

ETERNAL HARVEST: THE LEGACY OF AMERICAN BOMBS IN LAOS

Karen J. Coates and Jerry Redfern

The inaugural issue of Asia Pacific Peace Studies journal features a selection of publications and public initiatives sponsored by the Asia Pacific Peace Studies Institute (APPSI) in the three years since its inception in 2013. On November 12, 2013, APPSI and Asia Society Northern California co-hosted a presentation at Holy Names University by Karen J. Coates and Jerry Redfern unveiling their book Eternal Harvest: The Legacy of American Bombs in Laos. This collection of unforgettable essays and photographs provides powerful testimony about a historical—indeed, ongoing—injustice, and inspires readers to push for redress. Coates and Redfern explain: “[b]etween 1964 and 1973, in an offshoot of the Vietnam War, the U.S. military dropped 4 billion pounds of explosives on Laos.” Many of those explosives, especially smaller cluster munitions, did not detonate and “remain in the soil today as UXO—unexploded ordnance—contaminating... the surface area of the country. Tens of thousands of civilians have been killed and injured in UXO accidents since the war officially ended.” The following is adapted from this important book.¹

Prologue

Laos is a land steeped in cliché; of gilt temples and golden Buddhas, shimmering rivers and dazzling sunsets. There are saffron robes and colorful markets with exotic foods. The paddies gleam an emerald green, the people smile with ease. Consult a guidebook, and you will read these things. Travel to Laos, and you will see. The Land of a Million Elephants, as it is known, is also a Land of Infinite Light.

The Lao People’s Democratic Republic, as it is officially named, is a landlocked Southeast Asian country ringed by a necklace of economic and political rivals—China up north, Vietnam to the east, Cambodia in the south, and Thailand to the west. Touching the far northwest border is Myanmar, the longtime military state that is rattling the region as it opens its doors. All six of these countries share a single artery of life: the Mekong River, the Mother of Waters, which slices right through Laos’s hilly terrain.

Karen J. Coates and Jerry Redfern are senior fellows at Brandeis University’s Schuster Institute for Investigative Journalism. They have lived and traveled extensively in Asia, covering food, environment, health and human rights for publications around the world. They also teach writing and photography to journalists in the developing world.

Fifty-five percent of the country's people are ethnic Lao, while a medley of distinct cultures and tribes (forty-nine of which the government officially recognizes) makes up the rest of the population. Even so, certain characteristics pervade Lao society: more than 70 percent of the country's 6.5 million people live in the countryside and work as farmers, and one-third of all Laotians live below the poverty line. Many kids—adults, too—don't get enough to eat. Nationwide, about 40 percent of the population is malnourished; in the countryside, every other kid is chronically so. These factors reflect the United Nations' classification of Laos as a "least developed country."²



Photo: Monks leave Wat Xieng Muan for their early morning round of alms begging in the streets of Luang Prabang. © Jerry Redfern

It's a country that also suffers from a troubled modern history and complicated politics. Laos endured French colonialism for more than half a century, followed by years of warfare as a sideshow to the Vietnam conflict. The U.S. government supported the Royal Lao government in its fight against the communist Pathet Lao. Meanwhile, the CIA covertly owned and operated an airline called Air America, while training Hmong soldiers in their struggles against communist forces. In 1964, unknown to the American public, U.S. forces unleashed a bombing campaign that lasted nearly a decade and ultimately devastated the country.

That's the short story. The long story is substantially more complex. World War II occurred during the French colonial period, and in 1945, the Japanese took brief control of Laos. In the aftermath of war and

Japan's defeat, an independence movement known as Lao Issara emerged in an effort to prevent the return of French colonial power. When Laos was granted partial autonomy, the Issara movement split, with its more radical members going on to form the Pathet Lao under Prince Souphanouvong. It became a communist force aimed at ousting colonialism, allied with the Vietnamese independence league known as the Viet Minh.



*Photo: Aerial view of bomb craters in the landscape surrounding Phonsavan, Laos.
© Jerry Redfern*

Laos gained independence from France in 1953, and in the following year, the Vietnamese defeated the same colonizers at the battle of Dien Bien Phu. The Geneva Agreement that year marked the end of French dominion in Southeast Asia. The accords called for a divided Vietnam, as well as neutrality and reconciliation in Laos. A coalition government was formed in 1957, but the union was short-lived. Fighting resumed in 1959 between Laotians divided in politics. A second coalition government was formed a couple of years later, but that, too, fell apart.

By that point, the White House had a close eye on Laos. U.S. administrators and their allies feared escalating violence could destabilize the region. President John F. Kennedy took office in January 1961, and quickly delineated the threats he saw. "The security of all Southeast Asia will be endangered if Laos loses its neutral independence. Its own safety runs with the safety of us all," Kennedy said. "I want to make it clear to the American people and to all of the world that all we want in

Laos is peace and not war... a settlement concluded at the conference table and not on the battlefield.”³

But that did not happen. In 1963, Prime Minister Souvanna Phouma called for help, and the U.S. military responded with arms and aircraft. The following April, the U.S. Air Force sent a team of air commandos to a base in northern Thailand, where they trained pilots from Laos, Thailand, and Air America. The next month, Air America pilots targeted the strategic region known as the Plain of Jars, while U.S. military jets flew reconnaissance missions in both the north and south. U.S. Air Force and Navy strikes on December 14 began an operation known as Barrel Roll, which would later become the designated title for the air war in northern Laos. Operation Steel Tiger was the name chosen for the southern air war against the Ho Chi Minh Trail, the network of supply routes connecting North and South Vietnam via Laos.⁴

The attacks continued for years, escalating dramatically in 1969, when sorties peaked at three hundred a day. And all the while, U.S. government officials denied their involvement in Laos. “Eventually, the secrecy became preposterous,” John T. Correll writes in a 2006 *Air Force Magazine* article. “There were sporadic reports of it in the newspapers, and Congress knew about it, but the government did not publicly acknowledge that Americans were fighting a war in Laos until 1970.”⁵

On March 6, 1970, President Richard Nixon finally issued a public statement acknowledging U.S. combat missions in Laos. “We are trying above all to save American and allied lives in South Vietnam, which are threatened by the continual infiltration of North Vietnamese troops and supplies along the Ho Chi Minh Trail,” he said. “We are also supporting the independence and neutrality of Laos.” Nixon assured the American public, “Peace remains the highest priority of this administration.” In a speech of nearly three thousand words, not once did the president use the words “bomb,” “bombing,” or “ordnance.”⁶

Operation Barrel Roll continued another thirteen months, with the U.S. Air Force reporting the last military strike on April 17, 1973. The last Air America plane left Laos and crossed into Thailand on June 3, 1974. (According to a CIA report on its operations in Laos, “Air America’s public image has fared poorly.” The document attributes that public relations problem to the 1990 Hollywood action comedy *Air America*, which depicts CIA pilots entangled in a drug-smuggling scheme.⁷)

To this day, Laos remains, per capita, the most heavily bombed country on earth. All told, the U.S. military and its allies dumped more than 6 billion pounds of bombs across the land—more than one ton for every man, woman, and child in Laos at the time. American forces flew more than 580,000 bombing missions, the equivalent of one raid every eight minutes for nine years. The targets were communist forces, allies of the North Vietnamese Army; but civilians died by the thousands.⁸

Among all the ordnance dropped were 270 million cluster-bomb submunitions, tiny “bombies” that were packed by the dozens or hundreds into canisters and casings designed to open in midair, scattering baseball-sized explosives across areas as large as a football field. Millions of submunitions fell into forests, where many lodged into treetops and scrub brush. It can take decades for something to jostle them loose. Bombies are the most common form of unexploded ordnance in Laos today.



Photo: “Bombies” © Jerry Redfern

Many of those weapons were shaped like little fist-sized balls. Some were painted bright yellow and looked like miniature pineapples; others looked like oranges, lemons, or soda cans. For various reasons—human error, defective equipment, failure to arm—upwards of 30 percent of all bombies failed to explode on impact.⁹

Thus perhaps more than 80 million live submunitions remained in the soil after war—volatile, deadly. Little kids mistake them for toys. Farmers mistake them for rocks. One little bombie is powerful enough to destroy anyone or anything within thirty yards.¹⁰

Unexploded ordnance (UXO) has killed and maimed more than 50,000 people since the bombings began; more than 20,000 of those casualties have resulted from accidents after the end of war. Every year, still, old ordnance claims an estimated 100-150 casualties.¹¹

The United States lost the war, and the Lao People's Revolutionary Party, which grew from the Pathet Lao, has been in charge ever since. It's a communist country, but more and more it operates as a free market. Laos remains another cliché—dirt poor—although slowly, things are beginning to change.

More highways are paved. More cities have twenty-four-hour power. The Internet reaches all provinces, to greater or lesser degrees; and hot showers can be found far from the city centers. These amenities are largely new, in just the last several years.

And with this awakening comes a swelling wave of travelers on circuit routes through Southeast Asia. Laos is big on the tourist map these days, favored alike by high-end tour groups and low-budget backpackers. Shoestring travelers, predominantly young, throng to Vang Vieng to tube the Nam Xong River, drink Beerlao, eat pizza, and take drugs. Their presence stokes an ongoing national conversation about the prospects and consequences of lost pride and culture—as well as safety. Careless stunts and accidents in the river's rocky waters have left several foreign tourists dead and injured in recent years, leaving many to criticize both the clientele and the area's lack of medical facilities.¹²

Meanwhile, far more moneyed crowds flock to Luang Prabang, a World Heritage City based on its architectural preservation and spiritual history. But prices preclude many average Laotians from visiting the center of their nation's religious heritage.¹³



Photo: Local women feed monks from the local temples during their early-morning alms rounds in Luang Prabang. © Jerry Redfern

Still, Laos is a blissful country to visit. Luang Prabang perches on a peninsula at the confluence of the Mekong and Nam Khan rivers. The sun really does set over the Mekong like a red ball of fire on blue-green glass. Saffron robes really do gleam in 6 a.m. light as troupes of monks emerge from their temples, plying the streets for their daily alms. It's just as it always was—except for all the tank tops on tanned bodies with cameras and cell phones in hand, strutting forth from swish resorts.

In the countryside, not so much has changed. Laotians still till the soil and plant the land. They fish, forage, and hunt for their food. They raise buffalo, chickens, pigs, and ducks (sometimes even turkeys). They carry machetes and walk miles in plastic sandals, lugging heavy loads in hand-woven baskets. Their roads aren't paved; they don't have running water or power or toilets. But their sunsets dazzle, just the same. Their lands are bucolic, their faces full of pride. They work their asses off just to survive.

There is, at times, irony in the growth of tourism: the more people visit, the less it seems a country is understood. Laos is a beautiful place where people live each day on the periphery of death. The closer they are to the land, the greater their danger.

That legacy lingers forty years after war.

* * * * *

Jerry and I eat dinner one night in the Luang Prabang market, then head to a lively little restaurant on the riverfront for a couple of drinks. It's a quaint place with soft light and a cool breeze. We stay longer than expected because it is so nice, so pretty, so cheap.

We chat with the waiter, nicknamed Sluk. He comes from a very small village called Don Kham, which sits on the border of Luang Prabang and Xieng Khouang provinces. It takes two days by bus and a day of walking to reach his village, he says. There are no paved roads, no motorbikes, no cell phones, no TV in his home. And no Beerlao—though plenty of *lao lao* and *lao hai*, locally made whiskey and wine.

Sluk is studying at Luang Prabang University. In order to communicate with his mother, he says, he must mail her a letter. At first he tells us his village has only two houses, but he means twenty. His English isn't perfect; he's still learning. It's almost Lao New Year, and I ask whether he'll go home for the holiday, which Laotians typically spend with family. No, Sluk says, he has no money. Maybe after he graduates, he hopes, he will have the chance to go home. But that will be a long while.

We stay a little bit longer, then pay the bill. I tell Sluk I have one more question: does his village have bombs? *Le but?* UXO left from the U.S. bombings? "Yes, yes!" he says. "A lot!" He's been in Luang Prabang for five years, so he doesn't know exactly the situation today. But when he lived at home, he says, he regularly saw ordnance.

When we return to our room, I consult our map. It shows a small highway leading into the heart of Luang Prabang province. The highway ends at the edge of a national protected area. Another small road heads south through the mountains toward the Xieng Khouang border and a single destination: a little red dot marked “Don Kham.”

And I think: we haven’t seen this one yet. It’s another village to visit someday. Laos has 9,583 documented villages. According to some estimates, a quarter or more of them are contaminated with bombs, as is half of all arable land around them. Sluk is an ambitious young man who left the farm, hoping to make his way in the wider world. But the village he left behind still grapples with fields of forty-year-old bombs.

All That Remains

Noi, whose name means “small,” stands about four feet tall. She has dark, wispy hair with a few gray strands, cinched in a bun. She walks fast, her hands are tough, and she looks straight into a person’s eyes when speaking. The lines across her face show a life of many smiles and few frowns—incredible, considering the stories she tells us. Noi has lived all her years—fifty-five—in the hills of northern Laos. Her wooden hut sits on the edge of a village, far from cities, along a rocky road that twists through the mountains bordering Vietnam.

Everyone around her farms rice and forages for shoots and herbs that grow wild in the nearby forests. The villagers’ tools are their hands, their feet, their buffalo, and their knives. It’s a hard, gritty life. Noi, like many of her neighbors, belongs to the Tai Dam tribe, an animist culture known for its weaving. Her village, Sophoon, supports a multiethnic mix of 150 hilltribe families. Here, beside the cold, rushing flow of the Nam Neua River, villagers share lands and similar lifestyles.

Jerry and I sit with Noi and her sister, Awn, as the two ebullient women tell us about the war. “I still remember,” Noi says. “I was young. The bombs, the fighting. The airplanes.” It was 1964 when a big bomb hit her house. “After that: smoke around me. I didn’t know where to go. There was no one to pick me up. My friend’s father shouted to me, ‘Noi, Noi, are you dead?’ I heard that sound, but all around, I watched fire burning the houses.” An American bomb had set several homes ablaze and sent shrapnel flying in every direction. “I heard my sister crying and I ran to pick her up,” says Awn, pointing to Noi’s leg and the forty-five-year-old scars that have left tracks across her skin. “Fragments of the bomb.”

“Half my body had pain,” Noi says. “My ear could not hear.” Noi’s physical wounds healed with time, but the mental distress did not. Twenty years later, when Noi was fully grown and married with children, she suffered another attack. “I was working in the rice field,” she says.

“A bombie exploded.” Though small, bombies can kill or injure anyone within thirty yards or more. The little bombs have sensitive fusing systems and high failure rates. Some have triggers designed to explode on impact. Some need to spin in order to arm; others have multiple trip wires that spring forth from the bomb when it lands. Many bombies explode when rotated or struck. If they fail to blow when first dropped, bombies can detonate years later when hit with a hoe, jiggled, or tossed.

Bombies aren’t just a problem for Laos. More than two hundred types of cluster submunitions are used globally. To date, these weapons contaminate land in thirty-seven countries, where thousands of civilians have been killed and injured.¹⁴

In 2008, sixty-eight countries signed an international ban on cluster bombs, which went into effect August 1, 2010. That law bans the production, use, stockpiling, or transfer of cluster bombs. It also calls for the destruction of stockpiles within eight years, the clearance of contaminated land within ten years, and aid to the survivors of cluster-munition accidents. According to the Cluster Munition Coalition, an international consortium working to eradicate these weapons, the quick move to enforce this ban reflects a “growing international revulsion toward cluster munitions and the civilian harm they cause.”¹⁵

But the United States, as of this writing, still is not party to that convention. Sixty percent of cluster-bomb injuries around the world occur among people going about their daily activities, and 30 percent of all casualties are children. That day in 1984 when Noi found a bombie in her field, her husband was working about fifteen feet away. She says neither one of them touched the bomb, but it blew anyway. It’s not an uncommon story. It could be explained by a time-delay fuse. But often old ordnance is so faulty, there is no telling why or how it detonates when it does.

The explosion left a hole in the ground seven inches wide, and it sprayed shrapnel across Noi’s face. “I still have fragments in my forehead and eyes.” She leans toward us, allowing us to touch the little bumps on the right side of her nose and in the corner of her eye. “I didn’t know UXO had exploded. I touched my face and thought it was water, but it was blood.”

Noi’s son, Koeut, joins the conversation. He remembers the accident. He was about nine years old at the time, on his way to bathe in the creek near his family’s field. “BOOM! The bomb exploded,” he says. “I thought my mom was killed.” A few years later, Koeut had his own encounter with UXO. He and a friend went to the forest to cut firewood, and they found several canisters packed with a type of bomblet called the BLU-24. They were inside aluminum tubes designed to spit out twenty or more at a time. Koeut and his friend found six tubes containing more than one hundred bombs. They didn’t know what else to do, so they set them on fire—and ran fast. When the explosions sounded through nearby

Sophoon, Koeut says, his neighbors thought, “They are dead.” But the two boys survived unscathed.

Noi takes us to the spot where her house was hit in 1964. “Right here the bomb exploded,” she points to the rocky ground on the edge of her village. “My house was right there.” The bomb came from the direction of a nearby bridge, which was built after war. “Before, there were houses here. Now it’s a new road.”



Photo: Noi points to where her family house used to be in Sophoon before it was destroyed in a U.S. bombing raid in 1964. © Jerry Redfern

As we return to the village where Noi and her family now live, she eyes the rice field where the bombie exploded in 1984. She can see the site from her neighbors’ yard. “I was scared,” she says. “Every time I go there, I worry. Still.” But Noi works in that field most every day. It is her job, her life. And she is afraid it could kill her. UXO is a perennial hazard that affects nearly every sector of Lao life—health, economy, environment, food security, peace of mind. It is chronic. It is overwhelming. It is a catastrophe.

Dreams of Total Clearance

Mike Boddington, a Briton trained in agriculture and economics, has a résumé nearly as long as the U.S. bombings were vast. He founded a nonprofit called Power International, which aids people with disabilities

in developing countries. He first traveled to Laos in 1994 to assess the country's need for a prosthetics program. No surprise, he found the need to be great, so he helped establish a Lao rehabilitation organization called COPE (Cooperative Orthotic and Prosthetic Enterprise), which works with the National Rehabilitation Center in Vientiane to provide orthotics and prosthetics to locals. Boddington, who has lived in Laos since 2002, spent several years as a technical adviser to the National Regulatory Authority for UXO/Mine Action (NRA), the government agency responsible for directing and regulating UXO information and policy. In 2010, in honor of his long track record of good deeds, Queen Elizabeth II awarded Boddington the Most Excellent Order of the British Empire (MBE), one of the highest British honors.



*Photo: Young men and women play wheelchair basketball at COPE in Vientiane.
© Jerry Redfern*

Boddington is one of the world's leading authorities on UXO in Laos. When he took the NRA job, he says, his colleagues were trying to decide the agency's long-term goals. Fifteen percent reduction in accidents? More? Less? By Boddington's thinking, there is only one appropriate percentage—one hundred—and one appropriate number: zero. One hundred percent reduction, zero accidents. Zero bombs, zero deaths, zero injuries. That's Boddington's dream. "The only way we can do it is total clearance."

To determine how total clearance could be achieved, Boddington needed to calculate a price. In order to calculate a price, he had to derive hard numbers from soft variables. "There are so many unknowns," he

says. No one knows precisely how many bombs were dropped or precisely how many remain. When it comes to UXO in Laos, all cited statistics are estimates.

Part of the problem is that so many forces had a hand in the covert war. It's a bit of a wild goose chase, attempting to find hard data on who did precisely what, when, and where; with whom or for whom. In the mid-1950s, the U.S. government established the Programs Evaluation Office in Vientiane, channeling clandestine military aid to the Royal Lao Army in its fight against the Pathet Lao. The PEO was a military venture dressed in civilian clothes. The U.S. Air Force, U.S. Navy, and U.S. Marines all dropped bombs in Laos during the nine-year air war. The CIA (through Air America) outfitted General Vang Pao and his Hmong guerrilla air force. The U.S. Army provided helicopter gunship support for South Vietnamese forces in Laos. U.S. forces also collaborated with Royal Thai and Republic of Vietnam air forces, using bases in both countries for raids over Laos. Plus, the Royal Australian Air Force supported the U.S. Air Force at Ubon Royal Thai Air Force Base, a primary launch pad for U.S. bombing raids throughout the region (although the Australians reportedly didn't fly over Laos).¹⁶

There were unscheduled raids, too. If U.S. pilots could not reach their targets in Vietnam for one reason or another, they sometimes dumped the remaining explosives over Laos so they could return to base with empty planes—creating more unknowns with which to contend today. “We never will have anything on all of those flights that came back from Hanoi and chucked whatever they had left over Laos,” Boddington says.¹⁷

Neither will UXO experts ever have a precise figure on the failure rate of all cluster bombs dropped. “We don't know,” Boddington says. Some people argue less than 15 percent; others insist more than 50 percent. “We've selected 30 percent.” It's a figure that is, Boddington says, “speculative, and has been adopted by consensus rather than scientific observation.” Since more than 270 million bombies were dropped on Laos, the difference between 15 and 50 percent, he notes, “is enormous.”¹⁸

Likewise, no one knows for certain how much land is contaminated, in terms of square footage or percentage. It's fairly common to read that 25 percent of all villages contain UXO. But Boddington says he has also seen figures as high as 35 or 40 percent. “The truth of the matter is that we really have no idea.”

Given all the unknowns, Boddington used the best figures he had. Multiplying the average cost of clearing a single item of UXO by the estimated number of bombies left in the ground, “I worked out that it would cost \$16 billion to remove them all.”

What did the United States spend on dropping all those bombs? “There are lots and lots and lots and lots of figures on that,” Boddington says.

He's seen prices ranging from \$200,000 a day to \$5 million a day, but the generally accepted figure is \$2.2 million. In 2010 dollars, adjusted for inflation, that comes to \$17 million a day—\$6.2 billion a year, for nine years, totaling \$56 billion.¹⁹



Photo: Ta lost his eye and both his arms in 2001 when a cluster bomb he found exploded after he prodded it with a stick. He is an internationally known advocate for a global ban on cluster munitions, and in 2008 traveled to Norway to serve as keynote speaker at the Convention on Cluster Munitions Signing Conference. © Jerry Redfern



Photo: Ta's daughters Pao and Pou help him put on his prosthetic arms. © Jerry Redfern

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In 2005, Jerry and I are sent on assignment to Xieng Khouang province to work on an article about a massive archaeological complex known as the Plain of Jars. Hundreds of giant stone vessels, as old as two thousand years, speckle the landscape in dozens of sites scattered across the province. No one knows for sure who built them or why, although the jars are associated with human burials. Archaeologists haven't studied them extensively—in part because of UXO.

During wartime, the Plain of Jars, a five-hundred-square-mile plateau in a predominantly mountainous terrain, was “the most valuable real estate in northeastern Laos,” according to CIA historian Thomas L. Ahern Jr. The French had built a military airstrip there, and the site served as a battleground for almost every warring force in Laos through the 1970s. Many of the jars sit atop soil peppered with unexploded bombs. Scientists rank the Plain of Jars among the world's most dangerous archaeological sites.



Photo: Serm Kham, a technician with the Mines Advisory Group, poses with a metal detector he used to find buried bombs at the Plain of Jars. © Jerry Redfern

We arrive in 2005 with jars on our minds. But three weeks later, our attention turns toward forty-year-old U.S. bombs.²⁰

We meet a young boy named Bich in the Phonsavan hospital. Part of his face is blasted off, and his arm is fractured. “He went to plow the

field and he hit something. We don't know what," his mother, Man, tells us in tears. "I heard the explosion and some people came to get me." She knew about UXO, about the dangers in the dirt, but what can her family do? They have to grow food. She has seven children to feed. "I worry about the others. It's very difficult because we cannot see the UXO," she says. Bombs hide in the earth that people tread and dig and plant and reap every year.

Some weeks, a nurse tells us, the hospital gets two or three UXO victims; other weeks, it gets none. Most victims who come to the hospital survive. But many never make it that far. They die at home or in the field or forest where the accident occurs.

Bich's story is hardly unusual, but it is not widely known in the country that likely made the bomb that hurt him. To this day, Laotians continue to die while playing in their yards, plowing their fields, tending their cattle. As villagers clear new land for planting, buried bombs explode. When farmers light their fields afire, shrapnel sometimes rains upon nearby roofs. At times, Laos still sounds like a country at war.



Photo: A family weighs a cluster bomb casing at a scrap dealer who specializes in war scrap in Phonsavan, Laos. Bomb casings like these are popular as planters and barn posts throughout the region. © Jerry Redfern

This story has an even bleaker side. As the global price of metal creeps upward, villagers gamble their lives on the chance to unearth valuable scrap. This is a country in which most people earn just a few dollars a

day. And most people farm. But in some parts of Laos, the earth holds a profitable crop, sown long ago in war.

While some dig with hopes of making money, others dig with hopes of securing safer land. Every day, bomb disposal teams scour the terrain, staking rows of string to the ground and slowly walking the grid with metal detectors. Back and forth, back and forth, back and forth—it's a meticulous job that can take days, even weeks, to cover an acre.

At any given time, twelve companies and humanitarian organizations have teams in the field, scattered across the country, looking for bombs. When a technician gets a signal, the spot is marked and later investigated by hand. Someone has to dig down and backward, slowly inching toward the source of the signal without making any sudden, harsh moves that could jolt a piece of ordnance and cause it to explode. Most signals end with a rusty nail or a twisted piece of bomb casing. But sometimes the team unearths a bomb, still armed, still ready to blow. It could take decades, even centuries, to clear all the munitions.

That is life. That is history—of the United States, of Laos, of the never-ending war between the two.

NOTES

¹ Karen J. Coates and Jerry Redfern, *Eternal Harvest: The Legacy of American Bombs in Laos* (San Francisco: ThingsAsian Press, 2013). The present article draws on portions of the book's Prologue (pages 14, 20, 24, 27, 28) and first chapter (pages 31, 34, 35, 41-43).

² National Statistics Centre of the Lao PDR, *Population Census 2005*, chapters 1-2. On poverty, see Michael Epprecht et al., *The Geography of Poverty and Inequality in the Lao PDR* (Swiss National Centre of Competence in Research North-South, Geographica Bernensia, and International Food Policy Research Institute, 2008), 3. On food security, see World Food Program, "Lao PDR Comprehensive Food Security and Vulnerability Analysis" (May 2008), as quoted in UNDP, "Hazardous Ground: Cluster Munitions and UXO in the Lao PDR," June 3, 2009, 5.

³ John T. Correll, "Barrel Roll," *Air Force Magazine* (August 2006), 54. "President Kennedy Statement on the Importance of Laos at a News Conference." March 23, 1961, *The Pentagon Papers*, Gravel Edition, vol. 2, 799-800. Archived online by Mount Holyoke College.

⁴ Correll, *ibid.*, 57. Victor B. Anthony and Richard R. Sexton, *The United States Air Force in Southeast Asia: The War in Northern Laos 1954-1973* (Center for Air Force History, U.S. Air Force, 1993), 160.

⁵ Correll, *ibid.*, 55, 59, 60.

⁶ Richard Nixon, "Statement about the situation in Laos," March 6, 1970. Archived online by The American Presidency Project, University of California, Santa Barbara. (Winter 1999-2000).

⁷ Anthony and Sexton, *ibid.*, 4, 362. William M. Leary, "CIA Air Operations in Laos, 1955-1974," *Studies in Intelligence*, Central Intelligence Agency.

⁸ The total tonnage of ordnance dropped on Laos is often reported as 2 million, but Spencer Tucker reports, "Before the end of the war, allied aircraft had dropped more than 3 million tons of bombs on Laos, three times the tonnage dropped on North Vietnam." This number seems a much more accurate estimate, given the large gaps in bombing data, undocumented raids, and discrepancies in bombing numbers. Spencer C. Tucker, ed., *The Encyclopedia of the Vietnam War: A Political, Social and Military History, Second Edition*, electronic version, ABC-CLIO, May 2011. See heading "Operation Barrel Roll." On the figure of more than 580,000 bombing missions, see Lao National Unexploded Ordnance Program website (www.uxolao.org).

⁹ The 30 percent figure for failures, an estimate using available data, refers to small bombs, most notably cluster munitions bomblets called "bombies," about the size of a tennis ball or soda can. Larger bombs, weighing several hundred pounds, had a much lower failure rate, closer to 3 percent. Michael A. B. Boddington, personal correspondence, January 5, 2012. U.S. Army documents indicate an assumed 1 percent failure rate among bombs ranging from 250 to 1,000 pounds that were dropped in late 1967 and early 1968, giving enemy targets access to the explosives inside. "Study and Evaluation of Counter Mine Activities," U.S. Army Counter, 1968.

¹⁰ National Regulatory Authority for UXO/Mine Action Sector in Lao PDR (UXO-NRA), "UXO Problem." <http://www.nra.gov.la/uxoproblem.html>

¹¹ Michael A. B. Boddington, Bountao Chanthavongsa, *National Survey of UXO Victims and Accidents Phase 1* (National Regulatory Authority for UXO/Mine Action Sector in Lao PDR, 2010), x. According to figures from the Lao NRA, the average annual UXO accident casualty rate dropped dramatically from about 300 to 117 after 2008 ("Lao PDR: Casualties and Victim Assistance," Landmine & Cluster Munition Monitor, October 31, 2011). Mike Boddington, the former Lao NRA adviser, says he was never able to fully investigate the change in numbers, which were released after his departure. "The reason for the significant drop-off from 2008 onwards was also never explained. It was said that the price of scrap metal had fallen, but nobody ever produced evidence of this. I just cannot attribute it to some miraculous and sudden acceptance of UXO/MRE messages by the population at large, and nor to the impact of clearance in the most seriously affected areas, though both of those undoubtedly could claim some of the credit.... Without undertaking a survey of afflicted communities, I think that we are in the dark and anyone's speculation is as good as anyone else's!" (Boddington, personal correspondence, January 27, 2012.) The NRA Lao UXO Annual Report documents 99 casualties in 2011. Most experts agree

statistics are unreliable or incomplete, but estimates generally fall between 100 and 150 casualties a year. U.S. Department of State, Bureau of Political-Military Affairs, "To Walk the Earth in Safety: Documenting 11 Years of the United States' Commitment to Conventional Weapons Destruction," 11th Edition, Center for International Stabilization and Recovery at James Madison University, July 2012, 23.

¹² See, for example: Windsor Genova, "Laos Tubing Claims Another Life as Sydney Man Killed in Jump to River," *International Business Times*, January 12, 2012.

¹³ Since 2008, several Laotians in Luang Prabang have discussed in personal conversation skyrocketing prices and an influx of foreign business proprietors combining to drive their businesses out of town. Likewise, locals report hotel and meal prices in Luang Prabang exceed their budgets.

¹⁴ On how decades-old UXO can accidentally be detonated, see National Regulatory Authority for UXO/Mine Action Sector in Lao PDR (UXO-NRA), "Cluster Bombs." www.nra.gov.la/clusterbombs.html

¹⁵ Cluster Munition Coalition, "From Words to Action on Cluster Bombs," April 2010.

¹⁶ The U.S. National Archives website (<http://aad.archives.gov>) contains hundreds of thousands of online records of U.S. military missions in Laos. On U.S. Army collaboration with Royal Thai and Republic of Vietnam forces, see, for example, Warren A. Trest, *Air Commando One: Heinie Aderholt and America's Secret Air Wars* (Smithsonian Institution Press, 2000), 99. According to a report commissioned by the Australian Government, on July 26, 1965, President Johnson requested additional Australian forces for the Vietnam War. On March 2, 1966, an Australian Cabinet decision rejected a proposal to use the No. 79 Squadron (stationed at Ubon, Thailand) over Laos.

¹⁷ This is a widely repeated rumor that appears in many online discussion forums but fewer published documents. The phenomenon is noted in the Background Information area of the film *Bomb Harvest* (Kim Mordaunt, Silvia Wilczynski, *Bomb Harvest*, Lemur Films, 2007); and documented in the profile of former pilot Bob Pardo: Di Freeze, "Bob Pardo: Stuck Between a Medal and a Court Martial," *Airport Journals*, February 1, 2003.

¹⁸ The failure rate for "big bombs" was much lower, probably around 3 to 5 percent. U.S. military officers were conscious of failure rates among larger bombs because the North Vietnamese Army harvested explosives from the duds they found. Boddington, personal correspondence, January 5, 2012.

¹⁹ The cost of clearing a single item of UXO is a highly variable figure that depends on many factors. But the simple answer, for the years 2006–2009, is about \$168 according to Boddington. For more on costs of cleanup, see Legacies of War, “Cluster Bomb Fact Sheet,” updated July 26, 2013.

²⁰ Thomas L. Ahern Jr., *Undercover Armies: CIA and Surrogate Warfare in Laos 1961-1973* (Central Intelligence Agency, 2006), 27.