

# managing a rebel landscape: CONSERVATION,

## PIONEERS, AND THE REVOLUTIONARY PAST IN THE U MINH FOREST, VIETNAM

DURING THE SPRING dry season of 2002, a series of fires in the Mekong Delta of Vietnam destroyed over 2,700 hectares of cajuput (*Melaleuca cajuputi*) forest in U Minh Thuong National Park. The burning forest was one of the last intact remnants of mixed cajuput and coastal mangrove forest that before 1900 covered over a million hectares and was one of the largest such ecosystems in the world. For two months during the blaze, several thousand army troops, volunteer police, and forest rangers worked around the clock to contain fires in the park and nearby forest plantations. Temperatures in the center of the fire reached several thousand degrees as the dried peat layer ignited, resulting in occasional fireballs roiling skyward. The firefighters' primary response to the fire involved pumping seawater from the coast to fill canals dug as firebreaks, thus causing further damage to the park's mostly freshwater ecosystems.<sup>1</sup> In total, over eight thousand hectares of land in the region burned in these fires, including many forest plantations. The fires reduced the protected core zone to approximately two thousand hectares, and it is doubtful that many highly endangered, endemic species of birds, reptiles, fish, and plants will survive.<sup>2</sup>

The fires captured national attention, not only because of their intensity but also because the area was home to one of the first southern bases for the Viet Minh (1941-1954) and later an important base of operations for the National Liberation Front (NLF) (1960-1975). Many top southern leaders in the Vietnamese Communist Party, including former Prime Minister Vo Van Kiet and Party Secretary Le Duan spent time in the forest, building a political and military infrastructure that after 1945 expanded a network of guerrilla bases, hospitals,

schools, and weapons workshops to support the war effort. The forest was at times a scene of intense combat and apocalyptic levels of destruction, especially during the final four years of American combat operations (1968-1972) when American and South Vietnamese forces hit the forest bases with B-52 strikes, napalm, Agent Orange, and large-scale, amphibious offensives involving entire battalions backed up with helicopter support. After 1972, NLF and party cadres reconsolidated their control of the area and from U Minh slowly expanded a liberation government across the delta region to 1975. After 1975, U Minh served as a new center for resettlement of war veterans and large-scale campaigns to remediate areas affected by defoliants and bombing from the war. By 1990, thousands of new settlers had rapidly cleared much of the remaining forest, so that Prime Minister Vo Van Kiet nominated Upper U Minh as a forest reserve. Since 1990, the Vietnamese Forest Protection Department has worked with international conservation organizations and national agencies to develop new legal and administrative frameworks to conserve the remaining stands of the cajuput forest.<sup>3</sup> Since 1990, one of the most difficult problems facing this new generation of conservationists is local people's widespread resistance to following the new forest ordinances.

While environmentalists and conservation groups have typically described this resistance in modern economic terms, this essay considers the ways that resistance to conservation efforts reaches back into a deeper revolutionary and colonial past. The recent fires may be seen not only as a failure in specific management technologies today but also as a failure to accommodate U Minh's past into relatively new and foreign models of forest conservation. It is important that sites such as this be approached not only as forests but also as intensely memorable places configured in the recent past by traumatic events. The forest was not just a convenient shelter for guerrillas from 1932 to 1975 but over this time it became a familiar lived-in landscape produced by successive generations of rebel communities, secret lines of communication, and physical modifications including bunkers and concrete structures.<sup>4</sup>

Intertwined with this political history is an earlier colonial history where the region was not regarded as a valuable forest but a much-maligned swamp. Even today, agencies and conservation groups have yet to develop a means of managing the wetlands nature of U Minh, having focused almost solely on managing trees. This tendency of saving trees at the expense of other forest life, especially aquatic life, stems from colonial forestry traditions in Vietnam and more globally; foresters typically focused on (valuable) trees while hydraulic engineers were left to reclaim wetlands through flood control and drainage. The war aside, U Minh's environmental past more closely resembled that of bogs, fens, and marshes than lush, tropical forest ecosystems typically depicted in colonial (and present-day) literature. These more recognizable forests—Javanese teak plantation or mountainous rainforests with giant dipterocarps—have dominated forest history in Southeast Asia as they were the primary object of colonial and postcolonial concern. The twisted, gnarled trunks of *Malaleuca cajuputi* were never so important as trees to colonial foresters or until recently to conservationists and

Map 1. U Minh Forest.



Map by Author.

The U Minh Forest once covered most of the delta region south of the lower branch of the Mekong River. Two remnants of that forest are now divided into Upper U Minh Forest and Lower U Minh Forest in the two shaded areas. These two remnant forests supported the bases of the 9th Division of the Viet Minh from 1945-1954 and the NLF from 1960-1975. The composite image was composed from Digital Chart of the World coverages for Vietnam and Cambodia.

eco-tourists. Instead, this forgotten landscape fell under the domain of the Public Works Department as a “wasteland” waiting to be reclaimed. Cajuput were third-tier trees in the colonial tax records, good for fuel wood or producing charcoal that fueled steam engines in place of coal. Public Works engineers, trained to think in terms of hydraulic mechanics, cost-benefit analysis, and straight lines,

saw the dense forest as an obstacle in need of clearance to permit a more manageable, productive patchwork of rice paddy and homesteads. A towering dredge surrounded by a team of a hundred laborers cut canals through the forested areas. Other work crews followed, leveling roads on top of the canal banks and planting telegraph posts at regular intervals. The colonial government practically gave away large tracts of adjacent land to *colons*, who then rented the land to tens of thousands migrants. It was a common sight to see small crowds of settlers following behind the dredge in their attempts to claim the best land closest to the new waterway.<sup>5</sup>

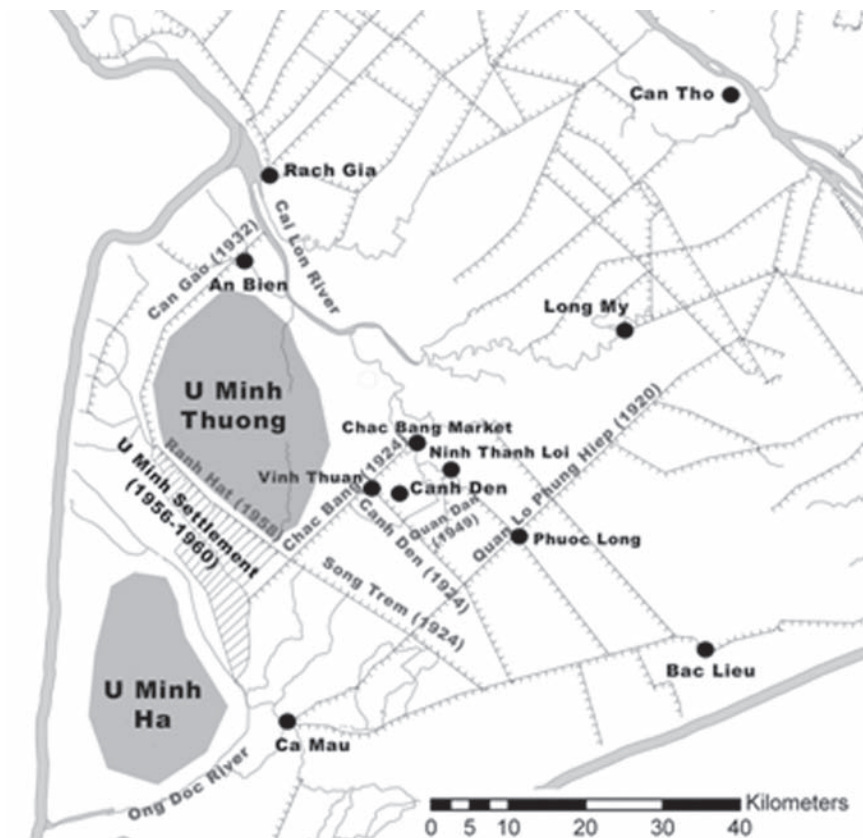
In the minds of Vietnamese migrants, the forest fared only slightly better. For most, it meant months of backbreaking labor to clear stumps and submerged roots before they could prepare fields for rice. Into the 1920s, the forest edge usually lay just beyond a newly cleared tenant field, every night shrouding the field and shack in isolated darkness. Older farmers from U Minh contrasted this more difficult landscape to the familiar, open horizons of paddy and villages common today. The name “u minh” conjured a place in the imagination that was dark, secretive, and subterranean—a kind of hell.<sup>6</sup>

During the decades of war that followed, U Minh became a more modern kind of hell. Foreign soldiers wrestled through waist-deep water or navigated small craft through the tight walls of submerged forest only to be ambushed by hidden guerrillas. They typically poured rounds of ammunition back into the forest, often catching only a glimpse of shadows. On the other side of this forest boundary, revolutionaries built communities united in efforts to nurture the revolution. The forest became an important meeting place where thousands of people—farmers, artists, doctors, political leaders, arm smugglers, women, children, and thousands of troops—passed through. They built extensive networks of secret bases, organized village schools to educate children born there, and they produced floating, traveling performances staged on sampans joined together with planks. Besides enduring disease, poisonous snakes, and other natural dangers, they had to escape frequent barrages of bombs, artillery, and occasional assaults from South Vietnamese and U.S. troops.<sup>7</sup>

Colonial land policies and revolutionary activity at U Minh produced an extreme kind of pioneering ethic that continues to influence local attitudes toward the forest today. Colonial rule and war prevented local leaders from developing more sustainable forms of stewardship. Such ideas of balancing human action within the land’s capacity were common to the traditional science of geomancy (*feng-shui*), but no such tradition had existed before colonial dredges opened up the area to settlement.<sup>8</sup> Survival in U Minh required farmers to develop a more transient, mobile form of community where by 1970 an estimated eighty thousand people moved through a mosaic of forest, wetlands, paddy and waterways.

This pioneering spirit was not born from colonial expansion but instead derived from pre-colonial experiences since the early 1700s. The Mekong Delta as a kind of Vietnamese “wild west”—albeit with the outlaws as Chinese pirates sailing the rivers, mission communities run by French Jesuits, and frontier garrisons manned by Vietnamese imperial troops. Vietnamese settlers steadily

Map 2. U Minh Forest and Surrounding Area.



NXB Ban Do. "Ca Mau 1/250.000." NC 48-10. Hanoi: NXB Ban Do (1983). Text and graphic by author.

The figure above shows major canals (gray), villages and towns (black), and approximate forest regions for the upper and lower U Minh forests. The U Minh Settlement (1956-1960) was located in the triangular area just south of Ranh Hat Canal built on the southern frontier of U Minh Tyyang.

built clusters of villages and fields outward from the garrisons while Chinese settlers established thriving market towns at several ports. Pierre Brocheux suggests that the colonial plantation economy actually accelerated this pioneering trend, pushing dispossessed farmers to distant, forested frontiers while landlords took land already cleared.<sup>9</sup> After 1930, leaders of the Indochinese Communist Party used this notion of the pioneer to build the revolutionary foundations of rural support at U Minh.

This essay focuses on the ways that revolutionary actions inside the forest and government responses outside of it influenced pioneering attitude and activity during the wars. It begins with a consideration of the area's earlier past, suggesting that U Minh's rebel landscape had been produced long before ICP members visited it in 1932. It then examines both revolutionary and government

efforts to develop U Minh, considering both projects as internally complex, often contradictory efforts where individuals often debated different ways to control environmental and political conditions. Within these revolutionary and government efforts, however, there were also continuities. For example, American-funded efforts to develop settlements at U Minh in the late 1950s borrowed heavily from Vichy-era plans drafted in 1943. As these settlements proved environmentally disastrous, the French chief engineer who had drafted the original plans argued that U Minh be preserved as forest to help regulate freshwater supplies in the area. Revolutionary activity inside the forest was likewise not a single project but instead many smaller military and social activities spanning two generations and often shifting strategy in response to actions from the outside. The revolution was not just a military struggle but one built on close association with people who had lived in the area before. Survival meant building real connections to local people where cadres spent some of their time running village literacy programs, organizing farmer unions, and harvesting rice when hands were short. The rebel landscape at U Minh then was the result of this back-and-forth dialogue between government forces outside and revolutionary forces inside; caught between them were the farmers whose children and grandchildren still live in the region today. The final part of this essay considers the end stage of the “American War” and its aftermath. Following the Tet Offensive in 1968, American and South Vietnamese forces targeted U Minh for defoliation, B52 strikes, and ground offensives that turned large parts of the forest into post-apocalyptic wastelands. The war introduced new technologies such as portable diesel engines, which in turn fostered greater ranges of travel and consumption; the sounds of outboard motors and diesel generators have become ubiquitous features in the delta ever since. The essay concludes by returning to the present and considering how this legacy of revolution and war has produced present-day pioneers at U Minh, a group receiving much of the blame in 2002 for causing the fires.

## CAJUPUT AND KHMERS: THE FIRST PIONEERS

DESPITE VIETNAMESE and American portrayals of U Minh as wilderness or “jungle,” people lived and worked in the forest area long before party cadres built secret bases there in 1932. The almost universal presence of cajuput described in an 1881 French hydrographic survey was most likely a secondary forest that had colonized patches left by selective logging or fire episodes since the 1700s.<sup>10</sup> The old forest may have been considerably more diverse than the extensive webs of common saltwater colonizers (*Avicennia* and *Rhizophora*) and cajuput in the brackish back swamps. Along the edges of deep creeks and oxbow swamps once grew a tree called *cay mop* (*Alstonia spathulata*). This tree grew very tall, over 150 feet, and probably formed the topmost canopy of what was in places triple-canopy forest.<sup>11</sup>

The dense cajuput forest covered ancient human settlements—discovered in 1932—that dated to the Oc Eo Period (200 BCE–600 CE). Archaeologists Louis Malleret and Danh Han visited the area in 1938, after hearing stories from Khmer locals of a “princesses’ palace.” At the site of a Khmer village, Canh Den, abandoned

after an area rebellion and massacre of ethnic Khmer in 1927, Malleret and Han found evidence of granite blocks, bricks, and pottery closely resembling remains at the main Oc Eo site.<sup>12</sup> The relatively dense archaeological record at these sites drops off to almost nothing after 600 CE, suggesting that the region may have suffered catastrophic environmental events such as rising sea levels, fires, malarial epidemics, or resource exhaustion.<sup>13</sup> Ancient stumps indicate that the area was forested during much of this early human occupation.

After 600 CE, both historical and archaeological records of human activity in the area are rare until 1700 CE, when Vietnamese and Chinese settlers began traveling to the area to establish trading posts. U Minh and the surrounding delta forests formed the eastern frontier of a weakened Cambodian kingdom. At the same time, famines and rebellions in the Vietnamese heartland near Hanoi led to thousands of Vietnamese migrants heading south to find new lands in what Vietnamese call the “southward march.” A few of these Vietnamese migrants moved to the U Minh area, but the larger migration before 1862 was a related migration of Chinese merchants from the Fujian coast. These mercantile families opposed the Qing Emperor’s policies prohibiting them from trading and political activity. These two migrations, Chinese as merchants and Vietnamese as settlers, led to the establishment in the late 1700s of a vibrant regional trading network based on the creeks and waterways of southern Vietnam, Siam, and Cambodia. Two of Southeast Asia’s largest cities, Bangkok and Saigon, formed in this era (1750-1850) through this merging of Chinese-centered commerce and indigenous political rule.

By the late 1700s, U Minh was a trading post in this booming economic and political network. Chinese sources show that by 1750, the U Minh region was famous for its honey and beeswax. Nomadic groups of Khmer families harvested them from the forests in the spring and then sold them to Chinese merchants who in turn sold them wholesale to fill sea-going vessels that anchored in the deeper, coastal estuaries. One Fujian Chinese, Mac Cuu, grew so wealthy that he constructed a port city with a stone citadel and palace at Ha Tien, (100 km along the coast from U Minh. Mac Cuu’s son Mac Thien Tu aligned the virtual city-state with the Nguyen Lord at Hue, and in return for Vietnamese recognition of his authority established new garrisons north and south of U Minh at present-day Ca Mau and Rach Gia.<sup>14</sup> In official records of the time, the name U Minh was not used. Instead the place was described using a variant of a Khmer word meaning “clear honey.”<sup>15</sup> This trade enterprise expanded in the 1800s with fifty registered members of a “Wax Taxpayers’ Association”—exclusively Vietnamese and Chinese—growing wealthy from the valuable export commodities. The port that is today still called Rach Gia derived its name from beeswax derived from stands of *cay gia* along the area’s tidal creeks (called *rach* in Vietnamese). The beehives in the *gia* forests produced so much wax that Khmer referred to the area as “wax land” and collected the wax as it floated on the surface of the flooded forest floor.<sup>16</sup> *Cay gia* (*Excoecaria agallocha*) was a true mangrove tree that is rarely found in the region today. Its leaves also produced a neurotoxin that could be used by local fishermen to stun fish.<sup>17</sup>



Besides these commercial activities, the pre-revolutionary forest also served as a haven for political refugees long before 1930. During the Tay Son Rebellion, a prolonged and violent civil war from 1787-1802, the heir to the southern Vietnamese throne fled in August 1783 to the southernmost fort at Ca Mau. The Tay Son sent several warships up the Ong Doc River and through the U Minh area to capture him. The teenage prince and his entourage, aided by the French head of all Jesuit missions in Cochinchina, escaped through the forest to French ships that conveyed them to Bangkok. From there the Nguyen organized a reconquest of the kingdom eventually resulting in Nguyen Anh's coronation in 1802.<sup>18</sup> After putting down a rebellion in the delta in 1833, the Vietnamese king embarked on new policies to assimilate Khmer and merchant Chinese enclaves such as Ca Mau and Rach Gia into a more standard Vietnamese system of governance. He ordered cadastral surveys of all cleared land and issued entirely new honey-gathering concessions. The surveys abolished older tribute relations and now recognized sixty-eight villages in the U Minh area that earned their principle income from honey-gathering. Unlike most villages that paid their taxes in rice, these sixty-eight villages paid in beeswax.<sup>19</sup>

The French conquest of the Mekong Delta from 1859-1867 pushed new waves of Vietnamese and Chinese southward into the forest. French authorities in 1862 replaced the old tax on beeswax with new quota-based contracts; Chinese and Vietnamese entrepreneurs collaborating with the French quickly moved in to claim the spoils. They registered new parcels and delivered new quotas of beeswax after the old honey-producing stands had been abandoned by loyalists to the old regime.<sup>20</sup> Historian Nola Cooke notes that French authorities also encouraged a booming salted fish industry at Ca Mau where Chinese operators shipped some eight hundred tons across the region from Hong Kong to Singapore.<sup>21</sup> Newly assigned French administrators came to the area and documented all forms of local industry in their attempts to find more sources of taxable revenue. Writing from the garrison at Rach Gia in 1879, a French administrator recorded the export of other forest species now extremely rare in the area: *cay doi ngua* (used for curved boat keels), *cay su* (a reddish furniture wood), *cay nhoc* (used to make barrels for fermentation of fish sauce), and *cay son trang* (used for dugout canoes).<sup>22</sup>

Ironically, establishment of the colonial forest service in 1866 and the issuance of wood-cutting permits starting in 1875 may have accelerated rather than slowed forest loss following the conquest. Cutting permits effectively legalized widespread cutting of cajuput and other species by traveling woodcutters on unclaimed land that previously had been off-limits either as property of the beeswax cooperatives or as hunting grounds of nobility. Government decisions in 1892 and 1894 established a system of forest guards and forest reserves but surveillance responsibility typically fell to individual communities. By 1909, colonial organizations such as Friends of the Indochinese Forest Service noted with alarm that in each dry season, massive forest fires threatened to destroy the "silvicultural integrity" of what was still mostly forested land. Forests, especially the cajuput forests, also were being rapidly lost because of skyrocketing demand



for charcoal to power new fleets of river steamers, small factories, and as a substitute for coal in colonial towns.<sup>23</sup> In 1910, the Forest Service removed its lone European-trained forester from Rach Gia and opted to manage what remained of the delta's forests from the comfort of the more central Forest Service office in Saigon. Despite some local protests, the Forest Service chose not to conserve in any meaningful degree the "charcoal forests" of the delta.<sup>24</sup>

Instead the cajuput forest became the responsibility of the Department of Public Works. Engineers working for this powerful colonial institution played the primary role in subsequent development (and deforestation) around U Minh. From 1900 to 1930, Public Works and a private French dredging enterprise excavated more than 165 million cubic meters of earth in the development of an inland waterway network that ultimately drained most of the 2-million hectare forest region and facilitated clearing the land for plantations after burning off the peat and root systems in the spring dry season. In terms of total earth moved, the French dredging project in the Mekong Delta was the third largest of its day behind the Panama and Suez Canals, resulting in the formation of most of the delta's major canals still functioning in the present.<sup>25</sup> The towering steel vessels, accompanied by a few engineers and a few hundred laborers, opened pathways for colonial *concessionaires* and thousands of Vietnamese migrants to establish new rice plantations. By 1916, canals extended the plantations and settlers southward from the delta center at Can Tho into the forest just east of U Minh. Owners of the large plantations encouraged their tenants to burn off remaining stands of trees to quicken the preparation of paddy. By 1916, these forests already had been selectively logged for larger timber. A note from one licensed wood-cutter to the administrator of Can Tho twelve years earlier described a contract to procure 24,000 timbers, 10-12 cm in diameter and 3 meters in length.<sup>26</sup>

The pattern of dredging, forest clearance, and tenant farming expanded to the Ca Mau and U Minh after the Quan Lo-Phung Hiep Canal was completed in 1920. This major transportation and drainage corridor connected the Mekong River some sixty kilometers north with the marshes and forests of Ca Mau.<sup>27</sup> While the canal lessened flooding in the older plantations near Phung Hiep, it caused worse flooding at its southern terminus near U Minh. Public Works responded by building more drainage canals from Quan Lo to Trem River and Canh Den.<sup>28</sup> Completion of Chac Bang Canal in 1924 pushed the grid of waterways and plantations to the eastern edge of present-day U Minh Thuong National Park.

Deforestation and drainage coincided with rapid population growth. The demand for labor on plantations and the lure of cheap, fertile land prompted tens of thousands of Vietnamese farmers to migrate southward in a colonial version of the "southward migration." A provincial monograph in 1936 praised the new canals and clearance of cajuput as an important action in promoting this migration and simultaneously ridding the region of destabilizing elements such as "pirates, rebels, royalists and thieves" who inhabited the forests. The table included in this provincial monograph also shows important demographic shifts in ethnic composition.

Table 1. Demographic Changes, 1859-1936.

<b>Ethnic Group</b>	<b>1859</b>	<b>1899</b>	<b>1936</b>
Vietnamese	46,600	102,000	270,531
Khmer	32,000	43,000	65,391
Chinese	4,020	6,800	13,725
<b>TOTAL</b>	<b>82,020</b>	<b>151,800</b>	<b>349,647</b>

"Mongraphie de la Province de Rach-Gia (1936)" Vietnam National Archives II (TTLTQG2), Ho Chi Minh City, Toan Dai Bieu Chinh Phu Nam Viet Section, Folio E02/71.

Total population quadrupled, mostly as a result of Vietnamese immigration, with modest population growth among Chinese and Khmer communities. The total European population by 1936 was negligible at 185; this was a common feature of colonial life in remote provinces. Despite modern depictions of colonial bosses in Indochina as white men, most of the "colonialists" in such rural areas were either native or part Chinese. Chinese merchant communities still controlled much of the export and import commerce in delta markets; they, along with wealthy indigenous people, eventually bought many rice plantations from their initial French owners. They also held the few licenses to operate rice mills in the region.<sup>29</sup>

## LOCAL ROOTS OF THE VIETNAMESE REVOLUTION

LOCAL PROTESTS BY Khmer and Vietnamese tenant farmers were first directed against this local set of entrepreneurs in 1926. Despite the apparent class-based tension here, one of the region's wealthiest owners, Le Quang Liem, strongly advocated for reform of corrupt land concession policies; he published a serialized account of the protest and subsequent massacre in one of the villages. He attempted to expose these conditions to an urban, French-speaking audience largely unaware of the rural situation at that time. The cause of the protest, he argued, was not ethnic or a personal vendetta but a more rational dispute over land title. Khmer farmers had cleared part of the forest for their fields just after the colonial conquest in 1867 and claimed their rights to this land under traditional practices. A wealthy local Vietnamese official used his connections to obtain legal title to over eleven thousand hectares of land in the region including lands belonging to ethnic-Vietnamese villages. With protection from the colonial government and police, he demanded that villagers pay him rent for the land.<sup>30</sup> The village chief at Ninh Thanh Loi, outraged by these unjust practices, organized what were described in the police report as "drunken parties" to protest. He consulted a local healer to prepare spells and amulets to protect villagers who intended to track down the province chief. Over the next several evenings, the protests spread to neighboring villages such as Vinh Thuan, where the Khmer group picked up Vietnamese followers also willing to march against the district chief.<sup>31</sup> When villagers arrived at the provincial seat Bac Lieu, a series of mishaps and mistaken identities resulted in the villagers killing the son of the province chief's Chinese friend rather than the accused. The villagers returned with the severed head to the village. The murder sparked a general panic in the region

after a French gendarme mishandled the arrest and left two of his Vietnamese militiamen to die on the canal bank at Ninh Thanh Loi. Mill owners and the few French settlers who lived in the region fled, fearing that a more widespread rebellion was underway. Colonial troops reached Ninh Thanh Loi aboard a gunboat the following morning and set fire to the communal house, killing the thirty people hiding inside.<sup>32</sup>

Given the coverage of these events in the Saigon press when labor movement leaders such as Ton Duc Thang were busy organizing strikes and protests in the city, the U Minh area drew the attention of young radical leaders living in the cities and towns. With the formation of the Indochinese Communist Party in 1930 and a series of successful strikes that summer, southern party members began establishing underground cells. In winter 1931, ICP members from My Tho and Vinh Long visited U Minh to search for a far southern site. They established the first local party cell at Vinh Thuan, a Vietnamese village involved in the 1926 protests. The location of this village on a provincial border, along Chac Bang Canal and close to the forest, allowed party organizers access to nearby villages and multiple escape routes.<sup>33</sup> Over the next several years, as the financial crisis worsened in Indochina and the world, local ICP members organized farmer protests, some gathering hundreds at the Chac Bang Market.

By 1938, environmental and economic conditions in the area continued to decline, giving rise to more violent forms of resistance. A severe flood in 1938 destroyed the season's crop and caused a general famine. ICP members coordinated a series of daring raids on nearby rice granaries before escaping into the forest. News of the raids and renewed attention to the severe conditions for area farmers provoked an inquiry from the pro-left government in Paris. An investigator traveled through the region, visiting granaries, villages, and markets to collect more details about the causes of the raids. The degree of planning and coordination involved suggested to him a local movement that was "political in nature." However, the brief shift to the left in French politics resulted in a relatively sympathetic appraisal of the farmers' plight. The investigation focused on the "draconian" conditions of tenant contracts as the cause of the violence and recommended creation of an agricultural wage structure modeled on industrial schemes. By creating a "prolétariat agricole," he argued that farmers would not be so tempted to follow the Vietnamese communists.<sup>34</sup> The debate over tenant rights and land concessions deeply divided colonial officials, especially during the Popular Front years from 1936-1938. For this brief period, Vietnamese political parties enjoyed new liberties to assemble and to criticize the colonial administration. The front's collapse in 1938 resulted in a return to strict policing and surveillance.

U Minh's birth as a key base of operations for southern party leaders followed the disastrous Southern Uprising on 23 November 1940. Following the Nazi defeat of France in June, ICP groups attempted a mass uprising in the Mekong Delta and Saigon by seizing government offices. Within two days, however, colonial troops arrived by train at My Tho and systematically crushed the uprising. Those cadres who escaped arrest hid for the next several years in safe zones organized

in the Plain of Reeds and U Minh. While hiding from secret police, they concentrated on rebuilding their organization from these remote regions. When Ho Chi Minh established the Viet Minh as a popular front, anti-Japanese organization in 1941, southern party leaders Vo Van Kiet and Tran Van Giau responded by building military training centers connected to the original U Minh cells at An Bien and Vinh Thuan. Besides training camps, members of these cells organized weapons workshops and a printing press inside the forest. The Vinh Thuan cell alone produced sixty-two bombs and twenty-four rifles in 1941. By 1945, the Viet Minh had added cells in neighboring villages.<sup>35</sup>

During these early years of Viet Minh activity, the term “U Minh” first entered regional and national vocabularies as a term synonymous with a growing revolutionary movement. By 1945, the forest was legendary among the youth in the towns and cities. Writer Son Nam describes his meeting with former school mates in Rach Gia who traveled from the forest to purchase red and yellow cloth to make the gold star, nationalist flags of the Viet Minh. Following the defeat of Japan in 1945, he journeyed with them to the forest bases and was soon involved in organizing educational activities and writing pamphlets.<sup>36</sup> After 1945, U Minh became one of two major destinations in the Mekong Delta for Vietnamese youth interested in joining the liberation movement.

Once arriving to the forest, many found themselves living among tenant farmers, a largely illiterate population suffering famine and extreme shortages of basic goods during the Japanese occupation. Farmers recall World War II as a period of intense “darkness”:

In the South, especially in '43 & '44, when the Japanese kicked the French out of the countryside, there was no kerosene, no fuel, so we used *mu u* [*Callophyllum inophyllum*] nuts for a lamp. We cut the nut into small pieces, dried it, then burned it. Sometimes we used pig fat or mouse fat to burn. We used it a while for dinner only. We didn't even have clothes, so we saved our mosquito nets for clothes, because at that time we didn't sleep in the mosquito nets any more. No one could buy new clothes, and our old clothes were worn out and torn after 2 or 3 years. Mosquito nets were used to make outfits for women while men just wore shorts. We also washed sacks to wear as a shirt without sleeves ... there was no cloth, no kerosene, people died of diseases in '43, '44, '45, '46 like malaria and cholera, they also died for lack of food and medicine.<sup>37</sup>

One of the first jobs for outside youth was to respond to these needs. Besides smuggling in medicine and basic supplies, they taught farmers and children to read.

The first major military test of the revolutionary establishment at U Minh came in March 1946, when a force of two thousand French Marines including Moroccan mercenaries and Vietnamese soldiers from the Hoa Hao and Cao Dai religious sects entered Can Gao Creek and the river south of Thoi Binh to destroy the two largest base areas. Using surplus WWII landing craft and aircraft, French troops quickly regained control of the area's villages and established new forts in the Viet Minh villages. Viet Minh guerrillas retreated deep into the forest interior and conducted small-scale ambushes on French patrol units. They built

earthen dams across canals and creeks on the forest edge to prevent French troops from easily crossing the forest or burning it down with flamethrowers and incendiary devices. French airplanes repeatedly targeted the dams and Viet Minh militias rebuilt them.<sup>38</sup>

Through these early years of combat against French forces, the Viet Minh became allies with the swamp, encouraging its spread as a measure of deterrence against their enemy's preferred lines of communication. This extension of the wetlands was especially important during each spring dry season when risks of forest fire were highest. Lowered water tables also reduced availability of fresh water. As they grew militarily stronger in 1949, Viet Minh troops gradually began to attack bridges, roads, and canals beyond the forest, expanding the area of "liberated land" while reducing government lines of communication to air support and only the largest highways. Government publications typically denounced these measures as "scorched earth policy," but by allying themselves with natural forces of hydrology and succession, rebels were instead engaged in a different form of construction more conducive to their own strategic needs.

No evidence suggests that Viet Minh leaders had any intention of preserving such vegetation after the war ended. The restoration of U Minh's natural wetlands ecology was at best probably a temporary measure. The rebels' largest constituency, some thirty thousand former tenant farmers, also expressed no discernible interest in preserving the forest beyond the immediate needs of the war. Older farmers involved in the guerrilla war instead described this period as one of forced adaptability to the varying water and soil conditions in an area that was simultaneously "liberated" and "wasteland." They shifted rice varieties from short-stem to long-stem (floating) to account for higher floods caused from the damaged canals. One farmer stopped farming rice altogether and constructed clay mounds above the water to grow tobacco. He then traded for rice at a regional market. While farmers recounted the return of many wild plant and animal species in this period, they did not necessarily view this as an environmental good. More often, they recounted the dangers associated with more snakes and insects, everyone mentioning the great swarms of mosquitoes "as big as birds" in that time.<sup>39</sup> All of this hardship in the short term, however, was worth the ultimate prize that revolutionaries offered to local farmers: clear title to lands formerly rented at high rates. This legal and economic liberation was a key element of negotiation between the Viet Minh political organization and area farmers. According to one figure, the Viet Minh redistributed 564,547 hectares of land in the Mekong Delta to 527,163 families in the first few years after 1945—most of this land was classified as "wasteland" and previously had been part of the large estates.

By 1949, with increased shipments of aid arriving to U Minh by boat from China or Thailand, Viet Minh military successes coupled with the liquidation of the old estates firmly established the southern peninsular region of the delta as a core "liberated" area. Rebels re-established the bases in the larger villages—An Bien and Vinh Thuan—and then regularly ambushed French patrol boats on nearby waterways. They stockpiled captured weapons in the forest and grew increasingly

bold, even staging conventional military attacks on French forts and towns. They started work on new canals in the area, notably the People's Army Canal that allowed easier transport of smuggled supplies and weapons from coastal bases. By 1950, they had extensive tax rolls and established schools. By 1953, French reports conceded that more than two-thirds of the land in the U Minh region was under Viet Minh control.<sup>40</sup> In Rach Gia Province alone, the Viet Minh controlled 478,000 hectares of arable rice land—20 percent of the entire rice-growing region in the delta.<sup>41</sup>

This period of revolutionary strength at U Minh fostered upward mobility for many former tenants in the area. Several thousand young men and women joined village militias at the outbreak of fighting in 1946. American interviews of prisoners of war in the late 1960s suggested that supporting the Viet Minh was for many a form of education. Local recruits rose through the ranks from village militia to party provincial infrastructure, often teaching themselves to read through party-sponsored programs. As cadres, they then taught other adults and children to read. At a re-established Ninh Thanh Loi village (site of the Khmer massacre in 1926), three female cadres organized an entertainment section that produced popular singing performances stressing revolutionary themes. Another woman in the village operated a primary school from 1946 until 1969, when hostilities forced the school to close.<sup>42</sup> The social effects of this educational transformation have yet to be studied in detail, but it is likely that many Khmer minorities acquired literacy in Vietnamese in this period; revolutionary experiences may have encouraged their assimilation into a modern Vietnamese society.

## STATE RESPONSES TO THE “AGRICULTURAL CRISIS”

DURING WORLD WAR II, French agricultural scientists working in the colony harshly criticized Public Works engineers and the folly of past dredging campaigns. In one special report, an agricultural engineer accused Public Works of not sufficiently anticipating the effects that new waterways would have on the existing water network. He accused the chief engineer of catering to the interests of wealthy, indigenous planters: “In the course of fiery meetings at the Colonial Council a certain number of Vietnamese Councilors asked the Administration to have canals dug across their lands, and the administration for reasons called political agreed to their request. It is plain for all to see that a system of canals created any old way, for sentimental or political reasons [resulted].”<sup>43</sup> The critique blamed the engineers for poor planning.

The colony's civil engineers, most of them graduates of the elite *École des Ponts et Chaussées* in Paris, fought back. The chief engineer dismissed the charges as “pessimistic reports” based on false conclusions that “all of Cochinchina was in danger.”<sup>44</sup> The colony's engineers responded to the environmental and economic hardships with a radical new plan for massive investment in government-induced resettlement programs, reflecting the modernist ideas of Vichy officials. To solve problems of fallow land and growing unrest among the thousands of tenants,

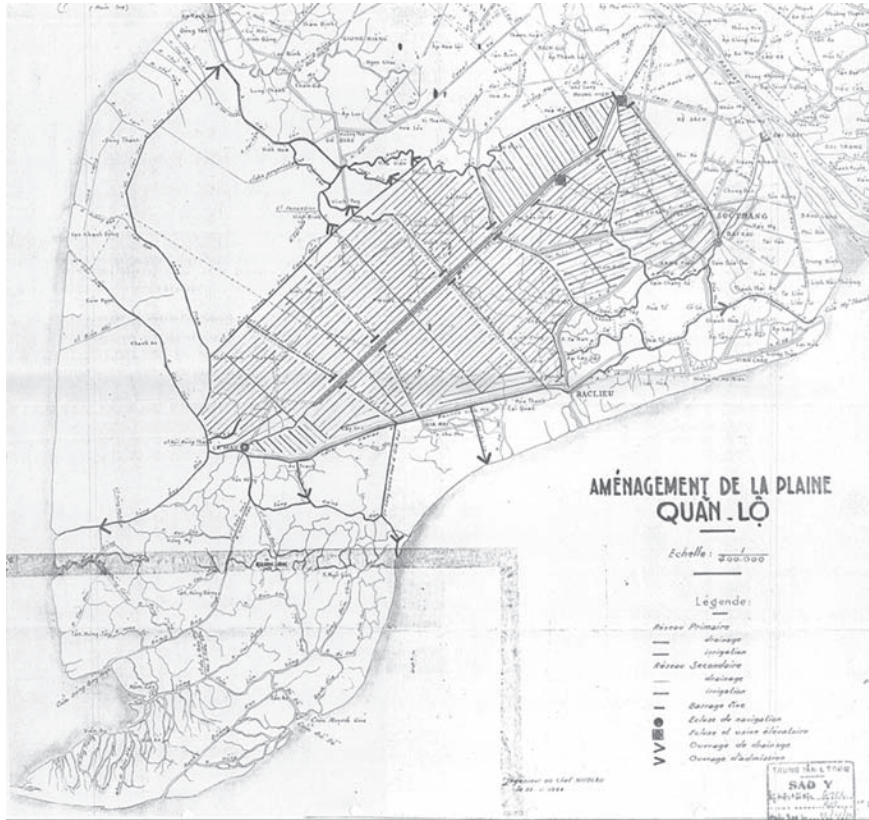
they invented a new kind of project called a *casier*. It involved a grid of irrigation and drainage canals with large pumping stations and flood gates that would in theory permit intensive agriculture in a densely settled, carefully managed checkerboard landscape. The colonial government approved earlier *casier* settlement schemes in the 1930s, but with poor results. Several thousand displaced families from U Minh moved to forested land about fifty kilometers west, but canals in the region lowered the water table and dried out the peat layer causing it to ignite in the dry season. In one dry season, a wildfire consumed over fifteen thousand hectares.<sup>45</sup> Within two years, the underlying clay soil had become parched and turned acidic, forcing many of the settlers to abandon the area. In 1943, government engineers revised the *casier* plan to include more intensive investments of capital and equipment. Laborers and dredges broke ground for a *Casier Tonkinoise* in August. Besides waterways, the project included a central infirmary, a school, and an oval track for exercise and youth activities typical in Vichy culture. In this settlement, the government planned to relocate approximately ten thousand farmers from the drought-stricken Red River Delta. Such modern projects reflected what Eric Jennings describes as the “neotraditional tendency” of the Vichy state: a simultaneously modern and idyllic, Orientalist construction of what French engineers believed to be a typical Vietnamese rural landscape.<sup>46</sup>

Chief Engineer C. E. Jammé also visited “troubled areas” such as U Minh and proposed even larger networks of canals, pumping stations, and mobile dams that ultimately would undo the mistakes—technical and social—of the recent past. Probably not a coincidence, the first stage of this U Minh project was to include both Ninh Thanh Loi and Vinh Thuan villages. Jammé’s 1943 project proposal also introduced the first plan to conserve what remained of U Minh Forest. He argued for enclosing three forest reserves within a system of dikes, canals, and floodgates, ensuring a “scientifically” controlled hydraulic system.<sup>47</sup> This initial forest preservation strategy at U Minh did not reflect Jammé’s interest in the forest per se but instead continued his intensely mechanical concern about water supplies for agriculture. He saw the forest and its inundated peat soils as a giant natural sponge, effective as a water reservoir in the dry season. He was quick to note that the forest itself was aesthetically repulsive and of little value; but its ability to absorb freshwater in the flood season and prevent saltwater intrusion in the dry season was important. He even suggested the construction of underground storage tanks in the marine clay below the peat to create an artificial reservoir that might support mechanical pumping during extreme drought.<sup>48</sup>

While the colonial government never realized most of these schemes in the violent aftermath of World War II, news of them nevertheless reached a more global audience, particularly Americans concerned about the plight of former colonized people in Asia and Africa. American anthropologists working for President Franklin Roosevelt’s top-secret “M Project” included a translation of a French report on the *Casier Tonkinoise* among several hundred development projects under study in Asia and Africa. President Harry Truman later folded the “M Project” into his “Point IV” program; that in turn was folded into U.S. foreign



Figure 1. C. E. Jammé's Matter Management Plan at U Minh.



TTLTQG2, TDBCNP, Folio H 62/6.

The grid of light and dark lines represents a hypothetical network of irrigation and drainage canals branching from a backbone of navigational canals managed by water pumping stations and flood gates. The U Minh Forest was to be encircled by the canals. The arrows show the intended direction of drainage.

assistance programs culminating with U.S. AID in 1960.<sup>49</sup> This is not to suggest that Americans working in rural development for the U.S. Operations Mission after 1955 accepted such projects wholesale, but they appear to have accepted the basic principles of these projects—mass relocations and radical alteration of the landscape—without hesitation. Most advisers had graduated from universities during the New Deal and served in World War II, and at least on paper such projects may have compared to large-scale irrigation and water diversion projects underway in other parts of the world.

With the Geneva Accords on 20 July 1954, the nine-year period of expanding Viet Minh liberated zones at U Minh ended abruptly. Under the provisions of the agreement, more than ninety thousand combat troops associated with the Viet Minh moved north of the 17th Parallel while former combatants associated with the French Army and its protégé Vietnamese state under Bao Dai moved south. The United States Operations Mission (USOM), a military and civil aid program

that had been operating in Hanoi and Saigon since 1950, organized an airlift that transported an additional 900,000 Catholic refugees to the south, many waiting in temporary camps to be resettled. A small office of military advisers, spies, engineers, academics, and other specialists helped Bao Dai Prime Minister Ngo Dinh Diem to consolidate authority over rival groups in Saigon. With this accomplished, Diem launched a series of military offensives in the countryside, with heavy equipment and financial support from the United States to crush opposition in former liberated zones. In May 1955, over three thousand soldiers of the newly formed Army of the Republic of Vietnam (ARVN) attacked former Viet Minh bases in U Minh.<sup>50</sup> They killed and imprisoned over a thousand people who had worked as political cadres for the Viet Minh or served in village militias but did not wish to move north in 1954.<sup>51</sup> Over the course of that year, 40,768 people were arrested, 1,563 were killed, 4,636 were wounded, and 732 were declared missing.<sup>52</sup>

The combined effect of the Geneva Accords, American military assistance, and Diem's disruptive campaigns created a short period of relative government control at U Minh. Diem acted quickly to affirm landlords' rights to reclaim all lands redistributed by the Viet Minh and dissolve any rights claimed in liberated zones. The "grand proprietors" returned with military escorts and legal protection to newly assembled village councils. Many of them seized crops not yet harvested, causing widespread confusion and violence with their former tenants. In the vicinity of U Minh, tenants protested new government taxes of 15 percent to 25 percent and landowners' attempts to extract back taxes.<sup>53</sup> Landlords worked with the police to prevent their tenants from returning to their fields unless they paid the rents. Police also detained tenant representatives of Viet Minh-supported Farmer Unions, sending leaders to prison camps between 1956 and 1959.<sup>54</sup>

At the same time, the United States presented Diem's public works engineers with unimagined fiscal and material resources to quickly implement new development projects. Between 1955 and 1960, the United States sent the Government of Vietnam (GVN) \$1.4 billion in grants and loans and \$444 million in military aid, making it the third-largest recipient of U.S. aid after Taiwan and South Korea.<sup>55</sup> The budget for the RVN Public Works Ministry increased forty-fold from a budget of 20 million piasters in 1955 to 800 million piasters in 1957.<sup>56</sup> With a new fleet of dredgers imported from the United States and dozens of large bulldozers, the GVN Public Works Department began work on a new settlement at U Minh in 1957. It was to be one of four major reclamation and settlement projects; another one was to be located directly next to the other major Viet Minh stronghold in the Mekong Delta in the Plain of Reeds.<sup>57</sup> These projects blended older, Vichy plans with American funding and equipment in projects that were hastily conceived to meet strategic goals.

Diem, however, shaped the program on more ancient terms closer to the pioneering ethic, describing them as modern implementations of the old Vietnamese frontier garrison. A July 1957 report clearly outlined his more militant stance on rural development: "to maneuver troops who are close to the end of their service to the Settlement Centers ... to create Agricultural Centers and find

land that is agreeable, to organize their own defense, to clear the land by means they already possess, and to erect houses so that gradually their families may come to live.”<sup>58</sup> Work at U Minh began in April 1957 with two American dredges, a few dozen bulldozers, and several thousand settler families, including mainly military troops near the end of their service. RVN engineers drew up an initial plan to clear eleven thousand hectares of forest and marsh south of Ranh Hat Canal at the southern edge of the forest. The dredges began deepening the transportation canals while settlers dug seventeen smaller branching canals by hand. Just two months into the project, engineers began reporting problems with the canals. They could not sufficiently deepen canal basins below 1.2 meters because the peat layer on the surface kept collapsing.<sup>59</sup>

By October, environmental problems threatened to destroy farming in the entire settlement. Former Chief Engineer Jammé revisited U Minh as a technical consultant. He wrote anxious letters back expressing his concern that the settlers were using their water buffalo (approximately ten thousand were airlifted from Thailand to project areas in the delta in 1957) to stir up remaining layers of peat in the canals and flush it downriver. The “decimation” of the peat layer predictably lowered freshwater supplies in the next dry season and filled the new canals with bars of sediment. Jammé, concerned about the survival of U Minh as a water reserve, advised immediate relocation of these “illegal” settlements from the forest edge, but the war-hardened veterans refused, claiming that the settlement area was already inundated with salt water. The dredges also encountered frequent delays caused by dense tangles of tree stumps and problems procuring spare parts for the foreign equipment.<sup>60</sup>

By 1958, the chief of dredging declared U Minh to be completely unsafe for his crews and equipment. Guerrillas repeatedly ambushed the dredger “Can Tho” working on Song Trem Canal, eventually killing the captain and critically wounding the chief surveyor. Days later, at Canal Number 5, a battle erupted between the GVN army veterans and former Viet Minh guerrillas that left several people dead. The chief engineer wrote to the minister of public works that he “would not send his staff to die out there.”<sup>61</sup> Provincial officials, however, implored the government to continue work in spite of the problems. Half-finished projects and thousands of stranded veterans presented serious concerns for security.<sup>62</sup> In February 1959, Diem convened an emergency meeting with American aid representatives and consultants to discuss U Minh.<sup>63</sup> The fall-winter harvest had been disastrous as a result of acidification and uncontrolled salinity. Diem authorized immediate payments to the settlers in cash and authorized relief shipments by helicopter to support them. Settlement centers at My Phuoc, Thoi Binh, and U Minh were all flooded, and the canals had done little to drain the soil or prevent salt water from intruding in the previous dry season.<sup>64</sup> The retreat of engineers and dredges in 1959 marked an end to major government projects at U Minh before 1975. On 30 October 1959, troops associated with the newly formed National Liberation Front began to attack GVN posts in the area, building up new caches of confiscated weapons and again storing them in the forest. By December 1959, they controlled the former settlements outright.<sup>65</sup>

For most of the 1960s, U Minh remained firmly under the control of the NLF or “Viet Cong” as they were called by American and GVN military officials. In this second war, figures such as Vo Van Kiet and Le Duan, who had helped establish the Viet Minh bases in 1954, had assumed top leadership roles in the Politburo in Hanoi. Party leaders re-organized the Central Office for South Viet Nam (COSVN) and moved it from U Minh to rubber plantations north of Saigon near the Cambodian border. U Minh Forest remained a major military and political headquarters for Military Region 9. The NLF’s 2nd Battalion operated from U Minh, managing important coastal bases for receiving Chinese and Soviet munitions smuggled into the area by boat. The forest also was an important rear operations area where families of high-ranking NLF leaders stayed and where injured soldiers received medical care. There were no major American military divisions based in the vicinity except for smaller river assault groups and military advisers assisting Vietnamese units from Ca Mau and Rach Gia. GVN military also was limited to regional and provincial forces; none of the larger Vietnamese divisions operated near U Minh until the ARVN 21st Division in 1966.

American estimates of the population living in the forest in the 1960s before major operations commenced in 1970 were repeatedly revised upward from an estimated twelve thousand to as many as eighty thousand people. More than half of these people were the relatives of high-ranking party and NLF officials. Approximately 60 percent were over the age of forty, suggesting that the younger men and women were off fighting with NLF units.<sup>66</sup> GVN officials and these smaller forces typically never ventured far beyond the perimeters of the district towns and frequently avoided even sleeping in the district towns for fear of assassination. The overwhelming majority of people living in and around U Minh were closely associated with the NLF.

One of the earliest operations to affect this large population was Operation Ranch Hand (1965-1972). Ranch Hand involved the strategic application of chemical defoliants, including Agent Orange, to forests and crops where guerrillas had major bases and supply corridors. It was applied in large doses by helicopter and fixed-wing aircraft and in small doses by sprayers operated from the ground. Herbicides first tested on Texas cotton fields were introduced in Vietnam in 1961 to clear forest cover along major lines of communication such as the Saigon River. Use of defoliants increased in 1965 as part of the “pacification” campaign with the chemical defoliants serving as an important offensive weapon to deny cover to the NLF. By 1967, the annual volume of herbicides used was approximately 4 million gallons. The volume increased to 1970, when the military began restricting the herbicide’s use.<sup>67</sup> A recent plotting of documented missions and drops shows that most defoliants used in the delta were concentrated in relatively isolated sections of coastal mangrove forests including parts of U Minh.<sup>68</sup> These extremely toxic chemicals reduced several thousand hectares of cajuput into a treeless horizon. The U.S. military later curtailed its use of defoliants because of the difficulty of containing damage to enemy targets. Sprayed aerially from converted C-123 cargo aircraft, the chemicals quickly spread to villages, water supplies, friendly troops, and operators in the aircraft.<sup>69</sup>

## CATASTROPHIC WAR

AMERICAN AND GVN military leaders did not attempt any large-scale ground operations in U Minh until after the 1968 Tet Offensive. Operation SeaLORD was part of a joint services campaign to deny the movement of supplies and people from northern Vietnam into the Mekong Delta via Cambodia and the bases at U Minh. It involved combined use of the U.S. Navy's now-famous Swift boats with U.S. Army and Air Force troops as well as the 21st Division. During campaigns in April 1969, combined U.S. and GVN forces built mobile pontoon bases at major river mouths near U Minh and staged offensives into the forest. The floating bases remained in operation until 1971, when they were turned over to GVN command. In addition to these assaults, high-altitude B52s commenced "carpet bombing" runs using fragmentary and incendiary devices while ground forces supported by helicopters attempted to locate NLF bunkers and weapons caches.<sup>70</sup>

Revolutionary accounts of the fighting from 1968 to 1972 describe heavy casualties in the forest as well as surrounding villages. During a single night in November 1969, B52 strikes killed 2,073 people and injured 1,194 more.<sup>71</sup> Several thousand hectares of forest disappeared in a matter of weeks and at least ten regular forces and many more civilians died from the bombing. Local American and GVN advisers complained to their superiors that local women reported giving birth to children with severe birth defects, and NLF propaganda efforts were successful at raising people's fears that the chemicals sprayed on crops and forests were to blame.<sup>72</sup>

The escalated war at U Minh triggered a widespread outmigration of an estimated 63,000 people from the forest into peripheral communities recently brought under GVN control. It was in these district towns that an American adviser, a junior Foreign Service Officer in his mid-twenties with basic Vietnamese language skills, analyzed interviews conducted with a team of eight Vietnamese assistants. The scene of tens of thousands of people fleeing from the forested areas in 1970 was chaotic. Along the major canals leading to the towns he described "wall-to-wall" boats where people towed their housing timbers, rice, and basic supplies and lived aboard the boats for months until they constructed temporary shacks on the land. In the GVN's desperate efforts to "win hearts and minds," they provided each listed refugee family with a thirty-day ration of rice as well as basic building materials. Advisers reported widespread instances of corruption in this program that cost an estimated \$1.5 million in 1970 currency. Local GVN leaders were reluctant to give money to these refugees for fear it would revert directly to the NLF.<sup>73</sup>

This less-studied movement of thousands of farmers throughout the war and periodic government aid programs to win the farmers' loyalty ultimately led to a third, more extreme kind of pioneering where one's life ultimately depended on the ability to move quickly within minutes. Families took pieces of their homes with them, unsure what would remain if they left it behind. By 1965, most families owned a small, American-made 4 hp diesel engine that was used as an outboard motor on the long, narrow boats. Anecdotal evidence gathered from interviews

and archival sources suggests that these machines quickly became vital tools to pioneers living around U Minh in this intensely violent age.

Farmers living in liberated zones adapted their methods to cope with severely impacted soil and water conditions resulting from the bombing and deterioration of irrigation systems. In the coastal mangroves near U Minh, they used the brackish ponds left from bomb craters to raise shrimp that could be traded for rice or cash. Museum exhibits at a reconstructed guerrilla base emphasized the importance of imported diesel engines to both the war effort and local survival after 1960. From 1960 to 1975, merchants and aid programs distributed an estimated one million small engines called “may koler” (Kohler Corporation) to regional wholesalers in the delta. Merchants sold the engines at shops in GVN district towns and fortified hamlets; black-market sellers carried them into NLF areas where they were used as pumps, boat engines, and generators.<sup>74</sup> Bay Long recalled seeing the first American motors arrive just north of U Minh in 1954-1956 and described how an engine aided his family’s survival:

In the time of fighting the Americans there wasn’t a house that didn’t have the engines. When the kids ran away from the enemy soldiers, they took the boat with the engine, lifting the propeller up when they saw *luc binh* [water hyacinth], letting it down again after to keep going. If they got stuck and the *luc binh* prevented them from moving away, then the planes shot them dead.<sup>75</sup>

It was not until 1974 that a group of Dutch observers working from Bangkok first considered the hydrologic impact of so many motors operating simultaneously across the damaged waterways.<sup>76</sup>

The sale of portable, diesel-powered rice mills also reshaped the rice economy by eroding the influence that large-mill operators had held over rice finishing and distribution since the colonial era. American advisers in the U.S. military’s pacification campaign expressed concern that by 1970 GVN restrictions on licensing the portable mills were creating higher prices in controlled areas and a demand for rice sold more cheaply in the liberated zones. The GVN’s insistence on preserving the old monopolies in effect drove cash and more people into NLF-controlled regions.<sup>77</sup>

## CONCLUSION

AFTER THE WAR’S end in April 1975, deforestation did not end but rapidly increased as thousands more refugees and veterans moved to the abandoned farms and rivers in U Minh. Post-war settlers eliminated fifteen thousand hectares of cajuput forest between 1975 and 1990. Population in Vinh Thuan District doubled from 68,000 in 1976 to 120,000 in 1996.<sup>78</sup> Post-war collectivization schemes also discouraged private ownership of mechanical equipment such as the Kohler engines and portable rice mills, causing farmers to revert to more extensive agricultural methods and clear more forested lands. Until 1981, total rice production increased just slightly, limiting the possibility for capital investment in more intensive forms of agriculture.<sup>79</sup> Facing serious internal criticism by 1986, the party reversed its collectivization policies and



Figure 2. Lower U Minh Forest after Defoliation.



Photo by Le Minh Truong, in Tim Page, *Another Vietnam: Pictures of the War from the Other Side* (Washington, D.C.: National Geographic Society, 2002), 104-5.

Ca Mau Peninsula, 1970.

passed what are now known as *doi moi* (renovation) reforms. The decision to recognize long-term, inheritable land leases and allow individuals to invest in privately owned technology led to a period of rapid agricultural intensification and foreign investment that continues to the present. Paddy production in the delta increased from 6.9 million tons in 1986 to 12.8 million tons in 1995 and 17 million tons in 2002. Per-hectare production has roughly quadrupled since 1975.<sup>80</sup>

The economic boom since 1986, however, has been problematic for U Minh and other forested areas as new migrants and foreign investors see the remaining mangroves and cajuput forests as ideal places for shrimp farms that bring quick profits in a new Chinese frozen seafood trade centered in Ca Mau. The government has moved to protect mangroves, reflecting its growing involvement with international conservation organizations. Since 1990, the government has declared many areas as national parks, nature reserves, special-use forests, and marine protected areas. Upper U Minh was approved as a Nature Reserve in 1993 and as a National Park in 2001. Lower U Minh was designated a Special-Use Forest in 1986, approved in 1992 as a Nature Reserve, and is currently under consideration as a National Park thanks to public concern after the fires.<sup>81</sup> Amid new global economic pressures and international conservation models, the government has placed U Minh within new legal frameworks that reflect its commitment to international conservation treaties such as the Convention on Biological Diversity (1994), the Ramsar Convention on Wetlands (1989), the World



Heritage Convention (UNESCO, 1972), and the Man and the Biosphere Program (2000).<sup>82</sup>

None of these myriad new legal protections, however, has been especially effective in protecting the forest. The ineffectiveness of new policies is in part due to the difficulty of convincing locals, many of whom live below Vietnam's poverty level, to accept that U Minh's wetlands and areas—once targeted for defoliation and bombing by the American and South Vietnamese military—now deserve to be protected. Provincial and national agencies are stretched financially to staff the park with sufficient numbers given needs in other areas of government. Modern conservation problems at U Minh are perhaps not too different from other parks and protected forests, especially wetlands. The forest is currently protected by a Provincial Forest Protection Department (FPD) within the Ministry of Agriculture and Rural Development. As one might expect, the FPD is concerned mainly with managing trees and holds little regulatory authority to manage water resources.<sup>83</sup> Post-fire reports repeatedly noted the lowering of the water table, particularly caused by new dredging and irrigation, as a systematic cause for the fires; but provincial authorities have yet to address the thorny issue of controlling water in the area.

Lingering just below the surface of these public debates over the future of U Minh is a deeper clash in attitudes between conservationists, the FPD, farmers, and many veterans who still live in the area. Conservationists, especially foreign specialists working with international non-governmental organizations such as the World Wildlife Federation, often reduce the environmental scenario to microeconomics—individual demand for wood, fish, and land—or to more generic terms of forestry models developed elsewhere. They often have little clue of the region's past, nor do they appear to understand how the trauma of unprecedented past environmental destruction may influence present-day attitudes toward protecting the forest. They often fail to appreciate that many of their counterparts in the park and FPD are themselves veterans of U Minh.

Also, the tendency to continue expanding hydraulic works despite a more complex hydrologic situation reflects not only the present boom economy where investment is flush but also a much older preference for an engineer's approach to cajuput and water. Recent park efforts to regulate water in the forest by creating more canals and floodgates reflects a tradition in the Mekong Delta where engineers were generally left in charge of the delta's forests. The prospect of returning U Minh to its more natural hydrologic state is dim given that it would adversely affect the larger canal network. A number of Vietnam's leading ecologists have argued just that; but they face an uphill political battle to persuade settlers and province officials to allow it. Officials often are more responsive to infrastructure projects that bring outside funding and jobs. This situation is not unique to U Minh; other major wetland remediation projects such as the Florida Everglades are managed by engineering agencies. What is unique at U Minh is the extent to which waterways are still critical as the primary means of transport and water supply for most of the population. Colonial development and war at U Minh left lasting imprints on modes of economic development, and even after

the end of political struggle, it has been difficult to challenge the ecological terms of colonial rule.

What is most unique to the U Minh Forest and deserves greater consideration in future conservation strategies is its exceptional history as an occupied landscape. Some sixty thousand party cadres and local farmers worked for several decades inside the forest to build communities, storage facilities and military bases—all without destroying the forest. They built dams and other structures that maintained the water table. Farmers demonstrated a genius for adapting to this shifting environment by growing different types of rice, adopting new technologies such as the diesel engines, and even using the revolution as an opportunity to gain access to education. Given the devastation of the war, it was not an ideal model of rural existence, but it demonstrates that a relatively dense population was able to survive in the U Minh Forest for years without causing significant damage to the forest, perhaps even extending its reach. Remediation since the 2002 fires presents a challenge to pioneer a new ethic where conservation extends beyond trees and water to include remediation of the past.

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## NOTES

1. Center for International Disaster Information, “OCHA Situation Report No. 1—Vietnam—Forest Fire 9 April 2002,” <http://www.cidi.org/disaster/02a/ixl119.html>.
2. B. M. Sanders, *Fire Incident Assessment, U Minh Ha and U Minh Thuong National Park, Ca Mau and Kien Giang Provinces, Vietnam* (aoHanoi: J.G. Goldammer/Global Fire Monitoring Center, 2002), 113.
3. BirdLife International Vietnam and Institute of Ecology and Biological Resources, *The Conservation of Key Wetland Sites in the Mekong Delta* (Hanoi: Royal Netherlands Embassy, 1999), 3.
4. Scholarship on postcolonial forestry, such as Nancy Peluso’s study of forests in central Java, has until recently focused primarily on high-value timber forests (teak, ironwood, mahogany, etc.) or mountainous “rainforests” populated with Dipterocarp species: Nancy Lee Peluso, *Rich Forests, Poor People: Resource Control and Resistance in Java* (Berkeley and Los Angeles: University of California Press, 1992), 113. Richard Grove’s chapter “Diagnosing Crisis: The East India Company Medical Services and the Emergence of State Conservationism in India, 1760-1857” also shows how colonial preoccupations with preserving “valuable” woods such as teak gave rise to an active eighteenth- and nineteenth-century discourse on scientific, medical, and ethnic dimensions of conservation with respect to teak and other tall canopy forests: Richard H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860* (London: Cambridge University Press, 1995), 380-473.
5. This rhetorical characterization can be found in a governor-general’s speech at the inauguration of a newly completed waterway in 1930. In speaking of the cajuput and mangroves, he stated: “swamps that were inhabited until very recently by wild elephants ... now they are opened up to the sun by these waterways, life-giving furrows

traversing an uninhabited, uncultivated plain,” cited in David Biggs, “Problematic Progress: Reading Environmental and Social Change in the Mekong Delta,” *Journal of Southeast Asian Studies* 34 (February 2003): 77-96. See Ann Vileisis offers the term “unknown landscape” for these places to suggest that they are largely invisible in popular thinking and generally misunderstood in existing legal and economic frameworks: Ann Vileisis, *Discovering the Unknown Landscape: A History of America’s Wetlands* (Washington, D.C.: Island Press, 1997).

6. Nguyen Van Khon, *General Vietnamese-English Dictionary/Viet Anh Tu Dien Loai Pho Thong* (Saigon: Khai-Tri, n.d.), 1236.
7. Two examples of Vietnamese fiction on U Minh include Son Nam’s collected short stories *Huong Rung Ca Mau* (Saigon: La Boi, 1967); and Tran Hien Minh’s *Rung U Minh: Tieu Thuyet* (Saigon: Giai Phong, 1971). For a memoir of Son Nam’s time traveling and working as a young Communist Party member at U Minh, see Son Nam, *Hoi Ky Son Nam: Tap Hai, O Chien Khu 9* (TP Ho Chi Minh: NXB Tre, 2001), 39.
8. The environmental history of war is a new field still based largely on analyses of the physical damage to ecosystems caused by war with emphases on certain topics: defoliants, nuclear weapons, depleted uranium, trenches, and deforestation. Edmund Russell’s *War and Nature: Fighting Humans and Insects with Chemicals from World War I to Silent Spring* (New York: Cambridge University Press, 2001) explores historical interconnections between American use of DDT and insecticides and American military employment of chemicals in war. He briefly mentions the use of defoliants and DDT in Vietnam to 1963; See pp. 225-227. Edmund Russell and Richard P. Tucker recently edited *Natural Enemy, Natural Ally: Toward An Environmental History of War* (Corvallis: Oregon State University Press, 2004). The essays in this work consider various war-affected environments ending with World War II in the Pacific Islands. See also Aldo Leopold, *A Sand County Almanac* (1949; reprint, New York: Oxford University Press, 1968).
9. Pierre Brocheux, *The Mekong Delta: Economy, Ecology and Revolution: 1860-1960* (Madison: Center for Southeast Asian Studies, University of Wisconsin, 1995), 212. See also Son Nam, *Lich Su Khan Hoang Mien Nam* (TP Ho Chi Minh: NXB Van Nghe, 1994).
10. Paul Moreau, “Rapport sur les Cours d’Eau de la Prescu’ile de Camau,” *Excursions et Reconnaissances* (1881), 439-44.
11. Phan Thanh Nhan, *Rung U Minh: Dau An va Cam Thuc* (Rach Gia, Vietnam: Hoi Van Nghe Kien Giang, 1993), 31. He notes that they were as tall as *co thu*—a century tree, a tree often venerated for its great size and age. Botanist Pham Hoang Ho also notes the tree’s prevalence in U Minh. The tree’s wood was light like balsa, hence it’s English name “Siamese balsa.” The wood was used for production of conical hats (*non la*). In many regions of the world, especially the Florida Everglades, cajuput (*Melaleuca leucadendron*) is considered an aggressive invasive species. It rapidly colonizes open wetlands or recently cleared forests and typically prevents former patterns of succession either by native grasses or trees.
12. Louis Malleret, *L’Archeologie du Delta du Mekong: Tome Premier: L’Exploration Archeologique et les Fouilles d’Oc-Eo* (Paris: Ecole Francaise d’Extrême-Orient, 1959), 164. The area described in this passage is in the present-day village of Canh Den, Ca Mau Province.
13. Edward Maltby, Royal Holloway Institute of Ecology, London and Dr. Duong Van Ni, Can Tho University, Vietnam, personal correspondence with author, December 2001.
14. Trinh Hoai Duc, *Gia Dinh Thanh Thong Chi*, ed. Dao Duy Anh, trans. Do Mong Khuong and Nguyen Ngoc Tinh (aoHanoi: NXB Giao Duc, 1998), 120-21. See also Yumio Sakurai, “Eighteenth Century Chinese Pioneers on the Water Frontier of Indochina,” in *Water*

- Frontier: Commerce and the Chinese in the Lower Mekong Region, 1750-1880*, ed. Nola Cooke and Li Tana (Singapore: Singapore University Press, 2004), 39.
15. Son Nam, *Tim Hieu Dat Hau Giang* (aoSaigon: Phu Sa, 1959), 47-48.
  16. Nola Cooke, "Water World: Chinese and Vietnamese on the Riverine Water Frontier, from Ca Mau to Tonle Sap (c. 1850-1884)," in *Water Frontier*, ed. Cooke and Tana, 143-44.
  17. Besides the tree's support for bee colonies, the leaves and sap also produced a mild poison that causes temporary blindness and is used in fishing and in medicine to stimulate abortions. Pham Hoang Ho, *Cay Co Viet Nam/An Illustrated Flora of Vietnam II* (TP Ho Chi Minh: NXB Tre, 2000), 284.
  18. Duc, *Gia Dinh*, 131. See also a description of the river on 71.
  19. Nguyen Dinh Dau, *Tong Ket Nghien Cuu Dia Ba Nam Ky Luc Tinh* (Ho Chi Minh City: NXB TP HCM, 1994), 338.
  20. Cooke, "Water World," 144.
  21. *Ibid.*, 145.
  22. Ernest Brière, "Note complémentaire sur le Kien-giang (Rach-gia)," *Excursions et Reconnaissances* (1879), 56. These local names are no longer used, and are not listed in recent catalogs of Vietnamese flora. It is likely that some of these species still may be found in the area but that they have different names or that Brière transcribed them incorrectly.
  23. "Le Service Forestier en Indochine," *Bulletin de l'Association Amicale des Agents Forestiers* No. 11 (1909), Vietnam National Archives No. 2 (hereafter TTLTQG2), Fonds Goucoch, IA 13/308(12).
  24. Frédéric Thomas, *Histoire du Regime et des Services Forestiers Français en Indochine de 1862 à 1945* (Hanoi: The Gioi, 1999), 73.
  25. Inspection des Travaux Publics, *Gouvernement Générale de l'Indochine, Dragages de Cochinchine: Canal Rachgia-Hatien* (Saigon: 1930), 20.
  26. It is unclear whether the term refers to a species of cultivated shade tree, *cay cong* (*Samanea saman*), or unspecified wood (probably *Melaleuca*) to be used for public works (*cong cong*). In any case, *Melaleuca* of 10-12 cms in diameter represent relatively mature forest stands. TTLTQG2, Fonds Goucoch IA 13/308(12).
  27. TTLTQG2, Fonds Goucoch, IB 30/22 (3).
  28. *Ibid.*
  29. These numbers should be regarded as fuzzy since the colonial census did not account for interethnic marriages and others who frequently moved between different ethnic niches.
  30. Le Quang Liem, "La vérité sur l'échauffourée de Ninh-Thanh-Loi (Rachgia)." 20 May 1927, 1-2.
  31. *Ibid.*
  32. The policy of forced resettlement after the riots and the destruction of Khmer villages such as Canh Den ironically presented the opportunity for Louis Malleret and his colleagues to conduct archaeological surveys on the village grounds in 1938: Malleret, *L'Archeologie du Delta*, 164.
  33. Bui Van Thanh, "Bao Cao Khai Quat Lich Su v a Phuong Huong Bao Ton, Phat Huy Di Tich Lich Su Can Cu Dia Cach Mang U Minh Thuong Kien Giang," in *Ky Yeu Hoi Thao Khoa Hoc: Di Tich Lich Su Can Cu Dia Cach Mang U Minh Thuong Kien Giang* (Rach Gia, Vietnam: So Van Hoa Thong Tin The Thao, 1997), 50.
  34. M. Bagot, "Malaise Agraire dans le Transbassac," 28 April 1939, TTLTQG2, TDBCNDV M.2/63.
  35. uaThanh, "Bao Cao Khai Quat Lich Su v a Phuong Huong Bao Ton," 51.
  36. Nam, *Hoi Ky*, 43.

37. Ong Bay Long, taped interview with author, 20 April 2002, reprinted in the appendix to my dissertation, David A. Biggs, "Between the Rivers and Tides: A Hydraulic History of the Mekong Delta, 1820-1975" (PhD diss., University of Washington, 2004), 433-98.
38. Thanh, "Bao Cao Khai Quat Lich Su v a Phuong Huong Bao Ton, 52.
39. Biggs, "Between the Rivers and Tides Interview 2, Mr. Ro., 318.
40. Thanh, "Bao Cao Khai Quat Lich Su v a Phuong Huong Bao Ton," 52.
41. TTLTQG2, TDBCNPV, E.02/113 (1953).
42. Combined Military Interrogation Center, Report No. 0735-71. RG 472 "Records of the Assistant Chief of Staff for Intelligence, MACV (J-2)," NARA II.
43. Xacat, 29 August 1944, "Riziculture et Hydraulique Agricole." TTLTQG2. TDBCNPV. H.6/20.P. 1. "[Q]u'a cours des seances de feu le Conseil Colonial un certain nombre de conseillers annamites demandaient à l'Administration de faire creuser des canaux traversant leurs terres, et l'Administration pour des raisons dites politiques, accedait à leur demande. Il est evident qu'une systome de canaux cree de bric et de broc pour des raisons sentimentales et politiques."
44. O. Bigorgne, 25 August 1944, "L'Hydraulique Agricole en Cochinchine." TTLTQG2. TDBCNPV. H.6/20.P. 1.
45. "L'Administrateur de Rach Gia a Monsieur le Gouverneur de la Cochinchine au sujet de la petit colonisation dans le Canton de Kien Hao," 7 December 1932, TTLTQG2, Fonds Goucoch IB23/096 (12), 3.
46. L'Ingenieur en Chef de la Circonscription d'Hydraulique Agricole et de Navigation de Sud-Indochine (HANSI) a Monsieur le Gouverneur de la Cochinchine, 1 September 1943, TTLTQG2, TDBCNPV BO/3904. See also Eric T. Jennings, *Vichy in the Tropics: Pétain's National Revolution in Madagascar, Guadeloupe, and Indochina, 1940-1944* (Stanford: Stanford University Press, 2001), 170.
47. C. E. Jamme, "Amenagement Hydraulique des Provinces de Rachgia et Hatien," July 1943, TTLTQG2, TDBCNPV, Folio H 62/6.
48. Ibid.
49. The entire collection of "M Project" reports can be found at the Library of Congress or as part of the Henry Field Papers, Collection Number 72, University of Miami, Otto G. Richter Library Archives and Special Collections Department. See No. T-109, "Studies of Migration and Settlement: Translation Series—Tonkinese Settlement in Cochinchina" 20 October 1945.
50. Vo Thanh The, "Nguoi Dan Vung U Minh Thuong Di Khang Chien," *Ky Yeu Hoi Thao Khoa Hoc: Di Tich Lich Su Can Cu Dia Cach Mang U Minh Thuong Kien Giang* (Rach Gia, Vietnam: So Van Hoa Thong Tin The Thao, 1997), 204.
51. Ibid.
52. Vietnam News Agency, 4 May 1956: see, for example, Carlyle Thayer, "War by Other Means," 117.
53. Lien Doan Nong-Dan Lao-Dong VN, "Bao Cao: Tinh Hinh Chung Nong Dan Cac Tinh Tronh Thang 5 va Thang 6 1955," TTLTQG2, PTTDNCH 9492, 1-2.
54. Ibid., 3.
55. John D. Montgomery, *The Politics of Foreign Aid: American Experience in Southeast Asia* (New York: Praeger, 1962), 284.
56. Tong Giam Doc Cong Chanh eVietnam k/g Ong Bo Truong Cong Chanh va Giao Thong, 15 April 1957, TTLTQG2, GTCC 1276/1.
57. Bui Van Luong, "Bao Cao ve Hoat Dong Cua Phu Tong Uy Dinh Dien Nhan Dip Ky Niem De-Tam Chu-Nien Chap-Chanh cua Ngo Tong Thong Ngay 7.7.1957," TTLTQG2, PTTDNCH: De 1, 10807.
58. Ibid. "Song song voi viec thanh lap Nha Tong Quan Doc, cac Cong Truong Khuech-Truong Nong Nghiep, Tong Thong cung Da chi-thi cho Quan-Doi Viet-Nam Cong-Hoa

- cung Bao-An-Doan Dieu-Dong mot so binh-sy sap Den han giai-ngu, Den nhung Trung-Tam Du-Dinh lap Nong-Truong De tim Dia-Diem thich hop, tu to chuc phong ve, khai-pha bang phuong-tien rieng hien co, cat nha De Dua lan lan gia-Dinh ho Den lap nghiep.”
59. “To Trinh cua Doan khao-sat Thuy Nong ve viec vet kinh tai Khu U Minh Thoi B inh,” TTLTQG2, GTCC Folio C 18/o.
  60. TTLTQG2, GTCC 18/1.
  61. Tran Ngoc Canh, “Ve Viec Khao Sat va Dao Cac Kinh Nho o U-Minh va Kinh Ranh Hat,” 10 October 1958, TTLTQG2: GTCC Folio C18/1.
  62. “Hoang Van Lac k/g Ong Bo Truong Bo Cong Chanh va Giao Thong,” TTLTQG2, GTCC Folio Q.6o.
  63. “Bien Ban Phien Nhom Thao Luan Ve Viec Dao-Vet Kinh Tai Dia-Diem U Minh,” TTLTQG2, GTCC Folio Q 6o, p. 1.
  64. Tran Le Quang, Minister of Public Works, letter to presidential cabinet minister, aoSaigon, 12 December 1958.
  65. Tran Khai Minh, “U Minh Voi Nhung Tran Danh Co Tinh Chat Don Xeo Trong Hai Thoi Ky Vo Trang Chong Phap va My”; oaThe, “NguoiDan Vung uoDae,”182.
  66. “The People of the U-Minh Forest Area: A Survey of Their Attitudes in the Context of Past and Present VC/GVN Activities,” NARA II, RG 472, CORDS: Plans, Policy and Programs Directorate, “Historical Working Group Files”, Box 32.
  67. CORDS Pacification Studies Group, “Use of Herbicides,” CORDS HWG, NARA II, RG 472.3, 1.
  68. Tran Triet, et al. “Viet Nam, Herbicides and Wetlands: Locating the Hotspots,” (International Crane Foundation, 2000), <http://www.savingcranes.org/gis/fedprojects/vietnamherbicide.htm>.
  69. CORDS Pacification Studies Group, “Use of Herbicides,” 9.
  70. Victor Croizat, *Vietnam River Warfare: 1945-1975* (Poole, Dorset, England: Blandford Press, 1986), 150.
  71. Nguyen Tan Thanh, 93.
  72. U. S Adviser, An Xuyen Province. 1966. “Use of MILCAP Fund–Defoliation Damages.” NARA II, RG 472, MACV Advisers, Team 8o: An Xuyen Province, Box 16.
  73. “The People of the U-Minh Forest Area,” p. 16. I arrived at the 1.5 million USD using the eighty-to-one black market valuation of the VN piaster in 1970 and tripling the amount given for one of the three districts covering the forest.
  74. Biggs, “Between the Rivers and Tides,” 252.
  75. *Ibid.*, 223.
  76. Netherlands Delta Development Team, *Recommendations Concerning Agricultural Development with Improved Water Control in the Mekong Delta: Main Report* (Bangkok: Mekong Committee, 1974), 5.
  77. *Ibid.*
  78. Thanh, 94.
  79. Vo-Tong Xuan and Shigeo Matsui, eds., *Development of Farming Systems in the Mekong Delta* (Ho Chi Minh City: Saigon Times Publishing, 1998), 47.
  80. “Vietnam: Rice Development Strategy,” *Vietnam Business Forum: The Magazine of the Vietnam Chamber of Commerce and Industry No. 4* (25 October 2003); Xuan and Matsui, eds., *Development of Farming*, 51.
  81. Previously, the Democratic Republic of eVietnam’s Forestry Department managed several areas as special-use forests. President Ho Chi Minh established the Vietnamese forestry system in 1960 under Ordinance 18/LCT. The first protected forest, Cuc Phuong, became eVietnam’s first national park in 1962.
  82. International Center for Environmental Management, “Vietnam National Report on Protected Areas and Development,” *Review of Protected Areas and Development in*

*the Lower Mekong River Region* (Indooroopilly, Queensland, Australia: ICEM, 2003), 18-19. Also see Annex 1, p. 53. Birdlife International, "Vietnam Source Book of Existing and Proposed Protected Areas in Vietnam," [http://www.wing-wbsj.or.jp/~vietnam/source\\_book/bg005.htm](http://www.wing-wbsj.or.jp/~vietnam/source_book/bg005.htm). See also [http://www.wing-wbsj.or.jp/~vietnam/source\\_book](http://www.wing-wbsj.or.jp/~vietnam/source_book). 83. ICEM, *Review of Protected Areas*, 24.