

The Dual Nature of Japanese Cedar Trees on Jeju Island: The Unintended Consequences of Korea's Afforestation Policy*

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Introduction

In the 221st session of the UNESCO Executive Board, which was held in Paris, France, on 10 April 2025, the decision was taken to inscribe South Korea's forest reforestation documents on the UNESCO Memory of the World Register.¹ These meticulous records document the comprehensive process of the forest greening project, a joint government and public undertaking to restore land devastated by the Korean War. The collection consists of a total of 9,619 items, including laws and regulations, official documents, photographs, and film. The afforestation project was formally initiated by the Korea Forest Service in 1973 with the establishment of the "10-Year Forest Afforestation Plan (1973 – 1982) 치산녹화 10 개년계획." This initiative garnered attention as a "Green Revolution" due to its early achievement in meeting its tree-planting targets by 1978.

The term "Green Revolution" is typically used to denote the phenomenon of a substantial increase in wheat yields following the introduction of "dwarf wheat," a variety developed by Norman E. Borlaug in the late 1950s, to Mexico in the 1960s. This variety was subsequently adopted in Pakistan, India, Argentina, Tunisia, and other regions worldwide, resulting in a significant increase in global wheat production.² At the same time, the term was also came to describe the development of high-yielding varieties of rice, another staple crop, and the resulting increase in production.³ This term was first coined in 1968 by William S. Gaud, Administrator

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¹ Korea Forest Service (<https://www.forest.go.kr/>) press release, "Forest Reforestation Records Inscribed on UNESCO Memory of the World Register 산림녹화기록물, 유네스코 세계기록유산 등재," (April 13, 2025).

² Nick Cullather, *The Hungry World: America's Cold War Battle against Poverty in Asia* (Cambridge: Harvard University Press, 2010).

³ A number of studies have recently been published that significantly revise and expand existing perspectives on the U.S.- and wheat-centered Green Revolution. John R. Garnett, "A Global

of the U.S. Agency for International Development (USAID), and Borlaug, a pivotal figure in the Green Revolution, was awarded the Nobel Peace Prize in 1970.

In the case of South Korea, the period during which the country achieved rice self-sufficiency through record-breaking increases in rice production—driven by the development and distribution of a new rice variety known as IR667 (Tongil rice 통일벼), dubbed the “miracle rice” of the 1970s, and the spread of agricultural technologies that supported it—is referred to as the Green Revolution.⁴ If the Green Revolution, centered on the “Tongil rice” variety, is considered a representative achievement in the agricultural sector during the Park Chung Hee era, the forestry sector also saw a major accomplishment in the form of successful afforestation. Despite the fact that forests cover 65% of South Korea’s total land area, which renders them of great importance, deforestation was severe until the mid-20th century, causing significant hardships in people’s lives. However, throughout the 1970s, a nationwide afforestation campaign was initiated, which led to the successful restoration of the lush forests that are in evidence today within a relatively short period of time. This afforestation initiative, which transformed barren, reddish-brown mountains into deep green forests, can also be regarded as a “Green Revolution.” Indeed, the Korea Forest Service, which was responsible for the greening efforts, evaluated its success as the greatest achievement among government-led projects in South Korea and referred to it as a “Green Revolution.”⁵

The Green Revolutions in Korea’s agriculture and forestry have one thing in common: while scientific research played a crucial role initially, they gradually unfolded through strong administrative measures, which caused expert advice to lose its influence over time. The views of agronomists, who argued that more extensive field trials were needed before the large-scale distribution of the new rice variety

Green Revolution: Semidwarf Genes from Asia, Agrónomos, and the Environmental Laboratory of Mexico,” *The Korean Journal for the History of Science* 44:2 (2022), 339–363; Gabriela Soto Laveaga, “Beyond Borlaug’s Shadow: Octavio Paz, Indian Farmers, and the Challenge of Narrating the Green Revolution,” *Agricultural History* 95 (2021), 576–608; Gabriela Soto Laveaga, “The Socialist Origins of the Green Revolution: Pandurang Khankhoje and Domestic ‘Technical Assistance,’” *History and Technology* 36: 3–4 (2020), 337–359; Timothy W. Lorek, *Making the Green Revolution: Agriculture & Conflict in Colombia* (Chapel Hill: University of North Carolina Press, 2023).

⁴ Kim Tae-ho, *A Social History of Modern and Contemporary Korean Rice* 근현대 한국 쌀의 사회사 (Paju: Deullyeok, 2017); Kim In Hwan, *The Green Revolution in Korea: Development and Dissemination of New Rice Varieties* (Suwon: Association for Potash Research, Korea, 1978).

⁵ Korea Forest Service, *50 Years of Korean Forestry* 한국임정50년사 (Seoul: Korea Forest Service, 1997), 704. This book contains a comprehensive discussion of South Korea’s forestry policies, including the reforestation campaign of the 1970s. For a comprehensive analysis of Korea’s afforestation projects, see Bae Jae-soo, Ju Rin-won, and Lee Ki-bong, *Factors Contributing to the Success of Afforestation in Korea* 한국의 산림녹화 성공 요인 (Seoul: National Institute of Forest Science, 2010); and Lee Gyeong-Jun, *Afforestation in Korea: How Did It Succeed?* 한국의 산림녹화, 어떻게 성공했나 (Seoul: Giparang, 2015).

known as Tongil rice, and the claims of forestry experts, who asserted that long-term forestry policies prioritizing quality over quantity were necessary, had little impact on government policy implementation. By setting goals and pursuing them with the intensity of a military operation, short-term results could be achieved, and this approach was effective under the authoritarian Yushin regime. However, following the death of President Park Chung Hee—a staunch supporter of both Green Revolutions—the political system that had underpinned the strong administrative power collapsed, leading to a rapid decline in the cultivation of Tongil rice; as a result, it became inevitable that the afforestation targets of the Second 10-Year Forest Afforestation Plan would have to be scaled back.⁶

The forest greening project spearheaded by the Korea Forest Service encompassed many initiatives extending beyond the scope of mere planting. These policies incorporated a range of measures aimed at mitigating the effects of erosion, including the restoration of degraded land, the installation of artificial structures to prevent landslides and the runoff of soil, rocks, and trees, and the sowing or planting of vegetation. Additionally, the program covered the elimination of slash-and-burn farming, a practice entailing the burning of mountains or forests to clear land for agricultural use. The 10-Year Forest Afforestation Plan was predicated on extensive planting, with a target of 1 million hectares over 10 years.⁷ In order to achieve this objective, the Korea Forest Service has standardized the 42 tree species that were previously utilized for afforestation purposes, consolidating them into a total of 10 major species. Furthermore, the Korea Forest Service has formulated a 7:3 ratio of fast-growing trees to long-term and specialty trees with the aim of accelerating the process of reforestation. The selection of fast-growing species was based on criteria including growth speed, as exhibited by Italian poplar and Suwon poplar,⁸ and long-term growth species, as demonstrated by Korean pine. Despite the fact that the number of tree species was initially limited to 10 in order to simplify technical guidance on nursery management and ensure the effective implementation of public tree-planting campaigns, criticism arose regarding the uniformity of the afforestation. Furthermore, owing to pragmatic concerns, such as the procurement of a sufficient quantity of seedlings, the catalogue of recommended species was subsequently augmented to encompass 21 species. While the number of recommended species was criticized as being limited, the value of the selected species for afforestation was not significantly questioned.

⁶ Moon Manyong, “The Dual Green Revolution: Food Production and Forest Afforestation in the Park Chung Hee Era 이중의 녹색혁명: 박정희 시대 식량증산과 산림녹화,” *Jeonbuk Sahak* 36 (2010), 155–184.

⁷ For details on the implementation of the 10-Year Forest Afforestation Plan, see Korea Forest Service, *50 Years of Korean Forestry*.

⁸ Hyun Sin-Kyu’s hybrid poplar, commonly known in Korea as *eunsuwon-sasi* 은수원사시 or *hyun-sasi* 현사시, *Populus alba* × *Populus glandulosa* (*Populus* × *albaglandulosa*), often referred to as Suwon poplar.

The Japanese cedar was recommended as one of ten recommended species and was promoted as a long-rotation tree suitable for warm regions such as Jeju Island and the southern coast of Korean Peninsula. Notably, although the cedar was selected for its long-term growth characteristics, its rapid growth rate led to its popularity among local residents. Consequently, by the 1980s, Japanese cedar forests had become the largest artificial forests on Jeju Island. Concurrently, however, research on spring pollen allergies emerged, and roughly a decade later, the Japanese cedar was confirmed to be a major cause of severe pollinosis.

Compared to the West and Japan, the recognition of pollen allergy as a medical condition took longer to take hold in Korea.⁹ With the emergence of allergology in the 1970s and the spread of awareness about cedar pollen allergies via Japan in the 1980s, cedar's pollinosis also began to spark controversy on Jeju Island. Throughout the 1990s, pollen allergies became fully established as a recognized medical condition, and since the 2000s, efforts have progressed to the stage of "nationwide pollen monitoring and forecasting." In fact, allergies are not a condition with clear-cut causes and solutions; they require an ecological and environmental perspective that considers the relationship between the disease and its location.¹⁰ In this regard, pollen allergy can be viewed as a socio-ecological phenomenon resulting from the co-evolution of the human body and its surrounding natural environment across Korea's modern and contemporary history.

While Korea's forest restoration efforts in the 1970s achieved clear results in terms of rehabilitating degraded land and restoring forest area, those results were primarily measured using quantitative indicators, such as afforested area, number of trees, and timber volume. However, even internal evaluations of the program had already highlighted the need to prioritize "quality over quantity," and issues such as inappropriate seedling selection, hasty implementation, survival rates and post-planting management, species suitability, biodiversity, community access rights, and state mobilization remained key issues for subsequent research to examine. A report on Korea's successful reforestation efforts, jointly published by the Korea Forest Service and the Secretariat of the Convention on Biological Diversity, also clearly states the initial failures and limitations.¹¹ Bae Jae-soo's recent article examines the dissolution of the Forest Management Corporation—an entity initially conceived to mitigate forest degradation, consolidate fragmented structure of small-scale private holdings, and foster a "mountain economy that generates income from the mountains"—and the subsequent 1973 policy pivot toward a Ministry of Home

⁹ Manyong Moon, "A Social History of Pollen Allergies in Korea," Second KRISTaC-IHNS Joint Conference (Seoul, 9 May, 2026).

¹⁰ Gregg Mitman, *Breathing Space: How Allergies Shape Our Lives and Landscapes* (New Haven & London: Yale University, 2007).

¹¹ Korea Forest Service and Secretariat of the Convention on Biological Diversity, *Lessons Learned from the Republic of Korea's National Reforestation Program* (Daejeon: Korea Forest Service, 2014).

Affairs-centered reforestation paradigm.¹² This article further shows that state policy increasingly prioritized rapid, mobilization-driven reforestation outcomes, commitment to high-quality afforestation correspondingly diminished.

In addition to these two studies, several studies argue that while the forest reforestation project achieved results in quantitative terms, it fell short in qualitative terms.¹³ This brings to mind the assessment that, although the dual green revolution at the time was initiated based on expert opinions, it was driven by the government's administrative power, which allowed it to rapidly achieve its goals but led to problems in terms of quality. This is likely because the initial forest restoration plan was established based on scientists' advices, and the recommended tree species were also selected based on experts' assessments of the value of the specific tree species. However, these recommendations did not undergo sufficient verification or follow proper procedures during implementation. As a result, there has been relatively little criticism of the recommended tree species themselves. Nevertheless, residents at the time and some experts were critical of the recommended tree species policy as well, and this phenomenon is particularly evident in the case of the introduced species, the Japanese cedar.

The Suwon Poplar or *Populus × albaglandulosa* 은수원사시나무, which—along with the cedar—was designated as a recommended tree species and given the new name “*hyun-sasi* 현사시” by President Park Chung Hee, came under criticism for causing allergies due to its fluffy seeds that scatter in the wind, much like those of the weeping willow. As a result, Suwon Poplar became a target for tree species replacement beginning in the mid-1980s.¹⁴ Of course, some experts took a critical stance toward government policy, arguing that since fluffy seeds are not pollen, it is unrelated to pollen allergies, and that allergic diseases are limited to a very small number of individuals with specific constitutions. However, the allergies caused by cedar pollen have become a clear physiological problem acknowledged even by experts, and furthermore, the critical perception of cedar has led to the observation that, due to its inherent characteristics, it poses an ecological threat to native plants.

¹² Bae Jae-soo, “Change in Forest Policy under the Park Chung-hee Government: From the Establishment of the Forest Management Corporation to the Transfer of the Korea Forest Service to the Ministry of Home Affairs 박정희 정부의 산림정책 전환: 영림공사 설립에서 산림청의 내무부 이관으로,” *Journal of the Korean Society of Forest Science* 115:1 (2026), 70–80.

¹³ Don Koo Lee, Ho Sang Kang and Yeong Dae Park, “Natural Restoration of Deforested Woodlots in South Korea,” *Forest Ecology and Management* 201:1 (2004), 23–32; Don Koo Lee, Seon Deok Choi, Soon Duk Kwon and Yeong Dae Park, “Natural Regeneration in the Plantations of *Pinus koraiensis* and *Larix kaempferi* in Yangyang-Gun, South Korea,” *Journal of Agriculture & Life Science* 45:4 (2011), 47–58.

¹⁴ For more on the Suwon Poplar, see Sun You-Jeong, “From the Scientific Space to the Political Space: The Development and Proliferation of a New Poplar 과학공간에서 정치공간으로: 은수원사시나무 개발과 보급,” *The Korean Journal for the History of Science* 31:2 (2009), 437–474.

Consequently, the Jeju Island authorities excluded the Japanese cedar from the list of recommended tree species. In other words, the pollen allergies and ecological issues associated with the cedar led to a new understanding of the government-led forest restoration and greening project. This article aims to demonstrate that the belated discovery of these new characteristics of the Japanese cedar served as yet another catalyst for reevaluating the government's policy, which had focused on quantitative tree planting. Furthermore, cedar pollen allergies served as the backdrop for pollen allergies to be recognized as a legitimate health issue and established as a distinct disease within South Korea's public health system. Fundamentally, Japanese cedar and *Artemisia* (a genus in the Asteraceae family comprising more than 500 species)—the primary allergens responsible for pollen allergies in East Asia—are the result of large-scale planting or neglect driven by national policies. This suggests that the region's pollen allergy problem is not merely a natural disaster, but an “ecological policy failure.”¹⁵

Of course, the purpose of this discussion is not simply to argue that there were problems with the cedar afforestation efforts at the time. Forest restoration was undoubtedly a proud achievement in Korea's modern history. However, if we stop at merely commemorating that achievement, the contradiction—where the forest's greenery grows denser while its ecology deteriorates or local residents suffer—may well repeat itself. The controversy surrounding the cedar afforestation on Jeju Island and pollen allergies will serve as a useful lens through which to rigorously analyze our forest policy.

The “*sam* (杉)” in premodern Korea does not refer to the Japanese cedar

The Japanese cedar (*Cryptomeria japonica*, *sam-namu* 삼나무) is the sole species in the genus *Cryptomeria* of the Cupressaceae family and is native to the warm, humid climate of Japan. In Japan, it is referred to as “*sugi* (スギ).” The trees grow to a considerable height and possess a straight form, contributing to the creation of a magnificent landscape when planted in a forest setting. They have been extensively cultivated in Korea and Japan for afforestation initiatives and as windbreaks for citrus orchards in Jeju. In Japan, the tree is utilized for a variety of purposes, including in the construction of building materials and furniture. Due to its relative resistance to moisture and the emission of a distinctive, subtle forest scent, cedar is frequently employed in the fabrication of bathtubs. Conversely, it is not indigenous to the central and northern regions of the Korean Peninsula, where winter precipitation is notably scarce.

¹⁵ Manyong Moon, op. cit. (2026).

The Chinese character “*sam* (杉)” also appears frequently in the *Annals of the Joseon Dynasty* 조선왕조실록. The references under consideration include descriptions of Eomyeonjin, a fortress established at Jangjinpo in Bukcheongbu, Hamgyeongdo, as well as sections on the medicinal properties of cedar sap.¹⁶ However, in accordance with contemporary biogeographical and ecological knowledge, it can be deduced that the subject in question was not a cedar. Biogeographers regard the cedar as a species that was once present on the Korean Peninsula but subsequently became extinct.¹⁷ It was introduced from Japan in the early 20th century. In summary, the genus *Cryptomeria* disappeared on the Korean Peninsula at the onset of the Holocene, due to its inability to adapt to the cooling temperatures of the late Pleistocene epoch. Consequently, it can be deduced that the “*sam*” referenced in the *Annals of the Joseon Dynasty* is not the contemporary cedar. Conversely, given that classical translations and novels occasionally render “hards 麻木” as “*sam-namu*,” caution is advised when encountering the term “*sam-namu*” in translations of premodern texts.

The word “杉” appears in *Manhakji* (晩學志, The book’s title translates as *A Record of Late Studies* and it covers methods for planting and cultivating fruit and forest trees, as well as vegetables and fruits intended for use as food or timber.), one of Seo Yu-gu’s works on *Treatises on the Management of Forests and Gardens* (林園經濟志), and the translator has identified it as the Khingan fir (*Abies nephrolepis* 분비나무) based on the argument of Chung Jaemin of the National Arboretum.¹⁸ The Khingan fir is an evergreen conifer in the genus *Abies*, family Pinaceae. It is a native tree species endemic to the Korean Peninsula and is currently classified as endangered. The species is endemic to the northern regions, with a presence in the south being limited to high-altitude areas such as the subalpine zones of Mount Jiri, Mount Deogyu, and Mount Halla. The tree’s aesthetic appeal renders it well suited to utilization as a landscape or street tree. In addition, the Korean translation of the *Bencao Gangmu* (本草綱目) cited in the *Manhakji* also translates “杉” as cedar.¹⁹

¹⁶ For example, on December 2, 1503 (the 9th year of King Yeonsan’s reign; *Yeonsangun Ilgi*, Vol. 51), it was recorded that “I saw the newly established Eomyeon Fort at Samsu, where cedar and Japanese cypress trees grow densely.” (https://sillok.history.go.kr/id/kja_10912002_005). In the 11th year of King Sukjong’s reign (1685), Eomyeonjin was established on the banks of the Jangjin River in Bukcheongbu, Hamgyeongdo. However, Jangjin is located on the border between Hamgyeongdo and Pyeongando, an area where cedar trees do not grow.

¹⁷ Gong Woo-seok, *The Resume of Our Trees and Forests* 우리 나무와 숲의 이력서 (Paju: Cheong-a Publishing, 2019), 68–69.

¹⁸ Seo Yu-gu, translated by Cha Young-ik, Jeong Myung Hyun, and Kim Yong-mi, *Manhakji 2* 만학지 2 (Seoul: Pungseok Cultural Foundation, 2023), 43–49.

¹⁹ Li Shizhen ed., Park Sang-young, Noh Seong-wan, and Hwang Jae-woon trans., *Bencao Gangmu*, Vol. 34, Section on Trees, “杉 (삼)” (Database of Classical Korean Medicine, https://medicclassics.kr/books/190/volume/40#content_207).

However, this requires reconsideration because it is not the same species of cedar we currently use.²⁰

The fact that the cedar trees currently growing in the southern part of the Korean Peninsula did not exist in premodern Korea means that Koreans have not had much time to learn about and adapt to the ecology of these trees. This also suggests that there was likely insufficient empirical foresight regarding the problems that large-scale planting of cedar trees would bring. In fact, the cedar trees planted on a large scale in the southern regions, including Jeju Island, based on their perceived benefits, have led to unexpected public health and ecological problems.

Japanese Cedar on Jeju Island

It is believed that the practice of planting Japanese cedar trees in Korea commenced during the Japanese colonial period, coinciding with the establishment of the Busan City Water Supply Forest. In response to the increasing population of Japanese residents in Busan, the construction of reservoirs was initiated to ensure a reliable water supply. Concurrently, the establishment of Busan City Water Supply Forests around these reservoirs commenced, predominantly comprising Japanese black pines, along with oak, Japanese cypress, and Japanese cedar. In contrast to the unsuccessful trial plantings of the past, cedar and Japanese cypress demonstrated remarkable resilience and flourished in this region. It is documented that during the 1910s, an estimated 11,000 cedar trees and approximately 100,000 Japanese cypress trees were planted. The success of this afforestation effort was such that additional cedar and Japanese cypress trees were planted at a later date, which also flourished.²¹ Consequently, cedar planting operations were initiated on Geoje Island. In 1926, under the “Forestry Plan,” Japanese cypress and cedar were adopted as afforestation species in regions such as South Gyeongsang, South Jeolla, and Jeju, gradually becoming one of the representative tree species of the southern region.

Although no documentation has been found explaining why cedar was initially selected, Japan possessed a long history and technical system of establishing forest and water management and water source protection forests dating back to the Edo period. Given that cedar and Japanese cypress were treated as important economic and afforestation tree species,²² it can be inferred that the Japanese cedar was

²⁰ In China, the term ‘杉木’ refers to trees belonging to the genus *Cunninghamia*, which is in the same family (Cupressaceae) but is a slightly different species. The Chinese name for *Cryptomeria japonica*, which we call cedar, is ‘(日本)柳杉’.

²¹ Lim Kyung-bin, “A Stroll Through Landscape Trees (XIX): Japanese Cedar 조경수목산책(ⅩⅨ) 삼나무,” *Landscape Trees* 35: 11 (1996), 11–21.

²² Conrad Totman, *The Green Archipelago: Forestry in Preindustrial Japan* (Berkeley, California: University of California Press, 1989).

selected due to a combination of civil engineering and public health objectives—such as water source development and water quality conservation—and its ecological suitability as a fast-growing species for early erosion control. At the time, Japanese authorities stationed in Busan and forestry experts from the Government-General of Korea directly transplanted and applied the Japanese cedar water source forest model, which had been validated in Japan, to the Busan water supply construction project.

According to the historian David Fedman, who analyzed the forestry policy of colonial Korea not as mere exploitation but as a system of governance encompassing afforestation, forestry science, land rights reorganization, the ideology of forest conservation, and wartime fuel control. Japanese forestry experts attempted to introduce preferred tree species from mainland Japan—such as larch, Japanese cypress, and cedar—in Korea. Although they verified their suitability through research at forestry experiment stations, the efforts were not very successful because Korea's climate, precipitation, and soil conditions differed from those of Japan.²³ In contrast, Japanese cypress and Japanese cedar would likely have thrived better in areas with relatively milder climates, such as Busan or Jeju Island.

An examination of the available records indicates that the first cedar trees were planted on Jeju Island in 1924, when Japanese settlers introduced them to Wolpyeong-dong in the course of harvesting forest products such as shiitake mushrooms. Next, there was an intensive afforestation of Japanese cedar on volcanic cones (*oreum* 오름) where native tree species had previously been cleared for use as firewood or charcoal. The Japanese cedar is a species that thrives in areas with an average annual temperature of 12°C or higher and abundant rainfall. It was well-suited to the climate of Jeju and grew rapidly.²⁴ Some argue that although the Japanese cedar was an exotic tree species introduced during the Japanese colonial period, it has adapted and thrived better in Jeju Island's environment than in its native Japan. However, according to research by forestry experts, Japanese cedars under 20 years of age exhibit growth rates similar to those in Japan, but their growth rate declines significantly thereafter. While the peak growth period for Japanese cedars in Japan is between 50 and 60 years, in Korea it is approximately 35 years.²⁵

As interest in forest reforestation grew after liberation, the Japanese cedar gained attention as a timber species along the coasts of South Jeolla and South Gyeongsang Provinces, as well as on Jeju Province. As part of this effort, a large-scale tree species replacement project was undertaken in 1963 in the state-owned forest on Mount Halla on Jeju Island—said to be the first of its kind in Korean forestry history. The

²³ David Fedman, *Seeds of Control: Japan's Empire of Forestry in Colonial Korea* (Seattle: University of Washington Press, 2020).

²⁴ Lim Kyung-bin, op. cit.

²⁵ Lee Jeong-seok, "Nursery Methods for Japanese Cedar and Japanese Cypress 삼나무 편백 양묘법," *Journal of the Korea Nursery Association* 5 (1977), 35–40.

decision to clear existing natural forests and plant species such as Korean pine, Japanese cypress, and Japanese cedar sparked considerable controversy.²⁶ Authorities stated that the existing natural forest was “useless” except for firewood and shiitake mushroom cultivation, and that the project was intended to create commercial forests to meet Jeju Island’s demand for timber. Despite the controversy, cedar subsequently became an important afforestation species on Jeju Island, planted particularly as windbreaks for Jeju citrus orchards or for use in citrus crates.

The painting “*Gyullim Pungak* 굴림풍악 (The Joy of a Citrus Orchard),” featured in the *Tamna Sunryeokdo* 탐라순력도—an album of paintings documenting Jeju Magistrate Lee Hyeong-sang’s 1702 inspection tour of the entire island—depicts the citrus grove in the rear garden of *Manggyeongru* 망경루.²⁷ According to this source, the trees surrounding the citrus grove are bamboo, suggesting that they were used as a windbreak for the orchard. Bamboo grows rapidly and has a dense root system, making it effective at blocking the wind. However, in 1964, the government began actively encouraging the cultivation of citrus—a cash crop—rather than increasing food production, and starting the following year, large quantities of citrus seedlings were imported from Japan to Jeju.²⁸ As citrus farming took off in earnest after the 1960s, citrus farmers recognized the need for taller, sturdier timber-type windbreaks; as a result, the windbreaks surrounding citrus orchards were rapidly replaced with cedar trees.

In particular, since Jeju citrus were not transported in large containers until the 1970s, there was a need for large quantities of wooden crates that could be loaded together with other cargo during maritime transport and were easy to handle at the port.²⁹ Therefore, the fast-growing and easily processed Japanese cedar was regarded as an economically advantageous tree species that served a dual purpose: not only did it function as a windbreak, but it also allowed orchards to be self-sufficient in producing timber for citrus crates. However, in reality, most of the wood used for crates was imported, and cedar was used only to a limited extent as a supplementary material. This was because the Japanese cedar trees planted starting in 1960 had not yet grown large enough to be used for making wooden crates, and

²⁶ Shin Sang-beom, “Disagreement Over the Tree Species Replacement Project in Mount Halla’s State-Owned Forest 한라산의 국유림 수종대체사업에 이견,” *Kyunghyang Shinmun*, 1963. 4. 12.

²⁷ Oh Chang-myeong, *An Exploration of the Tamna Sunryeokdo: Illustrations of Jeju Island in the Early 18th Century* 18세기 초 제주도 상황을 그림으로 나타낸 탐라순력도 탐색 (Jeju: Jeju Development Institute, 2014).

²⁸ Kim Tae-Yeon, “How Did Jeju Island Become ‘South Korea’s Number One Tourist Destination’?: The Formation and Operation of the ‘Jeju Development System’ in the 1960s and 1970s 제주도는 어떻게 ‘대한민국 관광 1번지’가 되었나? 1960-70년대 ‘제주개발체제’ 형성과 작동,” *Journal of Humanities* 65 (2024), 167–191.

²⁹ Jeju Citrus Agricultural Cooperative, *Jeju Citrus Nonghyup 60 Years History, 1960–2020* 제주 감귤농협 60년사, 1960-2020 (Jeju: Jeju Citrus Agricultural Cooperative, 2020), 138–139.

demand for wooden crates had declined significantly since the 1980s due to the increasing use of corrugated cardboard and large plastic containers.

In the government's 10-Year Forest Afforestation Plan, which began in earnest in 1973 when the Korea Forest Service was transferred to the Ministry of Home Affairs, the Japanese cedar was designated as a "long-term growth species" alongside the Korean pine, larch, Japanese cypress, and fir, and became a recommended tree species for the southern part of the Korean Peninsula and the Jeju region.³⁰ It was generally explained that Japanese cedar shares similar characteristics with Japanese cypress, so their planting and management were also similar; however, while Japanese cypress grows more slowly than Japanese cedar, its wood is denser and possesses superior properties, making it significantly more expensive. Although Japanese cedar and Japanese cypress were similar in terms of planting and management, Japanese cedar grew faster, so residents planted more of it. Japanese cedar grew so rapidly that it was called "*ssukdaenang* 측대낭" in Jeju.³¹ Because it was a long-lived tree that also possessed the characteristics of a fast-growing species, it became an important afforestation species in Jeju.

However, some local residents, botanists, members of the Cultural Heritage Committee, and mountaineers criticized the decision to plant cedar trees and other species on Mount Halla as part of efforts to convert the natural scenic forest into a commercial forest.³² In response, President Park instructed during his New Year's inspection tour of Jeju Island in 1974: "Improve the tree species in the Mount Halla area and plant timber forests such as cedar."³³ During his authoritarian regime, the president's directives carried more weight than any expert opinion. Under the slogan of "scientific afforestation," voices opposing the policy of replanting with highly economically viable tree species failed to gain traction. Furthermore, in 1977, the Ministry of Home Affairs announced that it had designated poplar, Korean pine, larch, cedar, and Japanese cypress as the five major economic tree species and would proceed with the creation of large-scale commercial forest complexes centered on these species.³⁴ Although government documents do not appear to have officially announced the "five major commercial tree species," this was a period when the First

³⁰ For information on recommended tree species, see Korea Forest Service, *20 Years of Forest Administration* 산림행정 20년 발자취 (Seoul: Korea Forest Service, 1989), 121.

³¹ The National Standard Plant List names "*sukdaenamu* 측대나무" as a synonym for Japanese cedar, which appears to have the same meaning as "*ssukdaenang*."

³² Staff writer, "Mount Halla Protection Campaign Series ①: The Natural Scenic Forest of the Sacred Mountain Is Being Stripped Bare 한라산 보호 캠페인 시리즈① 헐벗는 영산의 천연풍치림," *Dong-A Ilbo*, 1974. 2. 4.

³³ Staff writer, "President Park Inspects Jeju Island 박대통령, 제주도 순시," *Kyunghyang Shinmun*, 1974. 2. 15.

³⁴ Staff writer, "Report to the Ministry of Home Affairs During President Park's Inspection: Improving the Structure of Rural Settlements 박대통령 순시 내무부서 보고: 농촌취락 구조를 개선," *Dong-A Ilbo*, 1977. 1. 31.

10-Year Forest Afforestation Plan, which aimed for the complete reforestation of the nation's land, was being achieved faster than expected, leading to a greater emphasis on the establishment of commercial forests in forestry policy. Consequently, the Japanese cedar received increased attention due to its rapid growth and high potential for timber utilization. Under the Second 10-Year Forest Afforestation Plan, the primary objective was the resource utilization of mountainous areas, and key policies included the formulation of long-term mountain land use plans and the establishment of large-scale commercial forest complexes.³⁵

Some scholars, however, viewed the cedar as an introduced species and did not consider it a high-quality species worthy of promotion in Korea. Lee Yong-no of Ewha Womans University stated that Mount Halla—once envied as a “haven for endemic plants and a natural garden”—had seen a significant number of its endemic species become extinct or face extinction due to the surge in hikers and indiscriminate harvesting. In particular, he criticized the phenomenon of Jeju's endemic plants disappearing due to the afforestation of exotic tree species, stating that it “robs plants of their identity.”³⁶ In fact, cedar trees are known for their dense foliage, which completely blocks sunlight, and for their strong phytoncides, which kill plants living on the ground surface. Although the planting of Japanese cedar was emphasized due to its rapid growth, awareness of the problems associated with the species gradually increased.

Nevertheless, Japanese cedar remained a recommended tree species well into the 1980s, and Jeju Island continued to plant it as windbreaks on barren land. As a result, according to a 1984 news article, “Cedar, selected as a reforestation species in the Jeju region and planted beginning in 1955, has reached 34,600 hectares and 103.8 million trees as of this year, accounting for 68% of the island's total reforested area of 51,184 hectares,” making it the largest artificial forest on Jeju Island.³⁷ The Hannam Cedar Forest in Seogwipo—known as Korea's first cedar plantation—became the first site in the country to receive Forest Stewardship Council (FSC) certification in 2006.³⁸ This means that the forest has received international certification for practicing forest management that meets international standards while considering the forest ecosystem, contributing to society, and maintaining economic sustainability. Furthermore, this site was designated as a National Forest

³⁵ Korea Forest Service, *Second 10-Year Forest Conservation and Afforestation Plan (Summary)* 제2차 치산녹화10년 계획(요약) (Seoul: Korea Forest Service, 1979).

³⁶ Staff writer, “High-Altitude Endemic Plants Facing Extinction 고산특산식물 멸종위기,” *Dong-A Ilbo*, 1979. 6. 7.

³⁷ Staff writer, “National News Highlights 간추린 전국 뉴스,” *Dong-A Ilbo*, 1984. 4. 6.

³⁸ Tak Kwang-Il, “The Cedar Forest in Seogwipo, Jeju 제주 서귀포 삼나무숲,” *Forest and Culture* 23:4 (2014), 7–9.

Cultural Asset in 2017.³⁹ This fact suggests that the cedar planting efforts on Jeju have yielded quite successful results.

The Japanese cedar was not a tree species unique to Jeju Island. In South Jeolla Province, with its relatively warm climate, the Japanese cedar was also an important species for afforestation. To date, eight individuals have been inducted into the “Forest Hall of Fame” established by the Korea Forest Service at the Gwangneung Arboretum in Pocheon, Gyeonggi Province, and two of them are private foresters.⁴⁰ The fourth inductee, “King of Afforestation” Im Jong-guk, planted 2.5 million cedar and Japanese cypress seedlings in the Mount Chukryeong area of Jangseong, South Jeolla Province, cultivating them into a beautiful forest. In 2002, the Korea Forest Service purchased the forest he created—which served as a model for private foresters—and designated it as the nation’s “No. 1 National Jangseong Forest Therapy Center.” Additionally, Jin Jae-ryang, the eighth exemplary private forester to be honored, planted and nurtured Japanese cypress and Japanese cedar across a total of 667 hectares at the foot of Mount Mudeung, for which he received the Bronze-pagoda Industrial Medal and the Republic of Korea Green Award.⁴¹ The fact that Japanese cedar was among the tree species these individuals diligently planted demonstrates that it was a key species in creating Korea’s beautiful forests. As a fundamentally recommended species, Japanese cedar—which grows quickly and beautifully—was highly suitable for private foresters who planted it on a large scale to take advantage of its benefits, as well as for those who enjoy the scenery created by these forests.

Health and Ecological Controversies Surrounding the Japanese Cedar

The first study on pollen allergies in Korea was conducted by Joo Yang Ja in 1965.⁴²

³⁹ As of the end of 2024, 103 sites nationwide have been designated as National Forest Cultural Assets since 2014; Jeju Island has two such sites: the Hannam Cedar Forest 한남 삼나무숲 and the Oldest King Cherry Tree in Bonggae 봉개 최고령 왕벚나무. Korea Forest Service, “2024 Distribution Map of National Forest Cultural Assets 2024년 국가산림문화자산 분포도,” Korea Forest Service website: <https://www.forest.go.kr/>

⁴⁰ The individuals inducted into the Forest Hall of Fame are as follows. President Park Chung Hee; forest tree breeder Hyun Shin-Kyu; afforestation pioneer Im Jong-guk; forester Kim Yi-man; Min Byeong-gal (Karl Ferris Miller), founder of Cheollipo Arboretum; businessman Choi Jong-hyun, who planted 3 million trees over his lifetime; Son Su-ik, Director General of the Korea Forest Service; and private forester Jin Jae-ryang—a total of eight individuals.

⁴¹ Lee Kyung-jun, *Hidden Stories of Forest Afforestation 산림녹화 숨은 이야기* (Seoul: Seoul National University Press, 2025), 224–230.

⁴² Joo Yang Ja, “A Study on Pollen Allergy, Part 1: Airborne Pollen in Seoul 화분증에 관한 연구 제1보: 서울에 있어서의 공중 화분,” *Journal of the Korean Society of Otolaryngology* 8:1 (1965),

In 1972, the Korean Society of Allergy was established, and the following December, the first Allergy Symposium, themed “Pollen Allergy,” was held in Seoul. Around this time, there were reports that American ragweed caused pollen allergies, but what truly raised public awareness of pollen allergies was the fluff produced by weeping willows and other trees in the spring.⁴³ In response to media reports referring to this fluff as “pollen,” some argued that since it was not actually pollen, it was unrelated to pollen allergies.⁴⁴ In response to public complaints, the government decided to allocate an annual budget to replace the tree species.

Based on research conducted to date, the 1985 study appears to be the first to investigate allergies caused by Japanese cedar pollen on Jeju Island.⁴⁵ A subsequent study undertaken the following year revealed that the climate of Jeju Island is comparable to that of central Japan, and that the levels of Japanese cedar pollen in the atmosphere were also highly analogous. And, despite the positivity rate of approximately 5% observed in skin tests, this was not deemed to be of clinical significance, as it did not correlate with the presence of clinical symptoms.⁴⁶ However, subsequent studies have argued that cedar pollen is a significant factor in allergies.⁴⁷ According to this paper, cedar pollen showed the second-highest rate of positive reactions—after house dust, which is generally recognized as a representative allergen—and this rate was significantly higher than that for cockroaches or cat dander. Furthermore, the study revealed that in Seoul, where exposure to cedar allergens is minimal, Japanese cedar is never the causative allergen in allergic rhinitis. This finding suggests that cedar pollen could pose a significant public health problem on Jeju Island, where cedar is a major afforestation species.

Cedar flowers, which are wind-pollinated, typically bloom from February to April. These particles are diminutive in size, spherical in shape, with a diameter of 35µm and a solitary pollen pore. A single flower, measuring approximately 2mm, produces

11–22; Joo Yang Ja, “A Study on Pollen Allergy, Part 2: Skin Reactions to Pollen 화분증에 관한 연구 제2보: 화분에 의한 피부반응,” *Journal of the Korean Society of Otolaryngology* 8:1 (1965), 23–32.

⁴³ Staff writer, “Weeping Willow Pollution on the Streets 거리 수양버들 공해,” *Chosun Ilbo*, 1974. 5. 12.

⁴⁴ Lee Byeong-geuk, “Street Tree Planting Methods Must Be Improved 가로수 식목법 개선되어야,” *Dong-A Ilbo*, 1975. 6. 30.

⁴⁵ Chang Suk Il, Kang Seok-Young, Min Kyung-Up and Kim You-Young, “Cedar Pollinosis in Cheju Island 제주도의 삼나무 화분증에 관한 연구<제1보>,” *Proceedings of the Fall Academic Conference of the Korean Society of Asthma and Allergy* (1985), 114.

⁴⁶ Kyung-Up Min, Hee-Bom Moon, and You-Young Kim, “Cedar Pollinosis in Jeju Island (Report II),” in *Proceedings of the 3rd Korean-Japanese Joint Allergy Symposium and the 1st West Pacific Allergy Symposium* (1986), 29–30.

⁴⁷ Choi Hee Seok, Cho Joong Saeng, Choo Jae Hak, Ko Woo Kyung, and Ahn Hwoe Young, “Allergic Rhinitis to Japanese Cedar on Jeju Island 제주도에서 일본 삼나무에 대한 알레르기성 비염,” *Journal of the Korean Society of Otorhinolaryngology-Head and Neck Surgery* 42:9 (1999), 1129–1133.

approximately 13,000 pollen grains, and a single 20cm flower branch generates over 1 million pollen grains that are dispersed into the air. In comparison with other tree species, cedar pollen has been shown to have a significantly higher fall rate, accounting for a substantial proportion of pollen. Indeed, in Japan—where cedar trees were extensively planted in the aftermath of the war as part of a concerted reforestation initiative—the populace endured considerable discomfort as a result of cedar pollen. Indeed, the decision taken by Japan to plant cedar trees was driven by two overarching objectives: the rapid restoration of the landscape and the provision of timber. However, as Japan’s rapid economic growth made it more economical to import cheap timber from overseas, the planted cedar trees were left untouched and unharvested. Consequently, as these trees matured, the pollen they emitted began to pose a social problem.⁴⁸

The first academic paper on cedar pollen allergy in Japan was published in 1964, and starting in the late 1970s, approximately 12 million people began to suffer from hay fever every spring due to pollen emitted by mature cedar trees. The prevalence of pollen allergies in Japan was brought to the public’s attention when professional baseball player Tabuchi Koichi announced his retirement due to this condition and subsequently granted an interview to *Shukan Bunshun* (週刊文春).⁴⁹ Consequently, Japan’s Ministry of Health and Welfare initiated two major research studies in 1985 and 1988, respectively. The first, titled “Basic Clinical Research on Allergic Diseases Caused by Plants,” spanned two years and focused on the underlying causes and management of plant-induced allergies. The second study, “Research on the Prevention and Treatment of Pollen Allergies,” continued for three years and concentrated on developing effective therapeutic interventions for individuals suffering from pollen-related allergies. At present, more than 40% of the Japanese population is affected by pollen allergies. Media outlets have reported on the “pollen front over the Japanese archipelago,” in conjunction with weather forecasts. Pharmacies have been observed displaying warnings such as “The pollen front is moving northward.” Due to the problems associated with Japanese cedar, the Japanese government has decided to develop and distribute varieties that produce less pollen, while also felling Japanese cedar trees over 20 years old; recently, it has decided to further accelerate the felling rate.⁵⁰

As the debate over cedar pollen allergy intensified in Japan, research on cedar pollen allergies by South Korean medical professionals affected by this issue also

⁴⁸ Julia Mariko Jacoby, “From Economic Miracle to Pollen Allergy Crisis: The Legacies of Postwar Forestry ‘Rationalization’ (合理化) in Japan (1957–2023),” *The Korean Journal for the History of Science* 48:2 (2026), 419–444.

⁴⁹ Kahei Koshio, *Pollinosis and Humanity* 花粉症と人類 (Tokyo: Iwanami Shinsho, 2021). This book provides a general introduction to pollen allergy, with a particular focus on Japan and other regions.

⁵⁰ Kim Dong-hyun, “Japanese Government Takes Action Against Pollen, Accelerates Felling of These Trees 꽃가루에 칼 빼든 일 정부, 이 나무 벌채속도 높인다,” *Chosun Ilbo*, 2023. 6. 1.

gained momentum. The study in 1985, mentioned earlier, as well as the research by Choi Hee-seok and others, proved that cedar is the primary allergen for patients with allergic rhinitis in the Jeju region. Consequently, it was confirmed that pollen allergies in Jeju are not merely a climatic phenomenon but a region-specific environmental disease. Along with such reports on pollen allergies, the ecological problems posed by the Japanese cedar as an invasive species were also highlighted in the local community. In the mid-1980s, reports emerged that trees planted haphazardly as invasive species on Jeju Island were being removed and replaced with native species to protect the subtropical forest vegetation.⁵¹ This was not unrelated to the trend in Korean society at the time, which emphasized “Korean values” ahead of major international events such as the ’86 Asian Games and the ’88 Seoul Olympics.⁵² Furthermore, the situation in which the value of cedar as lumber for wooden boxes declined, thereby reducing the need for cedar planting, also had an impact.

Eventually, in the mid-1990s, the Ministry of Environment and Jeju Province announced that they were implementing a plan to gradually cut down pollen-producing tree species, such as cedar.⁵³ The Ministry of Environment confirmed that the pollen released intensively in the spring consists of downy seeds that do not cause harm to humans, such as allergic diseases; however, it acknowledged that species such as Japanese cedar, *Artemisia*, ragweed, and Japanese hop do trigger allergies. Accordingly, Jeju Province decided to gradually remove Japanese cedar trees. Some critics pointed out that the planting of Japanese cedar in certain areas was a prime example of a failed street tree policy.⁵⁴ Although native forests were cleared and tall, sleek Japanese cedar trees were planted under the pretext of beautifying roadside areas, the dense foliage blocked sunlight, stunting the growth of shrubs, and the trees spread allergenic pollen, making them unpopular with residents.

⁵¹ Staff writer, “Cheonjiyeon Falls Washes Away Typhoon Damage and Gets a Makeover 천지연폭포 태풍 상처 씻고 새단장,” *Dong-A Ilbo*, 1986. 3. 4.

⁵² In 1980s Korea, interest in “Korean-ness” and “national culture” went hand in hand with the Fifth Republic’s active mobilization of the language of tradition, fine customs, the “cultural citizen,” and national culture through initiatives such as “*Gukpung* 81,” the “New Cultural Policy,” the “Olympic Saemaul Project,” and the 1986 and 1988 Culture and Arts Festivals. Kim Hak-Sun, “The Fifth Republic’s ‘New Cultural Policy’ and Changes in Cultural Topography 제5공화국의 <새 문화정책>과 문화지형의 변화,” *Culture and Society* 32:2 (2024), 289-344; Kim Young-Kap, “Analysis of Sociocultural Discourse on 1986 Asian Games and 1988 Seoul Olympics 1986년 아시안게임과 1988년 서울올림픽의 사회문화적 담론 분석,” *Research in the Humanities* 33 (2018), 163–183. However, the discourse on national culture during this period cannot be interpreted solely as state-controlled nationalism.

⁵³ Staff writer, “Spring ‘Pollen’ Is Not Harmful 봄철 ‘꽃가루’ 해롭지 않다,” *Chosun Ilbo*, 1996. 4. 15.

⁵⁴ Heo Ho-jun, “Bringing Nature to the City 28) Domestic Edition/Jeju 도시에 자연을 28) 국내편/제주,” *Hankyoreh*, 1996. 6. 7.

By the 2000s, Japanese cedar had become a “pariah” in the eyes of many, and there was a growing call for the development of a comprehensive master plan and forest management strategy for Japanese cedar forests.⁵⁵ Critics have highlighted that an excessive focus on afforestation has resulted in overcrowding of the cypress trees, thereby causing damage to the landscape and ecological diversity. It is therefore essential that methods to increase thinning and timber utilization of the cedar trees are explored. At this time, cedar tree was excluded from the list of recommended species on Jeju.

For Jeju residents, cedar trees are one of the main causes of allergic diseases. The prevalence of allergies among Jeju residents is relatively high. In 2015, Jeju Island had the highest number of patients with allergic rhinitis and atopic dermatitis per 100,000 people. A 2015 survey administered by the Center for Environmental Health at College of Medicine, Jeju National University sought to ascertain the prevalence of allergic sensitization in 1,225 elementary, middle, and high school students residing in Jeju Province.⁵⁶ The survey’s primary objective was to determine the proportion of individuals demonstrating allergic reactions. The findings revealed that 46.2% (566 students) of the respondents exhibited signs of atopic dermatitis. Of these individuals, it was estimated that 17.6% were attributable to cedar pollen exposure. Furthermore, within Jeju Island, the prevalence of Japanese cedar pollen-induced atopic dermatitis was significantly higher among students residing in Seogwipo City in the south (23.8%, 156 students) than in Jeju City in the north (10.4%, 59 students). The research team hypothesized that this was due to the earlier onset and higher volume of Japanese cedar pollen in Seogwipo City, where the average temperature is higher than in Jeju City. The fact that Jeju Island has a higher proportion of residents suffering from allergies compared to other regions—and that prevalence rates differ between Jeju City and Seogwipo even within Jeju Island itself—has further underlined the problems associated with cedar pollen.

A study by a research team at Jeju National University Hospital, published in *Scientific Reports* in 2019, found that cedar pollen allergy is a greater problem for long-term residents than for tourists.⁵⁷ The sensitization rate to cedar pollen varied depending on the length of residence on Jeju Island: 3.8% for those who had lived there for one year or less; 1.8% for those who had lived there between one and two years; 8.5% for those who had lived there between two and three years; 10.3% for those who had lived there between three and four years; 14.8% for those who had

⁵⁵ Staff writer, “The Pariah Japanese Cedar Is ‘Jeju’s Treasure’!? 천덕꾸러기 삼나무가 ‘제주의 보물’!?” *Jeju’s Sound*, 2006. 8. 11.

⁵⁶ Jaechun Lee, Keun Hwa Lee, Hye-Sook Lee, Sung-Chul Hong, and Jeong Hong Kim, “Japanese Cedar (*Cryptomeria japonica*) Pollinosis in Jeju, Korea: Is It Increasing?,” *Allergy Asthma Immunology Research* 7:3 (2015), 295–300.

⁵⁷ Michelle J. Suh, Hee Jun Yi, Jeong Hong Kim, Keun-Hwa Lee, Sung-Chul Hong & Ju wan Kang, “Number of seasonal exposures to Japanese cedar pollen increases the risk of sensitization: Observational study in Korean adults,” *Scientific Reports* 9:10496 (2019), 1–6.

lived there between four and ten years; and 19.1% for those who had lived there for 10 years or more, showing a statistically significant upward trend. Furthermore, the sensitization rate to the pollen was approximately three times higher among those who had lived on Jeju Island for 25 months or more compared to those who had lived there for 25 months or less. This indicates that the sensitization rate to Japanese cedar pollen increases significantly when individuals are exposed to it for 25 months or more—that is, through two or more pollen seasons. This study suggests that while this is not a major issue for tourists visiting Jeju briefly to enjoy the scenery, it can pose a practical problem for residents living on the island long-term.

It gradually became clear that the Japanese cedar posed not only a public health problem in the form of pollen allergies but also an ecological threat. In April 2006, Jeju Island submitted a nomination to the International Union for Conservation of Nature (IUCN) for the inscription of “Jeju Volcanic Island and Lava Tubes” as a World Heritage Site. The IUCN conducted a field survey in October 2006 and approved the evaluation report in April 2007.⁵⁸ At that time, areas totaling 10.3% of Jeju Island’s land area—including the Mount Halla Natural Protection Area, the Geomun Oreum Lava Tube System, and the Seongsan Ilchulbong Tuff Cone—were inscribed as a World Heritage Site. In particular, the Geomun Oreum Lava Tube System was identified as the most significant component and was assessed as being of the highest global standard in terms of its state of conservation, accessibility, morphology, preservation, and the abundance and diversity of carbonate formations. Although the potential for fertilizer runoff from farmland above the caves was noted as a potential issue, it was deemed resolvable through the acquisition of private land and the restoration of natural vegetation. While the IUCN recognized that the area’s biodiversity holds regional and national significance, it did not assess it as having outstanding universal value; however, the fact that a large portion of the area consists of artificially planted forests of a single non-native tree species (cedar) raised public concerns.⁵⁹

Subsequently, to meet the World Heritage criteria requiring the preservation of the natural landscape’s original form and the value of its native ecosystem, Jeju Province decided to gradually thin and remove non-native and exotic tree species,

⁵⁸ IUNC, “World Heritage Nomination, IUCN Technical Evaluation Jeju Volcanic Island and Lava Tubes (Republic of Korea) ID No. 1264,” (2007).

⁵⁹ It is generally known that in 2007, the IUCN recommended the removal of these artificial forests to restore Jeju’s native vegetation and expand biodiversity. Heo Ho-jun, “The Reason for Cutting Down 100,000 40- to 50-Year-Old Cedar Trees at ‘Jeju Geomun Oreum’ ‘제주 거문오름’ 40-50살 삼나무 10만 그루 베어내는 이유,” *Hankyoreh*, 2026. 5. 16. However, while the restoration of “natural vegetation” is mentioned in the IUCN’s official report, this refers to privately owned land used for agriculture, and there is no mention of removing cedar forests. Therefore, the removal of the cedar forest appears to be a conclusion reached independently by the Jeju World Heritage Headquarters, based on verbal recommendations from IUCN experts or in consideration of the various issues associated with the cedars.

such as Japanese cedar, within the World Natural Heritage site. By increasing sunlight exposure, the province aims to facilitate the natural recovery of Jeju's native evergreen broadleaf vegetation. Accordingly, Jeju Island has been conducting pilot thinning and removal operations on the artificial cedar forest in the Geomun Oreum area since 2016. Monitoring results from 2021—five years later—confirmed that, once the cedars were cut down and sunlight reached the ground, 32 species of low-growing understory vegetation began to sprout anew. Furthermore, the survey found that six species of woody plants ranging from 1 to 5 meters in height were also growing, confirming the effectiveness of vegetation restoration through cedar removal.⁶⁰ In fact, research supports this finding, showing that cedar-dominated stands exhibit very low species diversity in the tree layer and high dominance, resulting in a simple stand structure that requires management practices such as thinning and pruning.⁶¹ These findings have further jeopardized the future of cedar trees on Jeju Island.

Amid this situation, Jeju Island officially announced that it would remove 60,000 cedar trees in 2023.⁶² Given that Japan also announced an aggressive cedar removal policy around the same time, it is reasonable to assume that government measures addressing the health issues posed by cedar trees were inevitable. However, cedar trees—which have already become part of Jeju Island's major landscapes—play a significant role in shaping the island's beautiful natural environment. Jeju Island is one of the most popular tourist destinations among Koreans, and its cedar forests symbolize the island's unique landscape, offering a view that cannot be easily experienced elsewhere. In 2023, to commemorate the 50th anniversary of the National Afforestation Campaign, the Korea Forest Service organized a public vote to select the “Top 100 Premium Forests,” and a total of six sites on Jeju were chosen.⁶³ In all six of the selected forests, the Japanese cedar plays a significant role

⁶⁰ Oh Jae-yong, “38 Native Species Revive Five Years After Thinning of Jeju Cedars Imported from Japan 일본서 들여온 제주 삼나무 간벌 5년 만에 고유식물 38종 살아나,” *Chosun Ilbo*, 2021. 7. 18.

⁶¹ Park Joon-hyung, Lee Kwang Soo, Ju Nam Gyu, Kang Young Je, Ryu Suk Bong, Yoo Byung Oh, Park Yong Bae, Kim Hyung Ho, and Jung Su Young, “Vegetation Structure and Growth Characteristics of *Cryptomeria japonica* (Thunb. ex L.f.) D.Don Plantations in the Southern Region of Korea 남부권역 삼나무조림지의 식생구조와 생장특성에 관한 연구,” *Agricultural and Life Sciences Research* 50:1 (2016), 105–115.

⁶² Kim Doo-young, “60,000 Cedar Trees Causing Pollen Allergies to Be Removed 꽃가루 알레르기 유발 삼나무 6만 그루 제거,” *Jeju Ilbo*, 2023. 3. 7.

⁶³ In the forest management category, the Seoyeongari Oreum Cedar and Japanese Hinoki Cypress Forest 서영아리오름 삼나무편백숲, the Saryeoni Oreum Forest 사려니오름숲 (cedar, mountain ash, and others), and the Jogeun Nokko-mae Oreum Cedar and Japanese Cypress Forest 죽은노꼬매오름 삼나무편백숲 were selected as “Premium Forests” in the Forest Management category; in the Forest Recreation category, the Seogwipo Iseung-i Oreum Cedar Forest 서귀포 이승이오름 삼나무숲, the Seogwipo Healing Forest 서귀포 치유의숲 (Japanese cypress, cedar, and others), and the Jangsaeng Forest 장생의 숲 in Jeolmul Natural Recreation Forest (cedar) were

as a key tree species. In fact, Japanese cedar forests create a unique landscape found only on Jeju that sets the island apart from other regions, and they are considered one of the must-visit destinations for tourists visiting Jeju.

Furthermore, the issue of cedar logging that arose recently during the expansion of Bijarim-ro serves as a fresh reminder that, although cedars are an introduced species and part of an artificially planted forest, they have already become deeply ingrained in the lives of Jeju residents. When the Bijarim-ro expansion project was first proposed in 2018, the debate centered primarily on environmental concerns regarding the justification for widening the road. However, as claims emerged that the Japanese cedar—the primary target for removal—posed significant health and ecological risks, the nature of the debate shifted to a discussion of the tree’s harmful effects. Subsequently, construction was repeatedly halted and resumed depending on the potential presence of endangered species in the area. Proponents of the road expansion argued that the Japanese cedar trees, introduced during the Japanese colonial period, acidify the soil and block sunlight from reaching the forest floor, thereby hindering the growth of Jeju’s native plants. Opponents countered that there was no evidence the Japanese cedar trees caused increased soil acidification and that ecological issues could be resolved simply by thinning out some of the trees. Ultimately, after Jeju Province won the final ruling in a lawsuit over the suspension of construction, work resumed and was completed by the end of 2025.⁶⁴ The fact that the controversy over the Bijarim-ro expansion—which initially began as an environmental issue—shifted to concerns about cedar pollen allergies and ecological problems clearly illustrates the dual status of cedar trees in Jeju today.

Conclusion

South Korea’s state-led afforestation initiative is widely regarded as an exceptional global success model. In the 1980s, the Food and Agriculture Organization (FAO), a specialized agency of the United Nations, assessed South Korea’s forests and concluded that South Korea is the only developing country to have successfully carried out afforestation since World War II.⁶⁵ The government designated standard tree species suited to the climate and soil of each region, categorizing and

chosen as “Premium Forests.” In all of these forests, cedar is a key tree species. “Top 100 Premium Forests,” Korea Forest Service website: https://www.forest.go.kr/kfsweb/cop/bbs/selectBoardList.do?bbsId=BBSMSTR_1845&mn=AR02_02_05_03

⁶⁴ Baek Na-yong, “‘Environment vs. Convenience’ Conflict Lasts 7 Years... Expansion of 2.9 km Section of Bijarim-ro Completed “환경 vs 편의” 충돌 7년...비자림로 2.9km 구간 확장공사 마무리,” *Yonhap News*, 2025. 12. 25.

⁶⁵ H.M. Gregersen, *Village Forestry Development in the Republic of Korea: A case study* (Rome: FAO, 1982). An abridged version of this report appears in Louise Fortmann and John Bruce, eds., *Whose Trees? Proprietary Dimensions of Forestry* (Boulder: Westview Press, 1988), 225–233.

recommending them as fast-growing trees, long-term growth trees, and fruit trees. Fast-growing trees were centered on Italian poplar and Suwon poplar, along with paulownia, alder, and black locust; long-term growth trees were centered on Korean pine, along with larch, Japanese cypress, and Japanese cedar.

While there were significant voices pointing out the problems inherent in quantitative afforestation centered on fast-growing trees, there was also considerable counterargument that the choice at the time was unavoidable because even if high-value, high-quality tree species were planted on barren, infertile land, normal growth would be difficult. There is also criticism that South Korea's forestry administration has yet to break free from the inertia of the forest conservation and afforestation policies of the 1970s and 1980s, and is therefore unable to implement new forestry policies required by the country's changing socioeconomic development.⁶⁶ In this context, despite the geographical constraints of its southern habitat, the Japanese cedar was successfully afforested, particularly on Jeju. A key factor in this success was the rapid growth of the Japanese cedar, even though it was classified as a long-term, high-value timber species. Since the Japanese cedar, valued as a timber tree, grew quickly, there was little more to ask for. Furthermore, the forests formed by the straight-growing Japanese cedars were highly regarded for providing exceptional scenery. Above all, the president issued directives during his annual New Year's inspections of Jeju Province to improve tree species through the planting of timber trees such as the Japanese cedar, which further bolstered the drive to plant them. However, until that time, little attention was paid to the pollen allergies that Japanese cedar pollen would cause or the ecological problems in the surrounding environment that the tree's ecology would bring about.

The tree species recommended by the government generally achieved the intended afforestation results. However, problems arose because they were planted in excessive quantities, often beyond the areas suitable for each species. In the case of the Suwon poplar—which earned the nickname “*hyun-sasi*” under Park Chung Hee—it was planted in areas unsuitable for afforestation amid excessive expectations, ultimately earning the derisive nickname “*mang-sasi* 망사시” (“Failed Aspen”) rather than “*hyun-sasi*.” Even in this case, the prevailing view was that the problem lay not with the Suwon poplar itself, but rather with the act of mass-producing seedlings under the “Saemaul seedling nursery” program to meet quantitative targets and planting them indiscriminately. On the one hand, the need for alternative tree species is being raised as global climate change restricts the growth of species such as larch and Korean pine. On the other hand, the suitability of the Japanese cedar as a recommended species is being questioned due to serious issues unrelated to climate change, such as pollen allergies and its ecological impact.

⁶⁶ K. Tak, Y. Chun, and P.M. Wood, “The South Korean Forest Dilemma,” *International Forestry Review* 9:1 (2007), 548–557.

Pollen allergies are a condition closely linked to socioeconomic changes. In postwar Japan and in South Korea during the 1960s and 1970s, pollen allergies were not a major concern. Since they did not pose a threat to survival, there was little public interest in them. However, as the value of cedar wood had declined significantly due to economic developments in society since the trees were first planted, the health concerns associated with cedar pollen had become an issue that could not be ignored. In postwar Japan, the massive number of Japanese cedar trees planted were not utilized as lumber as originally planned but remained as mature trees, turning pollen allergies into a serious problem. By the 1980s, as the Japanese government began implementing full-scale countermeasures, public health concerns regarding Japanese cedar pollen allergies similarly surfaced in Jeju, where the large-scale planting of Japanese cedar had begun somewhat later than in Japan. It was not until the 1990s that Korea began to implement serious countermeasures against pollen allergies, including policies to cut down the Japanese cedar trees planted in Jeju or remove them from the list of recommended tree species.

Of course, when Japanese cedar was first planted in Korea, concerns were raised that an exotic species was replacing native species; however, during the authoritarian era marked by the “Double Green Revolution,” such dissent had little impact on government policy. While the changes to Jeju’s landscape brought about by the introduction of Japanese cedar must have been sufficiently foreseeable at the time, the loss of native species and the issue of pollen allergy were likely not taken into account. This underscores how human-mediated flora relocation does not always yield exclusively intended results, often generating unforeseen ecological or public health side effects. Public reactions to the problems caused by introduced plants are also not uniform. Human decision-making processes are not always based solely on rational logic and evidence, and there are many cases where factors that were not sufficiently considered at the time receive attention only belatedly.

When the Japanese cedar was first introduced, the focus was primarily on its economic benefits, and the government fully supported the rapid expansion of planting areas. The advantages of the Japanese cedar alleviated some concerns and cemented its position as Jeju’s most successful afforestation project. However, as the trees grew, pollen allergies became a problem and, amid the resulting criticism, the ecological issues associated with the Japanese cedar began to receive serious attention. Consequently, local governments decided to reduce the number of Japanese cedar trees. Nevertheless, the landscape created by these new forests is already popular with many tourists and Jeju residents. This duality—a forest that causes distress yet remains cherished, a landscape that needs to be scaled back yet cannot be easily erased—defines the reality facing Jeju today.

Introduced species (those artificially brought in from abroad for a specific purpose), naturalized species (those that reproduce and adapt independently outside their native range), and exotic species (a collective term for all species introduced

from foreign countries or other domestic regions) clearly demonstrate that plants do not merely remain stationary, but also move. The Japanese cedar is an introduced species that has adapted well to Jeju's environment, forming a prominent forest landscape. However, the allergies caused by its pollen cause significant distress to many Jeju residents, raising fundamental questions about the value of the Japanese cedar as a recommended tree species.

In November 2024, I gave a presentation on the "Afforestation and Pollen Allergy of Cedar in Jeju" at an academic conference held at Jeju National University. In response, a discussant criticized the university's decision to cut down the trees due to allergies, in a paper titled "The Japanese Cedar Is Innocent." However, one audience member, who suffers from a severe cedar pollen allergy, countered that, from his perspective, the cedar trees are clearly guilty. So, are cedar trees innocent or guilty?

In fact, asking whether the Japanese cedar is "guilty" or "innocent" is insufficient. There is no doubt that afforestation was a significant achievement in modern Korean history. However, if we merely commemorate that achievement, we risk repeating the same mistakes we made with the Japanese cedar. Policies that encouraged the intensive planting of specific tree species for rapid afforestation are no longer valid. Instead of relying on government or official directives, local residents and experts must now select tree species based on local conditions in order to create healthy forests that can sustain both people and the local ecosystem. Jeju's Japanese cedar is a vivid symbol of the merits and demerits of afforestation. Instead of singling out a particular tree as the problem, we must examine the context in which such policies were decided and establish which criteria should be prioritized in the current situation. This is why we must pay attention to history.

Abstract

Native to Japan, Japanese cedar was introduced to the Korea during the Japanese occupation and were planted in warmer areas such as Jeju Island. In the Korean government's 10-Year Forest Afforestation Plan, which began in 1973, cedar was selected as one of the 10 recommended tree species and became the representative tree of Jeju. Although cedar was chosen as a long-term and timber tree, it was welcomed by the locals because of its fast growth rate, and by the 1980s, the cedar forest had become the largest artificial forest on Jeju Island. However, around this time, research into pollen allergies began to emerge, and a decade later it was confirmed that cedar trees were responsible for severe pollinosis. When cedar's pollen allergies became a social issue, the ecological threat to native plants was raised in earnest. Despite the controversy surrounding them, Jeju's cedar forests have created a new landscape that has become very popular with tourists visiting the island. The dual nature of Jeju's cedar forests—functioning as a valuable economic resource on the one hand, and posing ecological and public health hazards on the other—has prompted a fundamental re-evaluation of government policies focusing on large-scale planting of recommended species. This demonstrates that establishing healthy and resilient forest ecosystems requires the active integration of local community perspectives and scientific expertise.

Keywords: Japanese cedar forest, pollen allergy, Jeju Island, 10-Year Forest Afforestation Plan, recommended tree species