


E. ELENA SONGSTER

cultivating the nation in FUJIAN'S FORESTS:

FOREST POLICIES AND AFFORESTATION EFFORTS IN CHINA, 1911-1937

CHINA EXPERIENCED tremendous upheaval during the early twentieth century as its new leaders attempted to establish the Republic of China following the overthrow of the Qing dynasty in 1912.[1] With many factions and continuous fracturing, the young country struggled to gain a sense of national union. China's leaders sought in various ways to strengthen the national spirit as well as the material well being of their country. Trees provided one answer to both of these needs. The new government in China was quick to recognize that all of the infrastructure and tools necessary to build a strong modern society during the republican period (1911-1937) required a constant supply of wood: for railroad cars and railroad ties, poles for electric and telephone lines, improved dams and mills, steamboats and naval ships, bridges connecting new roads, and paper for updated school books, new maps, and mass media.[2] Trees provided the basic components for attaining most of the material elements of early-twentieth-century visions of a new China and the material means for operating and protecting a new state. To realize any of these visions, the new government required a predictable and consistent supply of timber. To gain access to the timber supply growing within China, the nation's leaders established a national forest policy coupled with afforestation plans. In 1914, two years after the founding of the Republic of China, President Yuan Shikai established the National Forest Law. He endorsed China's first Arbor Day one year later.[3] Following Yuan Shikai's death in 1916, warlord rule divided China for over a decade until Chiang Kai-shek created a new centralized government under the Nationalist Party in 1928. Chiang Kai-shek's new government revived Yuan Shikai's forestation efforts with even greater vigor.

The act of cultivating national sentiment with saplings was not unique to

China. Many other young states also have recognized the symbolic power of tree planting as well as the material benefits of control over the timber supply. Beginning in the late nineteenth century, the Jewish National Fund made the association between the nation and afforestation famous with its concerted efforts to integrate tree planting and nation building in the area of present-day Israel.[4] In Soviet Russia, Vladimir Lenin's government did not even wait a full year after the Bolshevik Revolution to establish new land and forest policies defining broad state ownership of forestland.[5]

Although several scholars have done excellent work on the forest history of China, the vast majority of this scholarship focuses on imperial China (before 1911) or communist China (after 1949).[6] This paper examines the forces that transformed forests and forestry between these two eras. The early twentieth century was a unique period of rapid developments in forest science worldwide. Forest science was one of several "western" disciplines to have a strong impact on Chinese policy, education, and practice. This study will focus on the connections between China's nationalizing efforts and new forest policy during two incipient moments of nation building in the republican period: the early years following the overthrow of the dynastic system in 1912, and the founding of the Nationalist regime in Nanjing in 1928. The afforestation campaigns under both Yuan Shikai and Chiang Kai-shek illustrate strong state concern about timber supply as well as an understanding of the symbolic potency attached to planting trees.

The next major step after establishing national forest policy was to gain the cooperation of the forested provinces. The southeastern coastal province of Fujian was a particularly important region for forestry because of its long history of tree cultivation and timber production. Specific instructions on cultivating trees in Fujian date back to as early as the Yuan dynasty (1279-1367).[7] The harvesting of trees also was regulated under a traditional system in Fujian, but only in places with strict community forest management practices. Large areas of Fujian were not privately owned and therefore were harvested freely.[8] Traditional cultivation and harvesting contributed to an elaborate timber trade network that shared many structural similarities with the intricate timber trade system of the Tokugawa era (1600-1868) in Japan.[9] The vast majority of Fujian's timber floated from the mountains down the rivers into the bustling trading port at Fuzhou Bay. During the 1800s, the British recognized that Fujian timber production played a significant role in making Fuzhou one of China's most important trade centers along the coast.[10] Indeed, cities in the Yangzte River delta depended on Fujian for the majority of their wood.[11] Against the strong resistance of the Daoguang Emperor (r. 1821-1850), the British insisted that Fuzhou be included among the treaty ports as payment for the British victory in the Opium War (1839-1842).[12] The treaty port system forced the Qing government to grant more favorable trading regulations to foreigners and gave foreigners special new rights on Chinese soil within a designated area around the port.[13] As part of China's effort to strengthen its defenses in the face of continued foreign encroachment, the Qing government set up one of its most important shipyards in Fuzhou in 1870.

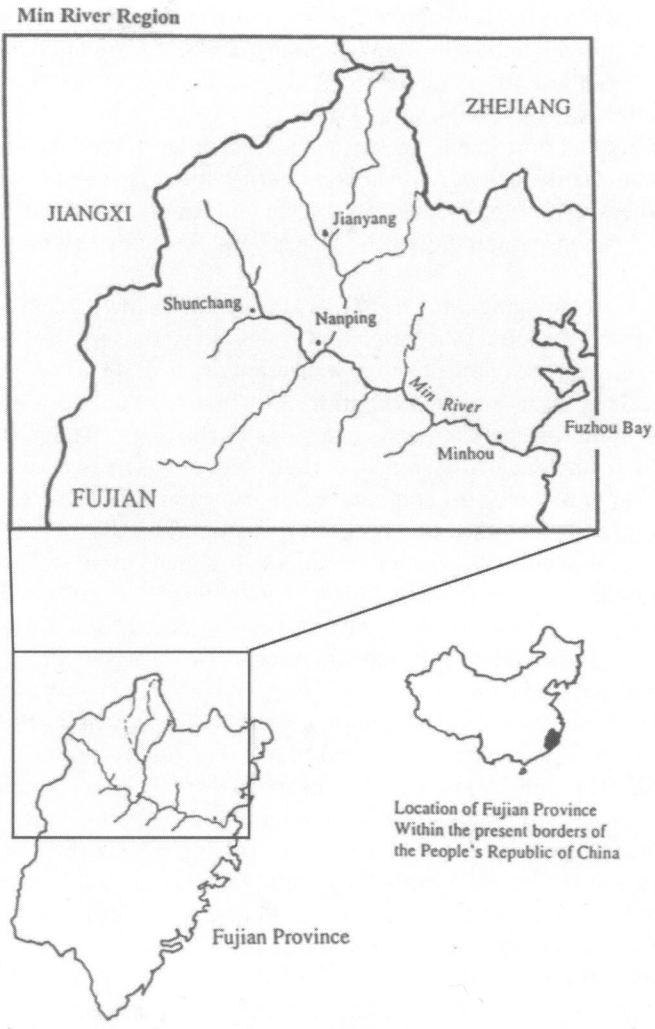
China thus could take advantage of the existing timber trade system in its attempt to build a new naval fleet. Fuzhou's timber trade, already prominent during the Qing dynasty, became even more important to the Chinese government with the increased timber demands of the early twentieth century.

The republican-era forest and afforestation policies aimed to create a new relationship among the people of Fujian, the land, and the government. Fujian's long history of tree cultivation makes this province an ideal case study for examining three main shifts that the nation-building enterprise promoted in thought and practice surrounding the timber trade during the early twentieth-century: the incorporation of Western scientific ideas of forestry, the implementation of governmental control over resources, and the encouragement of China's people to actively participate in the national project as citizens. The belief that scientific principles could bring about greater efficiency and control guided the goals and content of policy during the republican era. Scientific forestry had only recently become a field of study and profession in the United States with the efforts of Gifford Pinchot.[14] Formal exchanges of scholars and students expanded the influence of Pinchot's efforts to China. Inspired by progressive era conservation specialists from the United States and like-minded experts from Europe, China's new forest policies embraced western theories that promoted the control and ordering of nature. In so doing, China's early twentieth-century forestry programs shared a legacy that Carolyn Merchant associates with "the death of nature."[15]

When Fujian modeled its 1916 forest policy on the National Forest Policy of 1914, it joined in a national campaign to transform China in the image of western science. Fujian had a particularly tenuous relationship with the national government until the writing of its 1916 forest policy, in which Fujian province proclaimed itself to be part of the new nation. China's early-twentieth-century policies introduced a dramatic shift away from Fujian's forest cultivation and harvesting practices that dated back hundreds of years toward a more regulated program. Counter to the writings of many afforestation advocates of the time, however, scientific forestry and large-scale afforestation campaigns could not solve the major problems of the young nation. Afforestation and timber regulation efforts that grew from mere policy in 1914 into enforced practice in 1929 demonstrate how governmental regulation actually disrupted the industry that its afforestation campaigns were designed to support.

BUILDING ON TIMBER TRADE NETWORKS

DURING THE EARLY twentieth century, Fujian's timber trade system bridged two eras; the network was premodern, yet it was stimulated by modernity. Timber trade flourished during the first decade after the overthrow of the Qing dynasty. According to Fuzhou overseas export records, timber exports amounted to 5 million *yuan* in 1919, which grew to 10 million *yuan* in 1920.[16] As the logs proceeded down the rugged path from the northwestern mountains of Fujian to the bay in Fuzhou they connected various segments of society, each playing a different role in the progressively specialized levels of the timber market. Each segment of the



Map adapted from *Zhongguo Renmin Gongheguo Diming Sidian* [Placename Dictionary of the People's Republic of China], Fujian Province, (Shangwu ying shuguan, Beijing, 1995).

market shared (though certainly not equally) in the financial risk, the peril of the river, and the profit promised at the point of sale in the bay.

The process of getting the wood from the mountainsides to the river began with the sector that economic historian Lin Renchuan has referred to as the "primary market."[17] The primary market–the production site and first level of exchange–was in the rural mountain hinterland of Fujian province. One of the strengths of the timber trade system was its remarkable ability to accommodate the many participants in the trade network. The people who participated in the timber trade at the most basic level, tree felling, comprised frequently shifting

populations. They were known as *linhu* (literally translated as "forest households") and worked as hired laborers for lumber companies or private landlords.[18] The system was suited to both a mobile population and nebulous land ownership. *Linhu* tree fellers, as recent migrants to the area, were often unfamiliar with the river merchants and thus had to seek assistance in order to tap into the timber market system. *Shanke*, or mountain brokers, earned money by introducing these *linhu* tree fellers to river merchants. *Shanke* mountain brokers constituted the second tier of the system and, like the tree fellers, fluctuated in number and location.

In addition to employing *linhu* tree fellers, timber mills invested an immense amount of labor and capital to create "slipways" to move the logs to the rivers.[19] W. J. Cannon, a foreign resident of Fujian who wrote a special report on lumbering in 1925, describes these ingenious contraptions that the Fujianese created to overcome the daunting task of getting the logs to the river: "The sled or skid roads are remarkable, considering that their construction is accomplished without the aid of any modern engineering instruments, and involves cutting, filling, and bridging of ravines and rice paddies to maintain the proper gradient for the safe sledding of the logs to the streams. ... In some instances, the bridges are fifteen hundred feet long and as high as forty feet."[20] These elaborate log transport systems had been common since at least the early 1800s and belied the assumptions of many modern reformers that local practices were primitive.[21]

As Cannon's account demonstrates, these special log chutes were themselves a substantial financial investment, and thus simultaneously a risk. The impetus for minimizing the length of the skid roads was considerable. The disproportionately high forest depletion near the rivers was testament to the difficulty of transporting logs over the mountainous land and the expense of erecting these contraptions when wood was available near the waterways. Deforestation was not only a twentieth-century phenomenon. Nicholas Menzies notes in his seminal work on forest history in China that already in the thirteenth century officials recorded concerns about the silting and flooding that deforestation in the mountains caused downstream. By the sixteenth century, deforestation had escalated to the point of inciting conflict over water control between people from the mountains and those from coastal areas in Fujian.[22] With evidence of ancient tree cultivation and community restrictions on harvesting, such deforestation indicates that the land and the trees were part of a system that extended far beyond local use. Short-term profit in trade had overpowered concerns about the consequences of deforestation in spite of the longstanding recognition of the need to replenish trees.

Once in the river, the timber followed three basic paths. The most direct route to the markets in the Fuzhou Bay was through a merchant in a central market, who took the wood to domestic and foreign markets in Fuzhou.[23] The timber market also created niches for service-industry development along the river. Native banks served the various levels of wood merchants with loans to keep the commercial exchanges running well.[24] The actual path that the logs traveled to get to these bay markets required incredibly agile maneuvering. A journalist for

a Shanghai periodical, *The Chinese Nation,* described the extraordinary challenges faced by anyone journeying down the Min River in northwest Fujian: "The traveler glides on smoothly for a matter of less than two hundred yards and then has the first excitement darting down the first of a long list of rapids ahead of him. ... After passing the three-mile descent, the traveler hops on through some more rapids to Hell Gate, about half way between Shunchang and Yanping, where the river nearly one thousand feet wide is suddenly contracted within a passage hardly seventy feet across."[25] While the boats in this account were not necessarily guiding logs down the river, the logs followed the same route. Records of the Pine Guild, which included both loggers and mill owners, offer another testament to the precarious nature of this enterprise: The Guild estimated a loss of pine timber worth $350,000 in 1924 to rapids and splintering en route to Fuzhou.[26]

Once the timber reached Fuzhou Bay, the trade network drew Fujian timber into the intricate national and international market. During the early years of the republic, Fuzhou was a prominent port in this trade network. With migrating participants and little outside control, however, the system was not being monitored for sustainability. Tree cultivation depended on the productivity of individual growers and the natural supply of timber. As a result, the demand exceeded the supply and *linhu* tree fellers stripped the mountains of trees for the market faster than the limited cultivation could replace them.

TIMBER TREES

THE FUJIAN TIMBER trade centered on both natural and planted stands.[27] Among the local varieties of conifers in the Southeast, the enormous *shashu*, or cunninghamia, dominated the mountains and markets of Fujian.[28] Most cunninghamia stands that existed during the republican era were plantation stock. Because plantations were renewed about every twenty years, the natural prevalence of cunninghamia is extremely difficult to determine.[29] Loggers harvested cunninghamia at about ten to fifteen meters in height for faster cash returns and because larger logs were more difficult to maneuver through the rushing streams and rivers that wove between the steep banks in northern Fujian.[30]

Called the "treasure tree" of Fujian by later afforestation advocates, cunninghamia was traditionally the most widely cultivated tree in Fujian.[31] It generated the highest percentage of gross provincial income among all of the tree types. From 1923 to 1925 cunninghamia constituted between 75 and 85 percent of provincial lumber sales.[32] During these three years an estimated 15 million cunninghamia trees were cut for the Fuzhou markets.[33] The wood was used for tea chests and construction lumber, and was especially prized for coffins, tomb vault doors, and shipbuilding because of its resistance to decay.[34] Pine was also prevalent, but trailed cunninghamia in number on the hills and in volume at the market.

The *zhangshu*, or camphor tree, was a highly valued cash crop in Fujian throughout the republican period. Domestically it had been prized for the medicinal qualities of its sap, which was made into an ointment for curing "wind

illnesses."[35] According to Qing-era Chinese medicinal teaching, "wind illness" was a disorder that could result when exposed to wind that was excessive or irregular in some way. It was thought that people in poor health were much more susceptible to attack by the wind, which would enter through the pores.[36] Camphor trees also provided a key aromatic ingredient for such perfumes as the "auspicious dragon brain," admired by Xuantong, the eighth century Tang dynasty emperor.[37] A slow-growing hardwood, camphor was also used for expensive furniture, especially chests, because its odor repels moths.[38] The market, however, was not the only factor to dictate the harvesting of trees. Growers also responded to folk traditions, especially fengshui, which examines the arrangement of natural features and objects in a house, garden, or business and how these features relate to the balance of the universe. During the 1920s, for example, one of the leading camphor farmers discovered problems with the fengshui of his camphor grove. According to some Chinese traditions placement of objects, trees, or buildings could bring good or bad luck to the owners and users of that particular space. To the great chagrin of camphor merchants, this camphor grower ceased harvesting from his thousands of trees upon discovering poor fengshui in his grove.[39]

FUJIAN FORESTS FOR THE NATION

THE CENTRAL government of the new republic recognized the importance of controlling the new nation's timber supply. In 1914, the national government issued the National Forest Law that encouraged tree planting and specified stipulations for provincial-level participation. Yuan Shikai, the first president of the young republic, further promoted the importance of afforestation by combining the Qingming Festival (Grave-sweeping Day) with Arbor Day the following year. The Qingming Festival is a day set aside for Chinese families to offer reverence to their deceased relatives and has included such observances as visiting and grooming the gravesites and presenting offerings of incense, food, and other items. The inspiration for combining these two events came from an American afforestation activist, Joseph Bailie, who later founded the College of Agriculture and Forestry at the University of Nanking.[40] Bailie's tree-planting project for water and soil conservation on one of the hillsides near Nanjing was disrupted by a large number of Chinese locals who uprooted many new saplings in an effort to tend to the graves of their loved ones on the same hill. Bailie thought that a Chinese Arbor day might help foster a reverence for planting trees in China and prevent such an occurrence from happening in the future. On China's first Arbor Day, observed in the same location in, 1915, China's Minister of Agriculture, Zhang Qian, offered diplomatic statements about the trees symbolizing China and the United States, growing closer as they grew bigger.[41] By combining these two holidays, Yuan Shikai's administration transformed a family day into a national day. Subsequently, China's Arbor Day focused on children in schools, teaching scientific forestry techniques to the youth and keeping the tradition alive with active young participants. To aid in this campaign in the schools, the College of Agriculture and Forestry at the University of Nanking printed pamphlets with helpful tips on setting up nurseries and planting various types

of trees.[42] The extent to which these reforestation, afforestation, and forestry regulation projects reached individual provinces varied widely.

In October 1916, the Fujian provincial assembly called a ten-week-long meeting to formulate new government policies for the region. All of the issues addressed by the assembly during this meeting were aimed at improving the province by increasing its productivity, incorporating scientific ideas, and systematizing administration in various departments. The importance of timber to the provincial economy had long been recognized in Fujian. Now, two years after the promulgation of the National Forest Law, it was clear that timber was also an object of national concern. During this meeting, the provincial assembly drew up a detailed plan for reforesting the mountains of Fujian and adhering to the national forest policy.

The opening statement of the 1916 Fujian afforestation policy stated that the Fujian policy was written in accordance with the National Forest Law and Regulations of 1914.[43] With this explicit compliance, Fujian made a legal gesture of allegiance to the central government. At the same time, the forest policy document also asserted the role of the provincial government as an instigator and manager of national modernizing efforts at the local level. The assembly thus established the provincial government as the link between the local people and the nation. Such allegiance was a departure from the recent history of Fujian's relationship with the central government. Fujian province had not been consistently loyal since the founding of the new nation in 1912. The province had threatened secession in protest against the leadership of the new republic's first president, Yuan Shikai, once in 1913 and again in January 1916 when he declared himself emperor.[44] Yuan Shikai quickly rescinded this royal title as a result of widespread protests against the reinstitution of the monarchy.

The text of the 1916 Fujian forest policy proclamation most clearly illustrates the degree of management that the assembly hoped to achieve: "Once the forest is grown, those who participated in afforestation must make a request to the county before chopping down trees for sale. The profits will then be divided according to the regulations laid out in this document. ... After each forest area is inspected, the overseer should record the location area, number of trees (alive and dead), the status of the area, the kinds of products that might be obtained, and how the area should be improved."[45] The provincial government planned to obtain an accurate assessment of the potential productivity of the land. The assembly members also discussed land-surveying issues in other agenda items independent of the afforestation plan, demonstrating concern for both revenue and control.

Under the new apparatus outlined in the 1916 policy, the provincial government was to have a more direct relationship with the people who worked the land, and in turn, more control over their lives and livelihoods. Previously, under the Qing dynasty, forestland in Fujian had been managed according to agreements worked out between tenants and landlords. The topography of Fujian gave tenants an unusual amount of freedom over decisions concerning the land. Landlords, who lived in the distant Fujian coastal cities, left the mundane

decisions regarding the management of remote mountain lands to their tenants.[46] Consequently, Fujian customary law evolved into a split-soil system in which the tenant's surface, or "skin," usage rights could be bought and sold separately from the subsoil, or "bones."[47] Although the use of split-soil rights as a land-management system in China was not unique to Fujian, the farmers in Fujian experienced a comparably high degree of freedom in land management. Melissa Macauley's careful study of litigation and court records from this area describes the intricate structure of property rights in Fujian during the Ming and Qing dynasties. According to her findings, land contracts were referred to as "alive" or "dead," indicating the degree to which a property owner could maintain a claim to the land that had been sold out of the lineage.[48] This type of structure can be seen as an institutionalization of a system akin to ideas imbedded in James Scott's "moral economy."[49] Land contracts contained such mechanisms as the "lamentation contract," which enabled a seller to appeal to the new owners to add supplementary payments if the seller had become landless and was in need of financial assistance.[50] Implicit in this older system was the idea that land was more than simply property; it was the means of livelihood. If one lost access to the means of making a living, one could pursue continual compensation. In some cases this created a familial relationship between old and new owners; in other cases it created conflict. Within the context of this imperial system, new owners found that legally severing former owners from compensation rights was extremely difficult.[51] The new system retained a form of split soil rights. The modern system differed from the Qing model, in key ways—it incorporated a much greater degree of control over the land through the government regulation of land use practices and did not contain any such lingering agreements of sympathy as the lamentation contract.

In some instances, the new provincial policy demonstrated a great deal of innovation on the part of its authors. Certain items, such as tax incentives, would in theory simultaneously help the peasant farmers as they enriched the provincial timber supply. The government policy, however, was designed for the benefit of the state first and always delegated a large share in the profits from the wood harvest to the government: "For government-owned and government-managed land, revenue should be dispersed to the manager at 20 percent, and to the provincial state at 80 percent. For privately owned, government-managed afforestation projects, revenue should be dispersed to the manager at 20 percent, to the owner at 30 percent, and to the state at 50 percent. For government-owned and government-private cooperatively managed forest areas, revenue is to be dispersed to those who planted the trees at 50 percent, to the managers at 20 percent, and to the provincial state at 30 percent."[52] By favoring the state and management in the profit sharing plan the provincial assembly designed the policy to assert the authority of the provincial state over the mountain regions of Fujian.

The provincial assembly's close attention to profit in the policy text indicates that the Fujian government saw timber as a revenue-generating resource; the government was not simply interested in restoring and expanding the forests in

the mountains. The plan essentially called for scraping together wasteland and local labor. The drive for progress and improvement also was aimed at stabilizing the provincial economy. In order to entice local labor to participate in a policy that highly favored the government, the program incorporated tax breaks in thirty-year stints and other long-term incentives to match the duration of the unusual crop. The policy also incorporated such low-budget incentives as certificates of recognition for active tree planting.[53] These types of incentives could reinforce the connections that the government hoped to foster between the people and the state.

THE SCIENCE OF FOREST POLICY

THE 1916 FUJIAN afforestation policy reflected a national trend that favored western scientific learning over local knowledge. In spite of Fujian's long history of traditional local tree-cultivating practices, the provincial governing bodies and local forestry specialists joined the nation in embracing western scientific forestry. Returning students and foreign experts from the United States and Europe introduced western scientific forestry to China. Lecture tours by forestry experts drew crowds of students and farmers interested in learning more about scientific methods of forest cultivation.[54] Among students who went abroad to study, Nang Han returned from his studies at Cornell University, the University of Michigan, and the University of Wisconsin to be China's senior secretary of the Ministry of Agriculture and Commerce and co-director of the Chinese Forest Service, which was established in January of 1916. Forsythe Sherfesee, from the United States, served as the other co-director of the Chinese Forest Service, and a forest expert from England, William Purdom, became a division chief within the service.[55] Other specialists influenced the establishment of forestry schools or served as faculty at such esteemed institutions as Sun Yat-sen University in Guangzhou and the University of Nanking.[56] Numerous renowned scholars spent various lengths of time in China doing research and instructing Chinese students. C . W. Woodworth spent his sabbatical from the University of California, Berkeley, at the University of Nanking in 1918. W. C. Lowdermilk joined the University of Nanking College of Agriculture and Forestry as a visiting research professor from the U.S. Forest Service under the sponsorship of the Presbyterian mission board from 1922-1927.[57] Although missions and missionary schools spearheaded agriculture and forestry projects, funds for such study, research, and exchanges came from a variety of sources. The Rockefeller Foundation, for instance, donated money to support a Cornell-University of Nanking joint program in forestry education.[58] Other organizations such as the Qinghua Boxer Fund, Social Science Research Council, Chinese Bankers, and the U.S. government put forth funds to assist in this educational exchange to bring scientific forestry and agriculture to China.[59] Such agricultural and scientific journals as *Nonglin Xin Bao* (New Forestry Journal), *Kexue* (Science), *Senlin* (Forests), and the largely English-language publication, the *Lingnan Science Journal,* included an increasing number of articles on forestry, which consistently promoted the benefits of applied scientific methods for forest management.

Non-specialized periodicals also espoused the ideals of scientific improvement and modernization of China's industries. In an article for the *Far Eastern Review*, a Chinese writer promoting an industrial transformation for China highlighted the timber industry as one of the areas in desperate need of more modern, scientific methods: "In the timber industry, the axes used for felling the trees are often dull, and not well adapted to their particular needs, for hard and soft wood, trunks and branches are cut with nearly the same kind of axes. The logs are hauled by human labor, with the aid of a few simple and crude capstans and pulley wheels."[60] This reformer reflected the enthusiasm for modernizing forestry through science that was integral to almost every level of the 1916 Fujian policy.

The Fujian forest policy reflected the strong influence that foreign experts and foreign trained Chinese experts had on the views and policies of China's leaders at this time. The Fujian policy called for overseers to have formal forestry training and for local farmers to be given basic scientific education. The policy read: "Each district and county nursery should select management personnel who have technical training. Each county official should appoint managers who have graduated from a forestry institution or have had experience in afforestation to oversee projects."[61] The methodologies outlined in the policy for surveying and cultivation were all grounded in scientific discourse. By requiring such accreditation for management positions, the policy promoted a system based on scientific authority to regulate and manage the trees in the mountains. In addition to advocating modern equipment and institutionalizing formal accreditation, the policy also sought to make Fujian's peasants into modern foresters. This mission of the forest policy was made explicit in the portion of the document that addressed seedling cultivation: "In order to assist the people in future planting and raising seedlings, in addition to supplying seedlings for the official afforestation project, nurseries should sell extra seedlings to the local people at cost if possible. Each seedling should be accompanied by an explanation, written in simple vernacular, describing the most cost-effective methods of seedling cultivation."[62] The policy was more than simply a plan to plant trees; it was also an effort to incorporate the people into a government project. By proselytizing scientific methods of forestry to local people, the government hoped to train a large body of potential laborers for the forest areas under its jurisdiction. Ideally, all tree planting would become standardized as farmers applied these methods to their private groves. The local farmers thus would incorporate the government's philosophical agenda into the structure and management of their own private enterprises.

The meeting of the provincial assembly to create forestry and other provincial policies was an example of early attempts to establish a new order. Implementation of this elaborate afforestation and management plan required a modern infrastructure. In 1916, Fujian not only lacked such an infrastructure, but also was in a state of political chaos. During the first decade of the republican era, Fujian province experienced fiscal and political disintegration. Banditry, army skirmishes between rival provincial armies, and political and fiscal corruption in the Fujian provincial government prevented the realization of the

assembly's modernizing dreams. Government officials also contributed significantly to the financial crisis. As a United States consul noted, "The officialdom, from the Governor down, were making greater personal wealth out of the business [of provincial administration], than the Manchu official ever did."[63]

The old timber trade network persisted in spite of political chaos in the province. The malleability of the market system at each level enabled it to flourish even though banditry and the warring provincial government had created instability in the mountains. Evidence that banditry was a genuine and serious problem can be found in local gazetteers of the period. During this time in the northwest county of Jianyang, bandit incidents were recorded in nearly every entry in the "Major Events" section of the gazetteer.[64] Although timber surpassed tea as Fujian's leading export when the onslaught of World War I caused a dramatic drop in luxury commodity markets, the plummeting of the tea market compounded the financial crisis in the province.[65] Military expenses had risen; by 1917 there were twice as many troops to fund as there were in 1911, and five times as many as the Qing regime had maintained in the province.[66] The fiscal crisis and military instability made funding and managing such government reform projects as afforestation virtually impossible in Fujian.

The principles of the policy persisted in the literature of this era independent of any effort by the assembly to realize or perpetuate them. A foreign resident doing research on Fujian forestry in 1925, obviously unaware that a policy had been drafted in 1916, pointed out the need for a provincial forestry policy! He stated in his report: "There is no government control of the exploitation of existing stands and no reforestation, except of a private nature confined largely to fir [cunninghamia]. Scientific forest management is unknown, and its introduction is impossible unless it is regulated by the government."[67] Because such ideals were not yet evident in the landscape, this foreign researcher did not recognize that local policy makers shared his enthusiasm for scientific forestry. Although there is little evidence that the 1916 afforestation policy was ever implemented, the afforestation policy remains a valuable source of information about early-twentieth-century perceptions of the role of science in modern government and constituted an important precedent for subsequent afforestation efforts.

CHIANG KAI-SHEK'S AFFORESTATION MOVEMENT

FELLING TREES produced hard cash; planting trees created political capital. Rising national and provincial leaders of the late 1920s, like their predecessors a decade earlier, recognized the importance of asserting control over the timber trade. In April of 1927, Chiang Kai-shek destroyed a coalition between the Chinese Communist Party and the Guomindang Party by crushing a large labor strike. The coalition had been created to reclaim China from the fracturing forces of the many warlords who had grown in strength since the overthrow of the Qing dynasty. By 1928, Chiang Kai-shek transformed his position from leading general to head of state by setting up alliances in Nanjing, ousting the communist members, and nominally unifying China under the Nationalist flag. Chiang Kai-shek's

administration embarked on several national policies designed to integrate the disparate provincial regions and their local economies into a national unit with the central government in Nanjing. One of the first steps that Chiang Kai-shek's new government took in cultivating a more cohesive and nationalistic community was to draft a new national forest policy in 1929, one modeled on the same principles of scientific forest management that had inspired the writing of its precursor, the National Forestry Law of 1914. To support this new policy and promote the planting of trees, Chiang Kai-shek's administration also created a new Arbor Day and state-sponsored Afforestation Movement.

Just as Yuan Shikai had previously linked Arbor Day with the Qingming Festival, Chiang Kai-shek used Arbor Day to create a new holiday. He severed Arbor Day from the Qingming Festival and relocated it on the anniversary of the death of Sun Yat-sen, March 12. Chiang Kai-shek called this new national holiday "Sun Yat-sen Commemoration and Arbor Day," or *Zongli jinian zhi shu jie*.[68] By choosing Sun Yat-sen's unique title of "Zongli" and the anniversary of Sun's death as the date for the new national day, Chiang Kai-shek transformed the activity of tree planting into a more explicit celebration of the nation. The act of planting trees thus was disassociated from the family-centered observance of Qingming Festival and was linked to the memory of the " father of the republic," and to the concept of a national family.

Chiang Kai-shek used this festival as a way to assert his authority as leader of the nation. He reinforced his position as China's new national leader by assuming the authority to create and move national days established by China's former president. By acting as the creator of a national day that honored the renowned patriarch of modern China, Chiang Kai-shek established a symbolic link between himself and Sun Yat-sen. In effect, by participating in the new Arbor Day and commemorating Sun Yat-sen, the people celebrated the nation under Chiang Kai-shek's rule and contributed, symbolically and materially, to the growth of its resources.

Three weeks before the first observance of Sun Yat-sen Commemoration and Arbor Day, the agricultural journal *Nongsheng* (Farmer's Voice) ran a special promotional "Afforestation Movement" issue composed of articles related to the theme of planting trees. The Ministry of Agriculture and Mining made a formal announcement of this national celebration, detailing how each province was to observe it: "Every year on March 12, the anniversary of the death of Sun Yat-sen, each province should hold a tree-planting ceremony and afforestation activities to arouse the spirit of the masses to the importance of forestry."[69] In light of the massive afforestation efforts that were also promoted by this new festival, the Nationalist government simultaneously acknowledged China's need for wood and the importance of a dependable wood supply for the strength of a modern nation.

Shortly after the establishment of the new holiday, an Afforestation Movement convention was held. At the convention Ceng Jikuang, an afforestation advocate, argued that Sun Yat-sen's "Three Principles of the People" could not be achieved without afforestation, and claimed that tree planting thus served as a foundation of the new nation, and as a fundamental prerequisite for nationalism, democracy,

and a decent livelihood.[70] He viewed the widespread importation of foreign lumber at that time as both a threat to the nation and an example of submission to foreign imperialism. Ceng did not simply promote afforestation as a means of producing domestic lumber to reduce the need to purchase foreign lumber. He also saw afforestation as a means of employing the masses of jobless citizens and utilizing unproductive wasteland. Ceng's speech explicitly incorporated the ideal of nurturing local economic development as the real key to creating a strong, independent nation. Ceng further argued that attempting to topple imperialist economic power through a boycott of foreign wood, without first empowering China to take care of its people's basic needs by producing a domestic timber supply, was equivalent to "climbing a tree to look for fish"–to him, it simply did not make sense.[71] Ceng asserted that by creating employment, preserving mountain soil and streams, and sustaining a strong wood supply, afforestation was China's means of escaping the clutches of imperialism and establishing a sustainable economy.

Direct central government involvement and local action were major themes of the nationwide afforestation movement. In the same "Afforestation Movement" issue of *Nongsheng* an author named Chen Pengfei highlighted national consciousness as the main aim of the new Sun Yat-sen Commemoration and Arbor Day when he pointed to an observation made about China by a foreigner. Chen cited a dialogue between a traveler to China, Vicomte d'Ollone, and a foreign audience with which d'Ollone was discussing China's extensive deforestation. An audience member asked, "Is it that the Chinese detest trees?" Chen proudly cited d'Ollone's response: "On the contrary, no people loves them more: every house has one or several in its courtyard or garden, so that you may expect a village in the district when you see a wood, and the pagodas, which are the only places of public assembly, all possess groves which are usually ancient." Chen then asked a powerful question: "Why, then, does the Chinese, who loves to have trees about his house, so pitilessly destroy those at a distance, thus grievously denuding the mountains?"[72] For Chen, d'Ollone's comments poignantly captured the problem that Chen personally saw as a difficult hurdle in China's efforts to become a strong nation–a lack of national consciousness that could transfer private concerns for one's garden into public concerns for national forests. Chen saw Arbor Day and the afforestation movement as means of encouraging people in China to look beyond the boundaries of their courtyards. With stronger national consciousness, the disgraceful sight of the distant barren hills would become as personal an issue to Chinese citizens as the upkeep of their own dwelling spaces. In a similar vein, Chen emphasized that the afforestation movement was specifically designed to extend all the way down to the countryside and up to the mountain villages, to incorporate everybody into the national community.[73]

FUJIAN PARTAKES IN THE NATIONAL PLAN(TING)

THE NANJING government initiated three programs during the afforestation movement: Arbor Day commemorative planting, campaigns for wasteland afforestation, and tree planting along public roads. Because each province was

responsible for promoting these campaigns locally, the degree to which the different programs were implemented in each locale varied from year to year according to the government agenda as well as to local incentive and resources. The national call for afforestation in 1929 elicited numerous local efforts. Just as the Nanjing government modeled its new policies on the 1914 national forest policy, Fujian created a new forestry policy in 1929 that echoed the 1916 provincial plans.[74] The striking similarity in the content and structure of these two Fujian provincial forest policies illustrates an important continuity in the perspectives of the provincial assemblies. Both highly valued the importance of forests to the provincial and national government and had the perspective that planting trees builds national sentiment. Unlike the 1916 provincial effort to systematize and control tree planting, the afforestation policy of 1929 actually produced trees. The difference between the execution of the policies of 1916 and 1929 was determined, in part, by a decrease in the amount of banditry in the province. Political and military instability had been a key impediment to afforestation in Fujian during the previous two decades. In 1929, the Fujian provincial government was largely made up of the commanders of the Nineteenth Route Army sent to Fujian by Chiang Kai-shek in 1927. These new leaders of the Fujian provincial government were effective in bringing banditry under control and implementing other reforms as well as the new afforestation policy.[75]

Increased afforestation and government regulation efforts during the early 1930s did not lead to increased profits in the province. In fact, Fujian's timber market suffered with the implementation of afforestation and regulation. Between 1929 and 1930, directly following the promulgation of the 1929 Fujian forestry policy, Fujian lumber revenues showed a drop from 22 million *yuan* to 13 million *yuan*, and the following year an even more dramatic drop to 3.6 million *yuan*.[76] The timing of this decline in revenue implicates the world depression. Many of China's markets, however, did not suffer during the early 1930s as did the markets of most other countries. Close examination of this period has led some historians to argue that the great depression did not hit China as it did other countries, at least not until 1932.[77] The cause for the reduction in timber revenue after 1929 must be sought in the domestic economic situation. The two main transitions that affected Fujian timber at this time include increased taxation and increased competition. Taxes were imposed to cover the expense of new reforms. Although it is difficult to gauge the exact impact of competing timber sources, timber from Russia, Taiwan, and Japan was selling for lower prices in some of China's domestic timber markets for a short time during the early 1930s.[78] Japan's acquisition in 1931 of China's largest forest area in Manchuria (northeast China) provided Japan with an extensive supply of timber, putting increased pressure on Fujian and other timber markets.

Heavy provincial taxes added to the burden of competition in the Fujian timber market. The new Fujian provincial government proved to be overzealous in its reform efforts. Even though Chiang Kai-shek had sent the new Fujian government to the province, the new provincial government was highly critical of Chiang and the Nationalist regime. The provincial government plotted a revolt against Nanjing in 1933. According to historian Lloyd Eastman, because the Fujian rebel

government also denounced Sun Yat-sen, and levied numerous high taxes for reforms, its popularity suffered and quickly faded.[79] The central government squelched the Fujian Rebellion of 1933 in two months and immediately asserted more direct control in Fujian.

The province was reintegrated into the nation in part through tree-planting campaigns. The Nanjing government remapped China into forest areas, or *linqu*.[80] This new geographic division structurally reified the central government's authority over the provinces and their trees. Each province was required to oversee the establishment of "forest area" nurseries.[81] Although the Fujian government had been active in provincial-level reforms and afforestation, the relatively small amount of provincial participation in national planting efforts prior to the rebellion was indicative of the political schism that was brewing at the time; only 112 *mu* (one *mu* is approximately one-fifteenth hectare) was set aside for sapling cultivation in 1930. Almost immediately after the defeat of the rebellion, figures for and Arbor Day afforestation efforts skyrocketed.[82] Subsequent afforestation efforts encouraged by the central government persisted throughout the decade. Wasteland afforestation began to take hold in 1934 as part of the "Min Riverbank Wasteland Afforestation Plan," passed in the previous year. In 1934 the provincial government also passed the "Agriculture and Forestry Improvement Plan."[83] The total area of fourteen nurseries that were counted in 1932 increased from 139 *mu* to 316 *mu* and the number of saplings increased from 872,698 to nearly 4.5 million.[84] Records dating through 1939 demonstrate the continuation of annual provincial tree-planting efforts specifically linked to the national Arbor Day. [85]

The surge in afforestation efforts during the 1930s reflected an increased focus on Fujian province by the Nanjing government. Just as the Fujian provincial government had recognized the importance of afforestation in its provincial reforms, the central government focused on afforestation both as a means to produce timber and to reinforce the relationship among the national government, the province, and its resources. Both the national government and the new Nanjing-backed provincial government saw the multiple levels of the timber market as an opportunity to tax the timber industry multiple times—at each step in the process of bringing wood from the mountains to the bay. In 1934, more than sixty different types of taxes were assigned to the various levels of the timber-trade system.[86] The continued importance of timber tax revenue to the government is illustrated in fiscal reports. These reports show that timber and timber-related business management taxes in 1935 constituted the highest share—27 percent—of all industrial taxes in the province that year. The next year the timber industry management tax revenue dropped to 24 percent of the total provincial tax revenue. While remaining the highest generator of management tax revenue of all industries in the province, the fall in percentage of timber-related revenue indicates that the wood industry was under more stress than other resource-based industries such as the oil industry (which decreased 0.4 percent) or the seafood industry (which increased 2 percent).[87]

The Nationalist government and its provincial counterpart desperately needed revenue to support the struggle against the communist rebels along Fujian's

border with Jiangxi. The taxes caused many merchants to go bankrupt, forcing as many as 80 to 90 percent of the merchants of certain sectors out of the market.[88] In spite of the shrinking timber market and dramatic decrease in the number of people to tax, the national and provincial governments continued to burden the timber market with heavy taxes which continued to squeeze people out of business.[89] As a result, the lumber export revenue for the province fell again in 1934 from 3.6 million *yuan* to 2 million *yuan*.[90] Tax revenue became more difficult to collect as more merchants went bankrupt. Although specific Sun Yat-sen Commemoration and Arbor Day activities continued, the actual number of trees planted each year fluctuated greatly and finally dropped by two-thirds between the 1936 peak and 1939.[91]

Fujian's timber trade faced new challenges after Japan invaded China in 1937. In the context of full-fledged war against Japan, any continuation in these later years of national Arbor Day activities is striking in spite of the decline in number of planted saplings. Wood, which was becoming scarce on the hillsides, became an even more precious commodity during the war. Concern that Japan would confiscate timber incited even more strict governmental control over that market. The Nationalist government severed timber trade with the occupied northeast and lost its trade route to Taiwan. Because many ports were occupied and Fuzhou itself was blockaded, timber merchants were left with highly circuitous and costly shipping routes. In an effort to simultaneously cut down on the added cost of longer trade routes and prevent wood from falling into enemy hands, timber merchants began to mill all of their wood into smaller boards that could fit onto private boats. These smaller private boats could more easily leave the Fuzhou bay without encounters with Japanese ships.[92] No longer did old trade networks simply face restrictions and taxation that accompanied Nationalist planning; wartime emergency measures dramatically transformed the timber trade. The Nationalist government turned its focus from nation-building projects to nation-saving strategies. Large-scale afforestation projects could not be maintained under fire. The forest policies, afforestation promotions, and trees that survived these planting efforts remain as mementos of an era filled with grand visions of a new, strong nation that only partially materialized.

CONCLUSION

FUJIAN'S LONG history of tree cultivation helped to feed an elaborate timber trade network. Although trade was naturally limited by the physical bulk of this commodity and the precariousness of its transport, the old system seemed to work well for the timber industry as long as there were trees on the mountains to cut. While timber is renewable, it is also slow to grow. Even with Fujian's particular traditions in tree cultivation, the Fujianese had difficulty keeping pace with harvesting in the premodern period. Modern lumber demands quickly outpaced traditional cultivation. The banditry and accompanying social chaos that erupted soon after the overthrow of the dynastic system also disrupted traditional authority networks that were crucial to local community controls on timber

harvesting. The timber market continued to flourish during these early years, but its supply suffered as trade grew.

Scientific cultivation and management methods promised to create and expand a calculable, reliable timber supply. Government officials and forestry experts linked provincial and national strength, along with international competitiveness, to the growth of trees. The modern forest policies specified many ways that the distant mountain communities could participate in scientific projects, including joining in government tree-planting programs and developing scientific guidelines to manage local harvesting of this important resource. Although the policies were not enforced at first, the ideals embedded in them persisted. Government afforestation in the 1920s and 1930s strove to create a more explicit link between the people, their timber, and their nation. The Nanjing national government and Fujian provincial government succeeded in promoting afforestation and in asserting regulation. Yet the reform effort ultimately failed. The nationalization of afforestation projects was supposed to reverse the degradation of the forest in the Fujian hills and restore the national wood supply. The Nanjing government may have been able to avert the fate of the depleting supply of timber had it not stifled the very same industry by persisting in squeezing tax revenue out of continuously slimming profits. The war with Japan only exacerbated the government's need for tax revenue and its concern over controlling the wood supply and timber markets. Between heavy taxation of the industry and the closure of most of the major markets, there was no place for the timber market to grow.

If the government had not intervened, Fujian's indigenous timber trade likely would have overextended itself, although more slowly, in trying to meet the lumber demands of a modernizing nation. The Fujian government in the early 1930s and Nationalist government in the mid to late 1930s proved that government organization could sink roots into Fujian's soil. Between the banditry of the early decades of the twentieth century and the dire need for cash under the Nationalist regime, republican era reformers did not have the pristine laboratory necessary for their scientific forestry experiments to succeed. The history of forestry in Fujian demonstrated both symbolically and materially that cultivating prosperity and solidarity in a nation requires stability, time, and the willingness to accommodate both the needs of people and the pace of nature.

E. Elena Songster *is a doctoral candidate in modern Chinese history at the University of California, San Diego. Her dissertation examines the relationship between the history of nature conservation during the People's Republic of China and the emergence of the giant panda as a national icon.*

NOTES

Many thanks to Paul Pickowicz, whose seminar inspired this research, to Joseph Esherick for being the first to request more quantification, to Robert Marks for his AAS panel and encouragement, to Jim Cook for putting important documents into my hands, to Bill Deverall for the opportunity to present some of this material at an environmental history workshop, to Ye Wa, Sigrid Schmalzer, and Matt

Diffley, and deep gratitude to the readers of various drafts, reviewers, both known and anonymous, and the editors Adam Rome and Eve Munson, whose feedback helped this paper evolve.

1. The famous Xinhai Revolution that overthrew the Qing dynasty began in 1911; the Qing government, however, did not abdicate until February of 1912.
2. The republican period describes the period in Chinese history that follows the overthrow of the dynastic system, which ended with the Qing dynasty in 1912, and precedes the communist era, which begins in 1949. Often the periodization for the republican period ends with the outbreak of war with Japan in 1937, and the years between 1937 and 1949 are considered the wartime period.
3. Dai Yifeng, "Lun jindai Fujian de zhishu zaolin" [A discussion of tree cultivation and afforestation in modern Fujian], *Zhonghua shehui jingji shi yanjiu* (February 1990), 84; Randall E. Stross, *The Stubborn Earth: American Agriculturalists on Chinese Soil, 1898-1937* (Berkeley: University of California Press, 1986), 83.
4. Simon Schama, *Landscape and Memory* (New York: Vintage Books, 1995), 5-7; Nili Liphschitz and Gideon Biger, "Afforestation Policy of the Zionist Movement in Palestine 1895-1948," in *European Woods and Forests: Studies in Cultural History*, ed. Charles Watkins (New York: CAB International, 1998), 165-80.
5. Douglas R. Weiner, *Models of Nature: Ecology, Conservation and Cultural Revolution in Soviet Russia* (Pittsburgh, Pa.: University of Pittsburgh Press, 1988), 24-25; Brian Bonhomme, "A Revolution in the Forests? Forest Conservation in Soviet Russia, 1917-1925," *Environmental History* 7 (July 2002), 420-42.
6. Refer to Nicholas K. Menzies, "The History of Forestry in China" in *Science and Civilization in China, Vol. 6,* ed. Joseph Needham (Cambridge: Cambridge University Press, 1996) and Nicholas Menzies, *Forest and Land Management in Imperial China* (New York: St. Martin's Press, 1994) for excellent studies on the imperial period. S. D. Richardson, *Forests and Forestry in China: Changing Patterns of Resource Development* (Washington, D.C.: Island Press, 1990) offers a detailed look at the communist era.
7. Menzies, "The History of Forestry in China," 578.
8. Menzies, *Forest and Land Management*, 91.
9. Conrad Totman, *The Green Archipelago* (Berkeley: University of California Press, 1989).
10. John King Fairbank, *Trade and Diplomacy on the China Coast: The Opening of the Treaty Ports, 1842-1854* (Stanford, Calif.: Stanford University Press, 1953), 292.
11. Menzies, *Forest and Land Management*, 93.
12. While the British recognized the importance of timber to Fujzhou trade, the Fujian product that they were most interested in was of course tea. Fairbank, *Trade and Diplomacy,* 292.
13. These new conditions originally were granted to Great Britain, but soon after were granted to nationals of many countries.
14. Gifford Pinchot, *Breaking New Ground* (Seattle: University of Washington Press, 1947); Samuel P. Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920* (1959; reprint, Cambridge, Mass.: Harvard University Press, 1968).
15. Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (San Francisco: Harper Collins, 1980). Merchant traces the legacy of early twentieth-century forestry and nature study sciences to seventeenth and eighteenth century thinkers—attributing popular efforts to control and manipulate nature during the early twentieth century to developments on the thought and rhetoric that grew out of the Industrial Revolution (236-52).

16. Weng Lixiang, *Fujian diaocha tongji congshu zhi san: Fujian zhi mucai* [Collection of surveys on the Fujian lumber industry] (Fuzhou: Fujian sheng zhengfu mishuchu tongjiwu, 1940), 5. During the republican era, many currency systems were used simultaneously and exchange rates fluctuated by month and by province. In 1919, one U.S. dollar was, on average, equivalent to 1.39 silver taels, which consisted of 583.3 grains of silver. The Chinese *yuan* (named after China's first president, Yuan Shikai) was very close to the British pound and the Hong Kong dollar in silver constitution. In 1922, the average exchange rate for the *yuan* was U.S. $0.556 according to U.S. Department of Commerce, *Handbook of Foreign Currency and Exchange* (Washington: U.S. Government Printing Office, 1930), 46-48.
17. Lin Renchuan, "Minguo shiqi Fujian de mucai shengchan yu shuchu" [The Fujian lumber market and exports during the republican era], *Zhongguo shehui jingji shi yanjiu* 4 (1991), 86.
18. Weng, *Fujian diaocha tongji,* 108.
19. Menzies, "The History of Forestry in China," 639.
20. W. J. Cannon, Ernest B. Price, and T. C. McConnell, "Forestry, Mining, and Fisheries," in *Fukien: A Study of a Province in China*, ed. The Anti-Cobweb Club (Shanghai: Presbyterian Mission Press, 1925), 49.
21. Menzies, "The History of Forestry in China," 639.
22. Menzies, *Forest and Land Management*, 20.
23. Lin Renchuan, *Fujian dui wai maoyi yu haiguan shi* [The history of Fujian and foreign trade] (Xiamen: Lujiang chuban she, 1991), 325.
24. See Weng, *Fujian diaocha tongji* and Lin, "Minguo shiqi Fujian de mucai shengchan," for more details on the lumber market structure.
25. Wingsan Kann, "Fukien: The Land of Immense Possibilities," *The Chinese Nation* (14 January 1931), 787.
26. Cannon, "Forestry, Mining, and Fisheries," 50.
27. Sometimes trees were harvested from cultivated areas that had long been abandoned. Because most cunninghamia stands were planted, these stands technically may not be considered natural growth.
28. Menzies, "The History of Forestry," 574. Cunninghamia has been commonly translated as the China fir. Such taxonomy, however, is misleading because this tree is not actually a fir. In accordance with the work of Nicholas Menzies, the scientific term, cunninghamia, will be used.
29. Cannon, "Forestry, Mining, and Fisheries," 51.
30. Lin Rongxiang, "Fujian Mucai zhi diao cha" [Fujian lumber survey], *Fujian jianshe ting yuekan* 3 (July 1929), 2; According to Menzies, "The History of Forestry," 574, in twenty years time, cunninghamia could reach a height of approximately ten to fifteen meters. When allowed to grow to full height, cunninghamia can reach a height of approximately fifty meters.
31. Luo Zhenji, "Ji jian zhi shu zaolin zhuyi de shi" [Dispatch on the history of afforestation], *Nongsheng* (28 February 1929), 33.
32. Weng, *Fujian diaocha tongji,* 157.
33. Cannon, "Forestry, Mining, and Fisheries," 51.
34. *Jianyang xiangzhi* [Fujian province, Jianyang county gazetteer], in Zhongguo fangzhi congshu, 237 (Chengwen chuban she, 1930), 4 juan, 40a.
35. Edward Schafer, *The Golden Peaches of Samarkand* (Berkeley: University of California Press, 1963), 167.
36. Marta E. Hanson, "Inventing a Tradition in Chinese Medicine: From Universal Canon to Local Medical Knowledge in South China, the Seventeenth to the Nineteenth Century," (Ph.D. diss., University of Pennsylvania, 1997), 58.
37. Schafer, *The Golden Peaches of Samarkand,* 167.

38. Lin, *Fujian dui wai maoyi*, 319.
39. Kann, "Fukien," 755.
40. University of Nanking also is referred to as Nanking University or Nanjing University.
41. Stross, *The Stubborn Earth*, 83.
42. Ibid.; "School Nurseries" *University of Nanking Agriculture and Forestry Series*, 1.1 (February 1920), 1-22.
43. "Fujian sheng tuiguang zaolin zhangcheng" [Policy on the propagation of afforestation in Fujian province], (hereafter *FTZZ*) *Nong shang gong bao* 3 (January 1917), 21. Please note that references in the text to "The 1916 Fujian Afforestation Policy" or the "1916 policy" all refer to this document.
44. U.S. Government, *Records of the Department of State Relating to the Internal Affairs of China 1910-1923* [hereafter U.S. Government, *DSRIA China*], National Archives, Washington, D.C., 7, 13.
45. *FTZZ*, 21.
46. Nicholas K. Menzies, "A Survey of Customary Law and Control Over Trees and the Wildlands in China," in *Whose Trees?: Proprietary Dimensions of Forestry*, ed. Louise Fortmann and John Bruce (Boulder: Westview Press, 1988), 59.
47. Menzies, "A Survey of Customary Law," 59.
48. Melissa Macauley, *Social Power & Legal Culture* (Stanford, Calif.: Stanford University Press, 1998), 234.
49. James Scott, *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia* (New Haven, Conn.: Yale University Press, 1976).
50. Macauley, *Social Power & Legal Culture*, 235.
51. Ibid., 235-41.
52. *FTZZ*, 23.
53. *FTZZ*, 24.
54. Lin Dau-yang, "China and Forestry," *The Far Eastern Review* (August 1916), 105.
55. Forsythe Sherfesee, "The Chinese Forests [sic] Service," *The Far Eastern Review* (September 1916), 143.
56. According to *Zhongguo linye jiaoyu shi* [The history of forestry education in China] (Beijing: Zhongguo linye chuban she, 1988), 207, Fujian did not create its own forestry school until 1958.
57. W. C. Lowdermilk, "Forest Destruction and Slope Denudation in the Province of Shansi," *The China Journal of Science and Arts* 4 (March 1926); Stross, *The Stubborn Earth*, 107.
58. Stross, *The Stubborn Earth*, 151.
59. For colorful and detailed accounts of these academic exchanges and projects, see Stross, *The Stubborn Earth.*
60. Dakuin K. Lien, "The Industrial Transformation of China: The Nature and Necessity of a National Industrial Development," *The Far Eastern Review* (April 1917), 426.
61. *FTZZ*, 7.
62. Ibid., 6.
63. U.S. Government, *DSRIA China*, 30.
64. *Jianyang xiagn zhi*, 1 juan 18b-20b.
65. Contemporaneous to this WWI slump in the tea market, Fujian tea growers also were forced to compete with less expensive varieties of tea that were grown in Java and India. For more detail, see Robert Gardella, *Harvesting Mountains: Fujian and the China Tea Trade, 1757-1937* (Berkeley: University of California Press, 1994), 153; Julean Arnold, *China: A Commercial and Industrial Handbook* (Washington, D.C.: Government Printing Office, 1926), 656; U.S. Government, *DSRIA China,* 15.
66. U.S. Government, *DSRIA China,* 17.
67. Cannon, "Forestry, Mining, and Fisheries," 49.
68. Dai, "Lun jindai Fujian zaolin," 84. The Chinese name of the holiday is "*Zongli jinian*

zhishu jie." The Chinese word, *zongli*, which has been commonly translated as "Director" and "Premier," was an honorary title exclusively bestowed upon Sun Yat-sen by the Nationalist Party. Because there is a direct association between the term *zongli* and Sun Yat-sen in Chinese, but no direct association between these English translations and Sun Yat-sen, I consider the most effective translation of the name of the holiday to be simply replacing *zongli* with Sun Yat-sen.

69. Ibid.
70. Ceng Jingkuang, "Zaolin he jianguo de guanxi" [Afforestation and nation building], *Nongsheng* 120 (30 April 1929), 7.
71. Ceng, "Zaolin he jianguo de guanxi," 8.
72. Chen Pengfei, "Zhishu jie yu zaolin yundong" [Arbor Day and the afforestation movement] *Nongsheng* (28 February 1929), 11. The origin of this quote was not indicated in the above article. Norman Shaw cites the same exchange in his book *Chinese Forest Trees and Timber Supply* (London: T. Fisher Unwin, 1914), 21. Shaw accredits the quote to Henri Marie Gustave Vicomte d'Ollone's *In Forbidden China* (Boston: Small, Maynard and Company, 1912).
73. Chen, "Zhishu jie yu zaolin yundong," 12.
74. "Fujian sheng zaolin zhang cheng" [Fujian afforestation policy], *Fujian jianshe ting yuekan* 3 (February 1929).
75. Lloyd E. Eastman, *The Abortive Revolution: China Under Nationalist Rule, 1927-1937* (Cambridge, Mass.: Harvard University Press, 1990), 109.
76. Dai, "Lun jindai Fujian mucai ye," [A discussion of the modern lumber industry in Fujian], *Zhonghua shehui jingji shi yanjiu* (February 1991), 66; According to the U.S. Department of Commerce, *Handbook of Foreign Currency and Exchange* (Washington, D.C.: United States Government Printing Office, 1930), 48, the estimated value of the *yuan* in 1929 was approximately U.S. $0.41.
77. Gardella, *Harvesting Mountains*, 153.
78. Weng, *Fujian diaocha tongji*, 7. A main factor for the increased competition is more accessible supplies in these other areas and, in the cases of Russia and Japan, easier transport to some of the northern markets.
79. Eastman, 106-7.
80. Dai, "Lun jindai Fujian zaolin," 83.
81. Ibid.
82. Weng, *Fujian diaocha tongji*, 227.
83. Dai, "Lun jindai Fujian zaolin," 83.
84. Ibid., 83.
85. Weng, *Fujian diaocha tongji*, 227.
86. Ibid., 210.
87. Wang Xiaoquan, compiler. *Fujian caizheng shigang* [An outline history of Fujian fiscal administration] (Fuzhou: Wenhai chuban she gongsi youxian yinghang, 1936), 201-2.
88. Dai, "Lun jindai Fujian mucai," 66.
89. Weng, *Fujian diaocha tongji*, 7, 211.
90. Dai, "Lun jindai Fujian mucai," 66. The exchange rate for the Chinese yuan in 1934 fluctuated between U.S. $0.41 and U.S. $0.38, U.S. Department of Commerce, *Handbook of Foreign Currencies* (Washington, D.C.: United States Government Printing Office, 1938), 48; *U.S. Department of Commerce, Commerce Yearbook, 1930* (Washington, D.C.: U.S. Government Printing Office, 1930), 144.
91. Weng, *Fujian diaocha tongji*, 227.
92. Ibid., 8.