desert remained. . . . Suddenly, a new breeze, and France . . . arrived to conquer so that Latin civilization could be rescued.”¹²

The French colonial conception of Roman North Africa as spectacularly fertile and prosperous rested, in large part, on the belief that the Maghreb had been the granary of Rome and that the many ruins indicated a large population thriving in antiquity. Since the Roman ruins were no longer being used when the French colonized the region, and the local population was relatively small, they assumed that some sort of environmental catastrophe had occurred, and primarily blamed the Arab nomads for the perceived environmental degradation. The idea that the Maghreb had supplied grain to the Roman Empire is well supported by the historical record. The French colonial belief that the Maghreb had produced significantly more grain during the Roman period than afterward, however, is not well supported by the available evidence.

It is true that significant quantities of grain were produced in and exported from North Africa from before the Roman period until the twentieth century.¹³ During the Roman period it is estimated that five million bushels of grain were shipped annually from North Africa to Rome.¹⁴ By comparison, however, in 1862, Algeria alone produced 34.5 million bushels of grain, 90 percent of which was grown by Algerians using, significantly, traditional techniques.¹⁵ By 1954, Algeria produced around 86 million bushels of grain, nearly half of which was sold on the international market.¹⁶ As populations have grown in the Maghreb and other regions of the Mediterranean have begun to produce more grain, exports of cereals have declined, but production has continued to rise.¹⁷

A significant amount of land degradation did, however, occur during the Roman period itself, as a result of their agricultural techniques and expansion. Contemporary research in fact attributes the blame for the commencement of soil degradation in North Africa to the Romans, whose overcultivation was “followed [by] a phase of relative soil conservation and vegetative regeneration with the more nomadic land-use system of the Arabs.”¹⁸ Furthermore, these authors conclude that “conservation of Mediterranean landscapes . . . can only be ensured by continuation of the agro-pastoral functions under which these landscapes evolved.”¹⁹

The deforestation and desertification assumed to have been wrought by the Maghreb’s large pastoral population, especially since the eleventh century, were alleged to have continued unabated into the nineteenth century. Therefore, livestock raisers, especially nomads, received the vast majority of the blame for what the French interpreted as centuries of environmental abuse of a previously lush landscape. From the story of North Africa’s having been the bountiful granary of Rome and the tale of subsequent ruin and deforestation due to the Arab nomad “invasion,” the French fashioned a justification and an imperative for their colonial projects.²⁰ They told themselves that, to restore the former glory and agricultural fertility of Rome, they must save North Africa from the “destructive natives.”²¹ Jean Colin, for example, taught the young recruits of the Indigenous Affairs Service that “France is the legitimate successor of Rome. . . . The great Roman people of whom we are the heirs conquered this region well before the Arabs.”²² He later advised the recruits that, “like Rome, we will again expand the cultivable area . . . and transform [it] into fertile plains.”²³ The cultivable area was indeed expanded across the Maghreb, as was the afforested area. One influential colonist exhorted his countrymen to plant trees everywhere by promising that “if . . . we decide to fight until

our climate is transformed [by reforestation], it will be wealth, it will be life, it will be Algeria returned to its original fertility: it will be Algeria becoming the granary of France!”²⁴

The need for reforestation of areas assumed to have been deforested by the “natives” was commonly used as an excuse to appropriate land. Armed with the colonial environmental narrative, the French passed new laws and policies as early as the 1830s to curtail and criminalize many of the traditional uses of the environment by the Algerians. Colonial laws on property and land tenure, as well as laws on forestry and grazing, not only transformed the use of the land but also effected the appropriation of large amounts of land and resources for the settlers and the French administration. Many of the most important and far-reaching of these laws and policies, as demonstrated in the following chapters, were justified with the declensionist narrative. The narrative was so ubiquitous and influential, in fact, that it was actually written into several of these laws, including the Algerian Forest Code.



Figure 1.1. Roman ruins of Cuicul at Djemila, Algeria. The original caption of this photo states, “Methodical excavations begun in 1909 have revealed at Djemila, on the location of the ancient Roman town Cuicul, in a *hilled site today desert [désertique]*, a group of very interesting Roman monuments.” This caption insinuates that the region was more humid and vegetated during the Roman era, thus implying an environmental decline over the last two millennia. From Clément Alzonne, *L’Algérie* (Paris: Fernand Nathan, 1937), 25. Reproduced with the kind permission of Armand Colin.



Figure 1.2. The High Plateaus near Constantine, Algeria. Reinforcing the colonial environmental narrative that blamed Arab herders for land degradation, the original caption of this photo reads, “High Plateaus—region of Batna. Forests in regression, surrendered to grazing.” From Henri Marc, *Notes sur les forêts de l’Algérie*, Collection du centenaire de l’Algérie, 1830–1930 (Paris: Larose, 1930), planche 14. Reproduced with the kind permission of Maisonneuve & Larose.

Images such as the photograph shown in figure 1.1 frequently illustrated popular and official writings on North Africa. Hinting at the declensionist narrative, the caption of this photo from a popular book reads, “Methodical excavations begun in 1909 have revealed at Djemila, on the location of the ancient Roman town Cuicul, in a *hilled site today desert [désertique]*, a group of very interesting Roman monuments.”²⁵ Other images, especially in forestry publications, were more explicit in assigning blame for assumed environmental destruction. Figure 1.2 shows a photograph from an official government forestry book of the region of the High Plateaus near Batna. The caption reads, “Forests in regression, surrendered to grazing.”²⁶ In this case it is quite clear that the livestock of local herders were held responsible for deforestation. Images and descriptions thus worked together throughout the colonial period to reinforce the dominant environmental narrative, of the deforestation and desertification of a formerly fertile and wooded land.

The claim of the previous existence of large and lush forests was an important part of the story of North Africa’s ancient fertility and more

humid climate. Early descriptions of forests came mostly from Greek and Roman sources. In 1846, for example, one French author quotes Strabo's assertion that "all of the [land] situated between Carthage and the Pillars of Hercules (from Tunis to the [Atlantic] ocean) is of an extreme fertility" and then quotes Pliny on "the grand forests with which the sides [of the Atlas Mountains] are covered."²⁷ This practice of selective quotation was common well into the twentieth century. Just prior to the conquest of Morocco, similar descriptions were found frequently in French scholarship on the territory. "The Atlas were covered with thick forests," and the trees were "amazing . . . gigantic," wrote one of the members of the scientific mission to Morocco, citing Pliny.²⁸ Large forests were believed to have once covered not only North Africa's mountains and coastal areas but also many desert regions. French foresters working in Algeria noted that, even in arid regions of the High Plateaus and the Saharan Atlas, as far south as Laghouat, there were "numerous traces of ancient forests."²⁹

The importance of forests in the dominant environmental narrative grew over time—as did estimates of deforestation. Although the extent and composition of forests in Algeria were not known with any certainty until the early twentieth century (and in Morocco not until the 1930s), estimates of deforestation and the consequent pressure for reforestation increased during the late nineteenth and early twentieth centuries. Aided by the young science of phytosociology (plant ecology), these exaggerated estimates of deforestation became institutionalized as scientific fact in the 1920s and 1930s. By the end of the colonial period, it was widely accepted in the Maghreb, in France, and in much of the world that North Africa had suffered a loss of between 50 and 85 percent of its original forests over the preceding two thousand years.³⁰

In many scientific, administrative, and policy circles similar statistics are invoked today. Deforestation and desertification are still commonly believed to have occurred for millennia in North Africa and throughout much of the Mediterranean basin. The long historical scientific view available now, however, has shed some revealing light on the environmental history of the Maghreb and the surrounding regions.³¹ It has been established, for example, that during the last Ice Age (Pleistocene) many regions of the Mediterranean and Middle East were not forested, due to dry and cold climatic conditions. Rather, large areas of grassland and steppe predominated.³² In fact, during the last Ice Age the forested area of the globe was only about 32 percent of what it is today, and the total unforested area of the world was at least 1.5 times as large as it is today.³³ These sources

show that in the Mediterranean basin a general pattern of expanding forests did not occur until approximately the ninth to the seventh centuries BCE. This was followed by alternating periods of relatively more arid and relatively more humid conditions, which varied considerably from region to region, until approximately 1000 BCE. It is widely agreed that climatic and vegetation conditions then stabilized in the more arid pattern still found today.³⁴ Thus, the available physical evidence provides a view of the environmental history of the Mediterranean basin and surrounding regions very different from that developed by the French in the nineteenth century. It appears that there has been a long history of a comparatively treeless landscape with a dynamic and migrating vegetation.

Physical evidence specific to the Maghreb points to a more humid climate that settled in around 4000 to 3000 BCE and lasted with a few variations until approximately 1000 BCE, when a much more arid and stochastic climate (similar to that of today) became the norm.³⁵ This humid period produced a much wetter environment in what is now known as the pre-Saharan regions, supporting such tropical and subtropical animals as elephants and rhinoceros.³⁶ Evidence from fossil pollen samples taken in northeastern Algeria shows signs of this wetter phase: forest vegetation dominated the local landscape until approximately 2000 BCE, when it began to diminish and steppe vegetation and grasses began to increase.³⁷ In the majority of these North African pollen cores, the levels of grass pollen have remained remarkably constant, with some fluctuations, from the Pleistocene until the present, indicating that widespread desertification has not occurred.³⁸ The existing evidence of climate change and vegetation history in the region have led many to the conclusion that it is difficult to distinguish between man-made degradation and a natural trend toward aridification over the last two to three thousand years, especially at lower elevations.³⁹

Morocco has the highest rate of forest cover in the Maghreb and is usually considered the most severely deforested, historically, of the three countries. Morocco also has had more paleoecological research conducted within its borders than the other Maghreb countries. The pollen core data published to date show that since the appearance of trees in the mountains of Morocco between three thousand and eighty-five hundred years ago there have been fluctuations in tree cover, including some deforestation in a few areas but not in others. In the Middle Atlas region, four separate pollen cores, all of them carbon 14-dated, show some fluctuations in the pollen of oaks, cedar, pine, and other trees over the last two thousand

years, but reveal no significant trend in any direction.⁴⁰ In the case of pine, a large decrease is shown in two of these cores, but they occur at about two thousand to seventeen hundred and fifty years ago, long before either of the “Arab invasions.” Likewise, deciduous oak appears to have declined steeply in two of the cores, but this occurred around three thousand years ago and likely coincided with the drier climate that settled in at that time. Interestingly, some of these cores also show increases in species such as juniper, pine, and cedar over the last several hundred years. Evergreen oak is remarkably stable. A similar pollen core is available from the High Atlas Mountains, also carbon-dated.⁴¹ This core shows fluctuations of pine, oak, and cypress but no significant change over the last three thousand years. Overall, then, the samples that have been accurately carbon-dated show no definitive overall pattern of massive deforestation on the order of the frequently claimed 50 to 85 percent over the last two millennia.⁴²

In Algeria and Tunisia the pollen core data are more limited, but the studies that exist suggest that decreasing trends in the pollen of a few species like pine and some oaks began about four thousand years ago, well before the Roman period.⁴³ Many other species, though, have been fluctuating without trend, and some, such as cypress and certain oaks, particularly cork oak, have even been increasing in several of these areas over the last two thousand years.⁴⁴ This is very similar to the evidence for forestation and deforestation in the wider Mediterranean basin. As one scholar has explained, after the appearance of trees in the mid-Holocene “most [pollen] diagrams show either stasis, or fluctuations with no indication of trend, in arboreal pollen.”⁴⁵ Even data from the Algerian mountains of the central Sahara show no significant change in vegetation over the last four thousand years.⁴⁶ Moreover, these recent data indicate that old, dead tree stumps are not necessarily “traces of ancient forests,” as many colonial foresters believed.⁴⁷ What nearly all of the Maghreb data shows is that the significant changes in tree pollen took place thousands of years before present, and well before either of the “Arab invasions.” On the basis of her pollen analyses in Tunisia, Annik Brun has challenged the “Arab invasion” hypothesis of deforestation so popular with some French authors.⁴⁸ She proposes instead that it was more likely that general aridification has favored a vegetation that supported an expansion of nomadism over the last two thousand years. Much of the paleoecological data for the Maghreb in fact shows a general trend of aridification over the last fifteen hundred years, making it difficult, if not impossible, to conclude that vegetation changes regarded as degradation are solely the result of human ac-

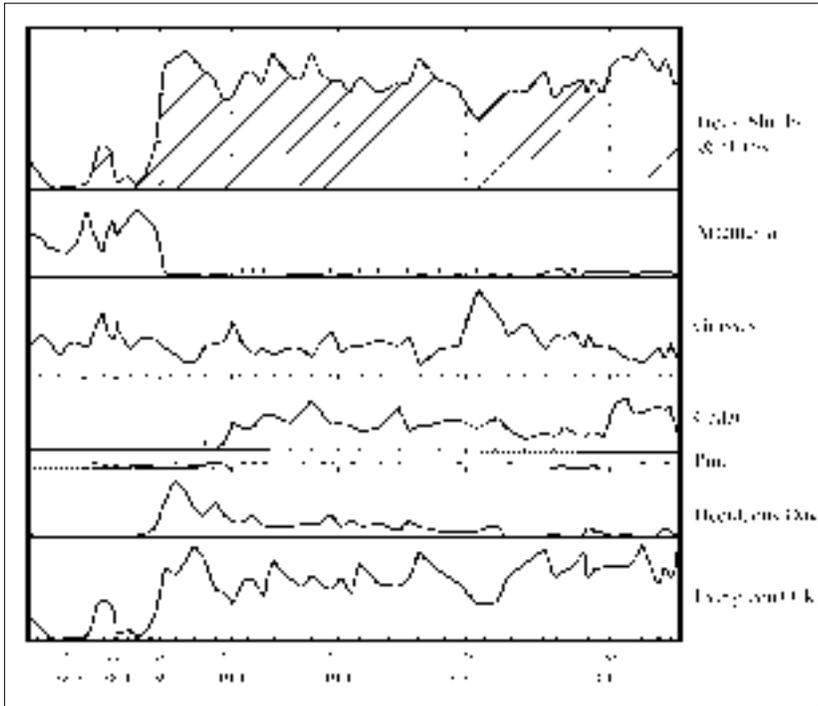


Figure 1.3. Diagram of pollen core data from Lake Tigalmamine in the Middle Atlas Mountains, Morocco. This diagram illustrates changing levels of plant pollen over the last 14,000 years. It shows a clear and significant increase in tree pollen about 8,500 years ago. Since that time, several shifts in tree pollen have occurred, but no significant trend toward either increased or decreased pollen levels is evident, indicating that no major changes in tree populations are likely to have occurred. The most significant decrease in pollen appears to have taken place about 1,600 years ago, well before either of the “Arab invasions.” Details of cedar, grass, and evergreen oak pollen are also illustrated here. Based on H. F. Lamb, U. Eichner, and V. R. Switsur, “An 18,000-Year Record of Vegetation, Lake-Level and Climate Change from Tigalmamine, Middle Atlas, Morocco,” *Journal of Biogeography* 1, no. 18 (1989): 71. Diagram by D. K. Davis.

tivity until the colonial period.⁴⁹ Indeed, in the words of Brent Shaw, “by far the greatest proportion of the loss of North Africa’s forests took place within the last century, primarily the half-century between 1890 and 1940,” well after the French had formed their declensionist story of the environmental history of North Africa.⁵⁰

This is not to say that no deforestation took place in the Maghreb before the colonial period. On the contrary, trees have certainly been felled

for human use and destroyed by natural forces such as fire and disease over thousands of years. It is vitally important, however, to place what deforestation likely did occur in an appropriate context. None of the colonial estimates, for instance, took natural regrowth of arboreal vegetation into account when making evaluations of North African forests. Instead, estimates of deforestation implied a somehow permanent loss of the trees believed necessary for civilization. As is detailed in the appendix, though, much of the vegetation in the Maghreb is highly resilient and regrows vigorously after disturbances, including fire, grazing, or cutting. The paleoecological research conducted in the region to date supports the historical regrowth of many of the trees and other vegetation that may have been removed at one time or another.

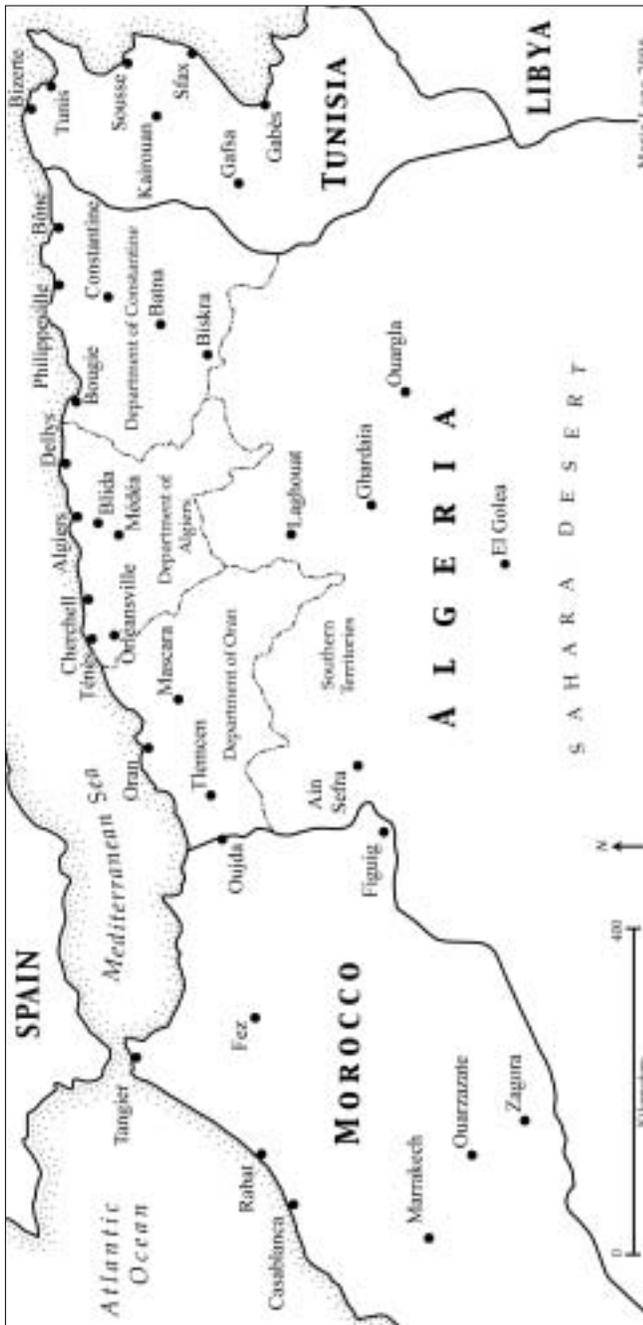
Paleoecological research such as fossil pollen analysis, however, was extremely limited during the colonial period, appearing only in the mid-twentieth century.⁵¹ From the 1830s through the early twentieth century the dominant method of reconstructing past vegetation was to compare historical literary descriptions to contemporary conditions visible in the landscape. Small clumps of trees, for example, were assumed quite often to be the remnants of large forests that had been destroyed. Such “relict vegetation” was then used to deduce what the “natural” vegetation should and could be in a region. Based on comparisons with written sources, especially with those of the Roman period described above, the conclusion was drawn by most that the Maghreb as the French found it was egregiously deforested.⁵² Such comparisons date from the first years of colonial occupation in Algeria and were made throughout the colonial period in each of the three Maghreb colonies. Moreover, they formed the basis of most phytoecological research on North Africa in the early twentieth century. Yet both the concept of relict vegetation as applied here and a reliance on written historical sources to deduce natural vegetation are fraught with serious problems. Knowledge generated with both methods has been shown frequently to contain large biases, and even serious errors, based on the subjective judgments of individuals and groups.⁵³ In North Africa, the colonial environmental narrative strongly biased research on the state of the environment using these methods well into the twentieth century.

Despite the fact that this declensionist narrative became the dominant environmental history over the course of the colonial period, there were some voices of dissent in the nineteenth and twentieth centuries. This dominant narrative was primarily championed by those involved in the North African colonies in some way: administrators, foresters, colo-

nists, military officers, businessmen, and the colonial lobby in France. It was sometimes partially challenged by members of the anticolonialist lobby, botanists, and a few French writers such as Stéphane Gsell. Gsell, of the Collège de France, thought it probable that “in antiquity as in our time, there were in Barbary [North Africa] vast regions denuded [of vegetation]” but that “there were also in this region extensive forests.”⁵⁴ Gsell did subscribe to other parts of the dominant narrative, however, such as the substantial deforestation allegedly caused in some areas by the Hillalian nomad invasion of the eleventh century.⁵⁵ There were also occasional officers in the indigenous affairs bureaus and Saharan experts who had some respect for the indigenous knowledge and traditional practices of the local Algerian farmers, herders, and nomads. When it came to making policy and enacting and enforcing legislation, however, their voices were generally not heeded, and the dominant colonial environmental narrative remained one of decline and destruction.

The story did, however, change over the course of the colonial period, and the purposes to which it was put also varied depending on who was using it and why. What began as a lamentation over untapped fertility quickly became a declensionist narrative that blamed the Algerians and their ancestors for environmental destruction in order to further the colonial project.⁵⁶ Although it is difficult to identify exactly who wrote which part of this complex environmental history, it is possible to identify many of those who used it, and for what reasons, over time. The remainder of this book teases out these details in the context of the history of the complex relationship between environmental narratives and French colonialism in North Africa. The declensionist narrative became the standard environmental history by the end of the colonial period, and it remains dominant today. It helped to delegitimize traditional ways of living with the land in North Africa and to facilitate colonial expansion, and in the process to dispossess North Africans from the best of their lands and from most aspects of their traditional livelihoods. As a result, generations of North Africans were dislocated economically, politically, culturally, and physically. To comprehend just how profound these dislocations were, it is vital to understand a few basic facts regarding the environment and ecology of the Maghreb.⁵⁷

Due to a combination of factors, including topography, latitude, altitude, and its relationship with the Atlantic Ocean, the Mediterranean Sea, and the Sahara Desert, the vast majority of the Maghreb is arid or semi-arid. Most of southern Algeria is hyperarid, and small pockets along the



Map 1. The Maghreb. Modified after multiple sources.

coast or in high mountains are subhumid. Approximately 75 percent of the Maghreb receives 350 mm of rainfall or less annually. Summers are generally hot and dry, and the rain, which falls mostly during the winter months, varies a great deal from year to year. Droughts and wildfires are common.

The vegetation, having evolved over thousands of years along with livestock under these conditions, is largely well-adapted to grazing, as well as to drought, aridity, and fire. The ecology of the region is by and large resilient, and such traditional livelihood activities as the use of small fires for agricultural purposes were ecologically appropriate. Furthermore, traditional methods of raising livestock—including movement over large areas during much of the year, or pastoral nomadism—are now understood to be some of the most appropriate and sustainable uses to which these arid and unpredictable environments can be put.⁵⁸ Indigenous herders generally understand, and work with, the intricacies of the local ecology as they time the movement of their animals for the benefit of both animals and plants.

In fact, a “new” model of management has been developed to capitalize on such traditional systems in arid environments. Called “opportunistic management,” it is often very similar to the herding practices of many indigenous pastoralists in arid regions. It is also strikingly similar to the traditional land use systems of the North Africans before French conquest in the nineteenth century. This predominantly pastoral population kept a wide variety of livestock, and much of it was managed by nomads and seminomads under conditions of high mobility appropriate to the ecology of the region. The more sedentary parts of the population were, by and large, agropastoral, and they raised crops in addition to livestock. Fire was often used in a sustainable manner to clear and prepare agricultural land and to create lush pastures.

As the following chapters demonstrate, however, the positive aspects of traditional land use in the Maghreb were not appreciated by the French in North Africa. Rather, the declensionist colonial environmental narrative facilitated the expulsion of the indigenous populations from their best lands to make way for colonial agriculture. The process not only systematically disadvantaged the North Africans but also led to profound changes in the landscape, some of which produced land degradation that continues to plague the Maghreb today.