

# **Archaeological Survey of WWII Remains at Laderan Kastiyu, Tinian, Commonwealth of the Northern Mariana Islands**

Boyd Dixon<sup>1</sup>  
Cardno GS; SEARCH

Robert Jones  
Cardno GS

Danny Welch  
Stone Point Services, LLC

Isla Nelson  
Cardno GS

This study explores the archaeological remains of architecture and artifacts of the pre-war and WWII period at Laderan Kastiyu (an escarpment named in Chamorro after a castle-like formation) on Tinian in the Commonwealth of Northern Mariana Islands. These remains recorded during survey in 2017 provide a material record of a forgotten people interpreted with the aid of early twentieth century Japanese ethnohistoric documents, archival photographs, maps, and oral histories of the era. Immigration from Okinawa and rural Japan enabled thousands of individuals and families to improve their standard of living and peace-time expectations by laboring under contract to a large sugarcane plantation in Tinian, as documented during archaeological survey of their farmsteads and gardens. The desperate efforts of these Okinawan and rural Japanese families to escape shifting American combat lines in the last days of the WWII battle for Tinian, however, are not well documented and the survivors of this era no longer live there.

This archaeological study of Laderan Kastiyu on Tinian focuses on a profoundly transformative period of the island's past, scarcely visible to the present-day casual visitor. At the end of the Spanish-American war in 1898, the Spanish returned to the Philippines with purchase of the CNMI by Germany until 1914 (Fritz, 1989; Russell, 1999). At the end of WWI with Germany, Japan sided with the British allies and quickly occupied the CNMI where few Chamorro families remained on Tinian. All

---

<sup>1</sup> Dixon, B.: Cardno GS and SEARCH, 425 Chalan San Antonio Rd., PMB 1004, Tamuning, Guam 96913, USA; Jones, R.: Cardno GS, 250 Bobwhite Court, Suite 200, Boise, ID 83706, USA; Welch, D.: Stone Point Services, LLC, 21 Paul Drive, Texarkana, TX 75503, USA; Nelson, I.: Cardno GS, 250 Bobwhite Court, Suite 200, Boise, ID 83706, USA.

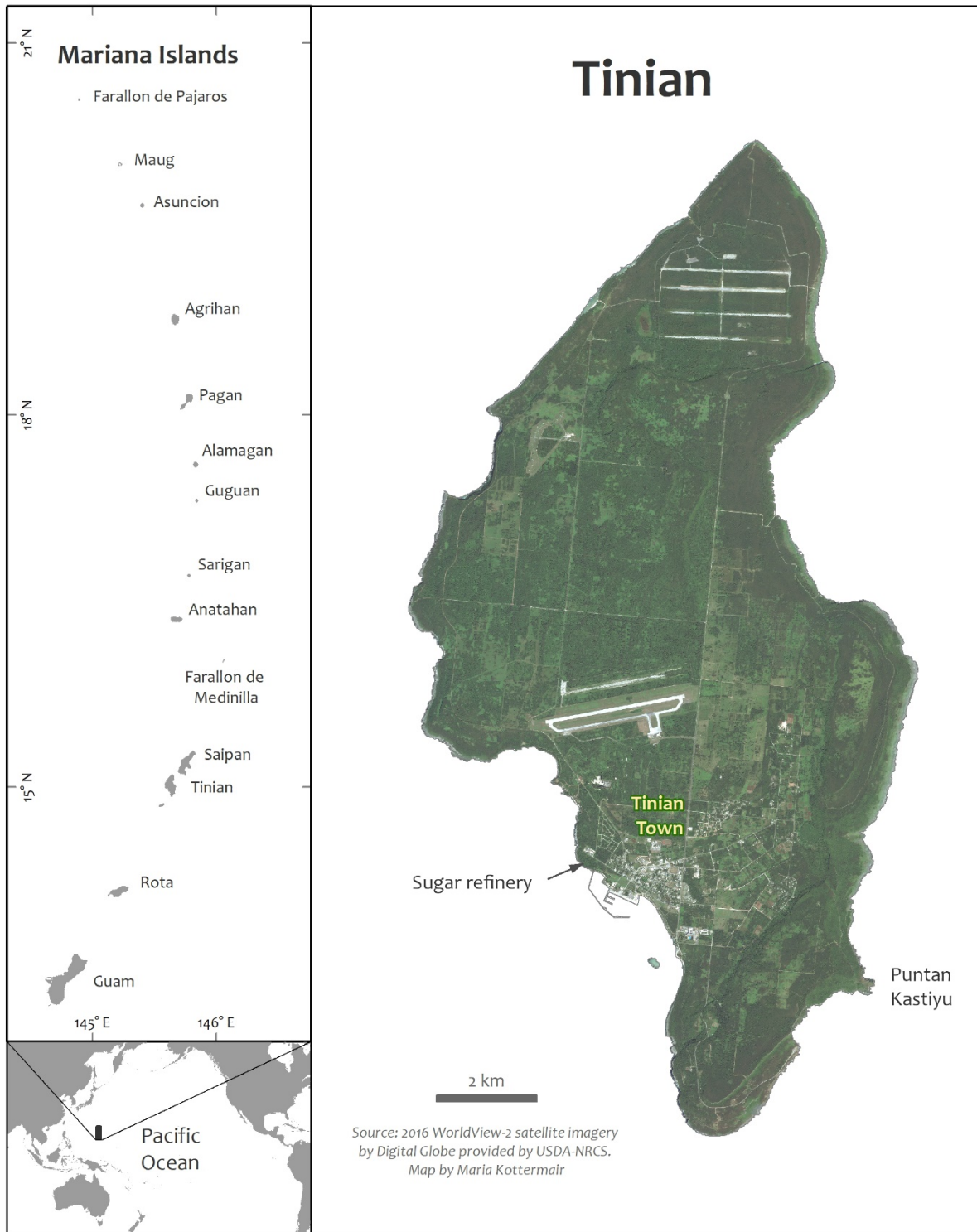


Figure 1. Location of Tinian within the Commonwealth of the Northern Mariana Islands (Source: Maria Kottermair).

this would change in the 1920's when it became a busy Japanese sugarcane plantation with a modern town and sugar refinery employing over 10,000 Okinawan, Korean, and Japanese immigrants (Dixon, 2015, 2020; Dixon, et al., 2020) - until WWII and the American invasion of the island in 1944. The island then became a massive US airbase of well over 100,000 military personnel, who were there to conduct the bombing campaign over Japan in advance of the planned invasion. This was before the use of two atomic bombs, delivered by the US from Tinian in 1945, changing the world – but that is another story (Farrell, 2018). In fact, one of many stories, extending back some 3,500 years ago (Carson, 2018; Farrell, 2011).

### **Tinian Environment and Early Twentieth Century History**

Tinian is the second largest of the Northern Mariana Islands and the third largest island in the Marianas archipelago (Figure 1). It has a land area of 101 square kilometers (sq km) or 39 square miles (mi) and a maximum elevation of 187 meters (m) or 613 feet (ft) above mean sea level (amsl). The general physiography of Tinian is a series of five limestone plateaus (Young, 1989), separated by steeply eroding escarpments. The five major plateaus are generally level to undulating with only a few sources of pyroclastic rocks from former volcanic activity predating the limestone formations. In the relatively flat northern part of Tinian, the ground surface slopes gently, increasing in elevation slightly from west to east where the largest Japanese and American WWII airfields were situated. The central plateau is an upland zone containing one of the highest elevations on Tinian, Mount Lasso, the first Japanese high command during the 1944 American invasion. The only point higher on Tinian is on the southeastern elevated ridge of Kastiyu above which the 2017 archaeological survey occurred (Dixon et al., 2019).

During World War I, Tinian and the CNMI were placed under military jurisdiction by Japan and the few German nationals were expelled. After a few unsuccessful experiments in export farming, the Nanyo Kohatsu Kaisha (NKK), or South Seas Company, obtained a lease for the entire island of Tinian in 1926 (Russell, 1995). The company

テニアン島

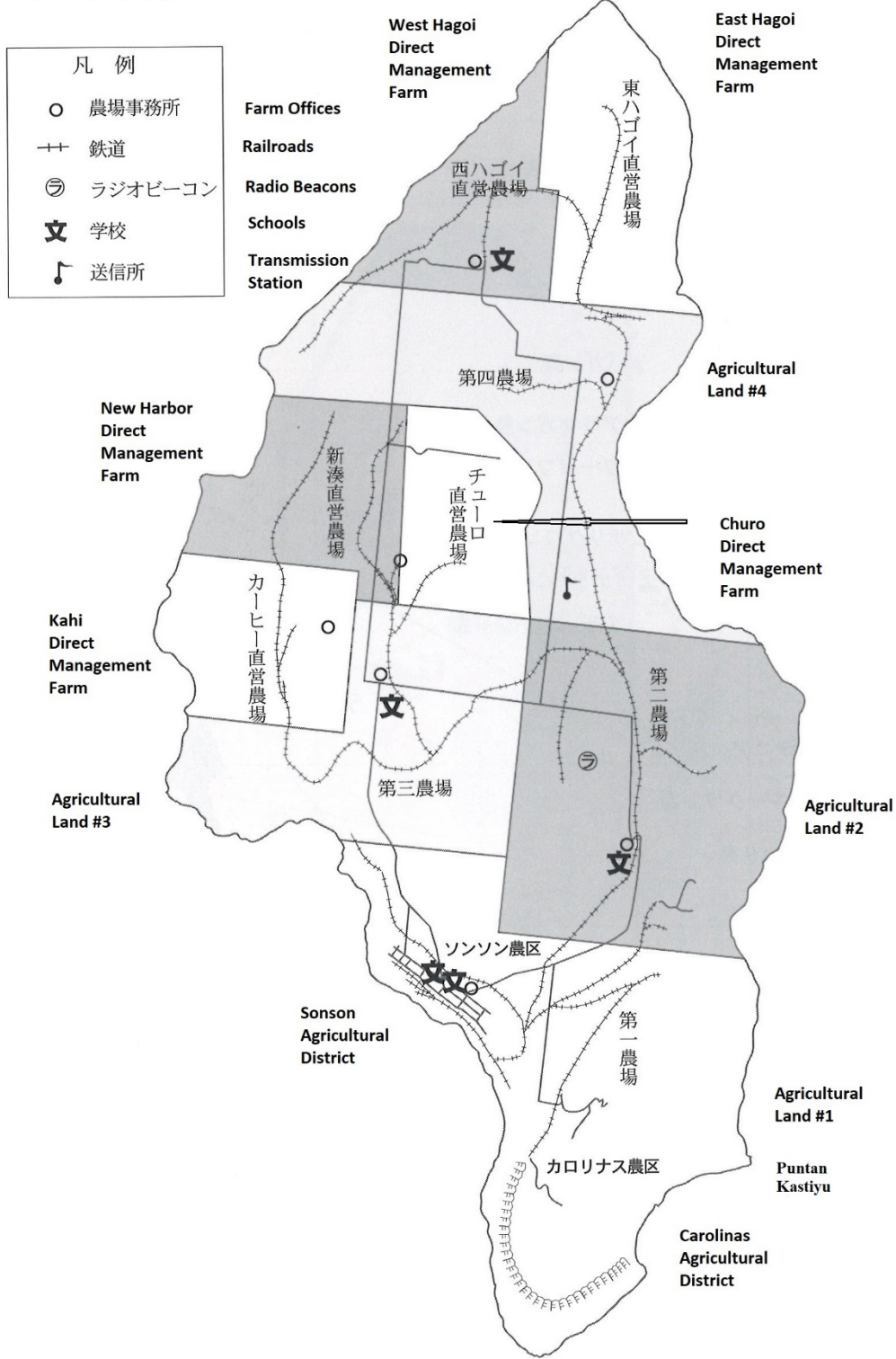


Figure 2. NKK Direct Management Farms and Agricultural Land #1 at Puntan Kastiyu (Source: Okinawa Culture Development Association 2002:4)

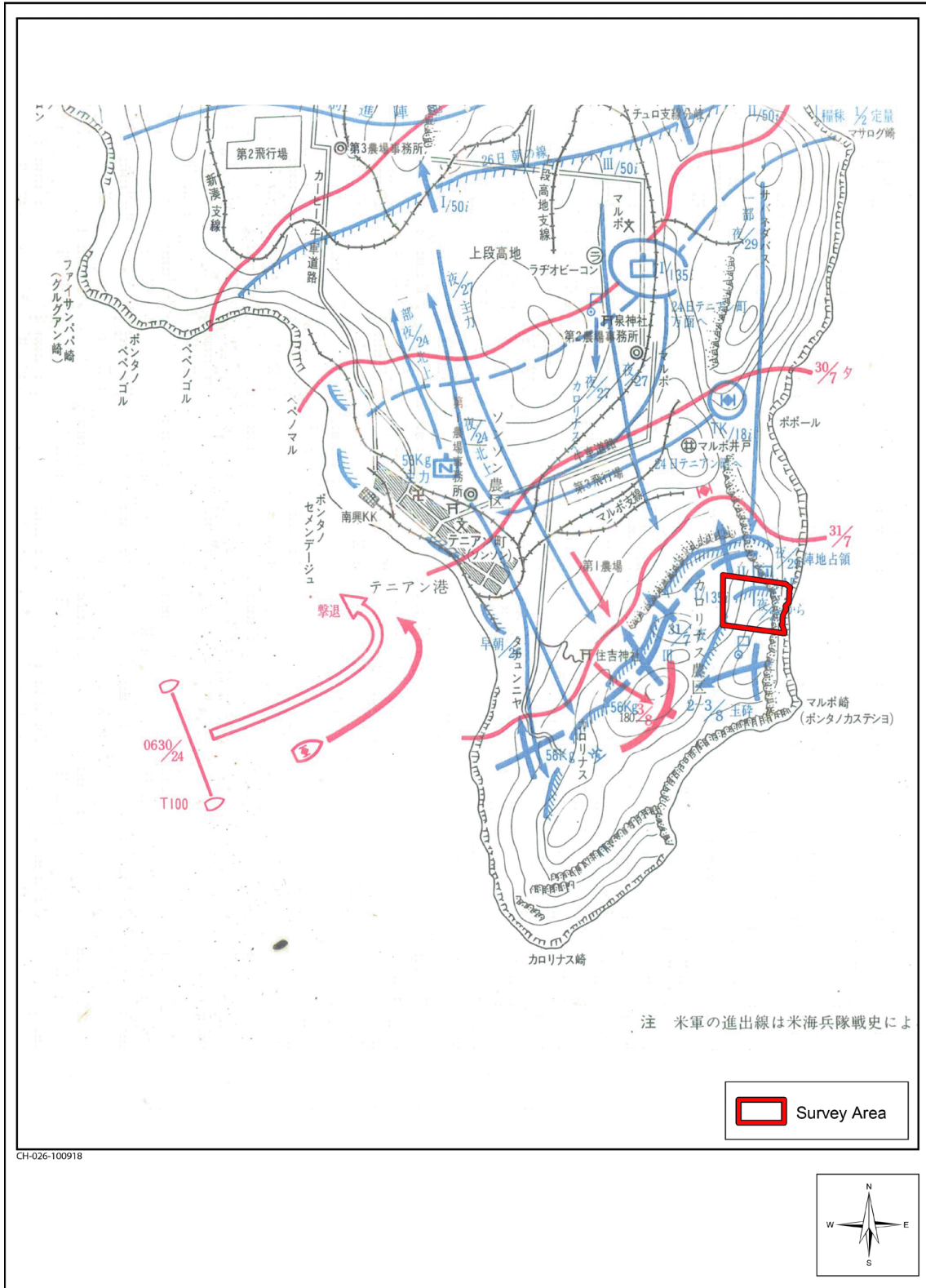


Figure 3. American (Red) and Japanese (Blue) WWII positions on Laderan Kastiyu 1944. (Source: Courtesy of John Scott.)

imported laborers, cleared land for sugarcane plantations, organized factories, built Shinto shrines, and laid railroads to the first sugar mill by 1930 (Bodner, 1997; Higuchi, 1998; Welch and Bodner, 2014). Songsong, the former San Halon, became Tinian Town in 1933 (Ono and Ando, 2007; Ono et al., 2002) and quickly grew into a major town with a sugar refinery, a warehouse, railway sheds, administrative offices, a fish market and ice storage building, a clubhouse, a dispensary, a canteen, and about 70 company houses (Peattie, 1988). The Laderan Kastiyu archaeological survey area was situated in the First Farm Agricultural District (Figure 2), where most tenants lived in individual farmsteads. This farm was worked by tenants, roughly 39 percent of Okinawan descent and 61 percent of Japanese prefectures, mostly Fukushima and Kagoshima (Tuggle 2014; Tuggle and Higuchi 2012).

On July 24, 1944 (Invasion Day or D-Day), fire was concentrated on Tinian Town as US Navy ships and landing craft feinted an offshore landing in an attempt to convince the Japanese that the invasion would take place there. The invasion instead took place at two lightly defended, narrow beaches on the northwest side of the island, designated White One (Unai Babui) and White Two (Unai Chulu). On D-Plus 5, the Marines passed through the central plateau and the next day entered Tinian Town. By July 31, the 2nd and 4th Marine Divisions had compressed the remaining Japanese forces at the southern end of the Carolinas Heights plateau (Figure 3), and by the end of the day the last desirable defense locality had been penetrated (Russell 1995). After bitter fighting throughout the night and the next day, Tinian was declared secured by the Americans at 6:55 p.m. on August 1. Tinian Town and much of the rural infrastructure were almost completely devastated. Napalm was used to clear many sugarcane fields (Dixon and Welch 2002). Japanese soldiers hiding in caves in the southern end of the island staged banzai attacks over the next several days, and some 500 stragglers continued to raid American camps for food around the island until the end of the war.

### **Civilian Memories of Laderan Kastiyu**

Some aging survivors of this era still retain their stories and modern ethnohistorians have interviewed several former NKK tenant-

farmers in Okinawa (Higuchi, 2015; Mori, 2019), American veterans in retirement (Astroth, 2018; Farrell, 2018), and Chamorros in the CNMI (Mushynsky, 2021; Tenorio in Dixon, et al., 2019). Each individual who lived through this man-made typhoon has a story they rarely share, even with their own families in some cases. More recently, a few survivors have been involved with the painful experience of collecting Japanese military and civilian human remains in former WWII combat settings on Tinian (NHK, 2020), before Shinto cremation rites and repatriation to their homeland.

During the compilation of oral ethnohistories for a Traditional Cultural Properties report for the US Navy on the island of Tinian, Asato Uto of Okinawan heritage, who had lived and farmed in Carolinas Heights First Farm during the Japanese Administration Period, was interviewed by Dr. Wakako Higuchi (in Griffin, et al., 2010; Griffin, et al., 2015). Portions of his memories are transcribed here to provide historic context to both pre-war land use and wartime tragedy at Suicide Cliffs and on the Carolinas Heights plateau and Laderan Kastiyu above, with information and sentiments inaccessible to archaeological inquiry alone.

At the age of 19, I came to Tinian from Okinawa on January 16, 1937 to marry Asato Shison (Tarū), a laborer of the Nishi Hagoi (West Hagoi) Farm District directly operated by Nan'yō Kōhatsu. Life in the islands was so easy that we did not need much cash. The farmers could buy groceries at Nan'yō Kōhatsu's *shuho* (canteen) on credit. The payment was deducted from the proceeds of sugarcane paid by the Nan'yō Kōhatsu. Our residence in Nishi Hagoi was a tin-roofed duplex.

After one year and a half, we decided to move to the Tinian-machi (the town in Songsong). We rode on Nan'yō Kōhatsu's freight car free. My husband looked for a job but could not find a good one. Mr. Ishikawa was hiring farm laborers in Carolinas and my husband became a sugarcane farmer again.

With the seventh group of Carolinas, a shack at a corner of a tenant farmer's residence was given to us: My husband, a son, and I. After a while, Mr. Ōshiro, a tenant farmer of the same seventh group, employed my husband. He built a tin-roofed house on a concrete foundation for us. With his recommendation, my husband was honored with his work by the Nan'yō Kōhatsu and received three yen.

We leased two-*chō* (4.9 acres) of Mr. Iba's farm in the same group and moved in his house. On Tinian, we could not dig a well and there was no spring. Each

family hired a contractor to build a concrete water tank (4 x 4 meters). Some of the materials came from limestone which was common.

Although we hired laborers when we harvested the sugarcane, my husband and I did all the other work. After the cane was sold to the Nan'yō Kōhatsu, we received payment the next year. But we did not receive any payment from the company for the years 1943 and 1944.

Besides sugarcane farming, we cleared the dense jungle, planted, and cultivated vegetables. My husband prepared firewood, too. I went to the town pulling a carator (bull cart) with firewood and vegetables. Restaurants bought firewood, and Okinawan grocery shops bought vegetables.

In February 1944, the first air raid on Tinian took place. Because the U.S. troops landed in Shinminato beach, at the northwestern section of the island, all the Japanese military and civilians ran down to the Carolians Hill, where we lived. We escaped to a cave under a cliff but decided to return home because we knew we could be killed, and, in the meantime, all our supplies were at home. We hid in a cleavage in the rocks near our house in the daytime and returned home to prepare food at night.

The U.S. troops expanded to the Carolinas area. A man jumped off the cliff with his son who had already been suffocated by the father. I lost two daughters and son among three who were born on Tinian. My leg was wounded by a bullet. When American soldiers came and pointed a gun at our group of five, we became prisoners.

We lived in the Chulu Camp between August 3, 1944 and April, 1946. I heard Mr. Kikumoto was giving food to military stragglers who entered the camp. We produced food outside the camp. Former fishermen caught fish. Others participated in road construction and macadam works. My third son was born on December 1945 at the camp after one year and a half of capture.

In the last days of the battle in and around the Laderan Kastiyu and Laderan Carolinas escarpments, a number of Japanese troops prevented civilians from surrendering (Astroth, 2019a:3). The Tinian Northern Troops and Landing Force G-2 (Intelligence) Periodic Report no. 49, 3 August 1944, written by American officers, stated, "...several hundred civilians with white flags had been turned back by Jap soldiers as they sought to give themselves up" (Department of the Navy, 1944:1). Some Japanese troops before taking their own lives or dying in combat near Suicide Cliffs (Astroth, 2019b), forced civilians to commit suicide. One Japanese survivor who was a child on Tinian remembers his father



taking six coins from his pocket to give to his wife and children for “boat fare across the River Styx [Sanzu River]” (NHK, 2020). The cave was identified and excavated during recovery where coins and the bones of children were recorded, but not considered suitable for DNA analysis in the absence of human dentition, so the mixed remains were cremated for return to Tokyo against their wishes and inclusion in a wartime Shinto shrine.

For Okinawan, Japanese, and Korean civilian survivors even before the end of the battle during July 1944, a rudimentary stockade at the destroyed village of Churo was established in part to protect the survivors from daily bombing, shelling, combat. The captured or surrendered Japanese soldiers and Korean combatants were housed on the Ushi Field tarmac and then sent to Saipan to be interned with the survivors of that battle. In Camp Churu, Marine Combat Correspondent Irving Schlossenberg wrote “most of the women [on Tinian] had babies strapped on their backs” (Astroth, 2019b, 156). Diarrhea, dysentery, and malnutrition took the lives of many occupants young and old in the first months of interment before triage units and field hospitals could be set up in the camps and necessities like soap, medicines, and fresh water could be distributed daily. By the eventual repatriation to their homelands in July 1946, children were being schooled and many parents had low paid employment doing camp duties and selling hand-made arts and crafts to the American soldiers before returning stateside. For these civilian survivors, memories of the stockades even as children never left them (Tenorio, in Dixon, et al., 2019).

### **Archaeological Sites of Laderan Kastiyu**

The archaeological project area on which this study is based consisted of public land on the Carolinas Heights plateau, just north of the Puntan Kastiyu promontory (Figure 1). This general area was reported to contain several types of sites, including prehistoric habitations and caves, pre-war farmsteads and water cisterns, and fortifications from the WWII period in 1944, some of which might contain human remains.

The survey area is adjacent to a tract including Puntan Kastiyu that was surveyed in 2010 (O'Day and Vernon, 2011) and found to contain several significant sites. The 2017 project included intensive pedestrian survey of previously unsurveyed land and judgmental survey of additional areas when they could be accessed safely. Judgmental survey was used to investigate the previously mapped Liyang Mohlang Cave, as well as the steep slopes and cliffs overlooking the coast. The southern portion of the project area had been previously surveyed by O'Day and Vernon (2014). This survey and the previous one nearby were scheduled to provide information for future Chamorro homestead management and land use planning by CNMI agencies.

A total of 15 archaeological sites were recorded in 2017 in the survey area, situated at the northern edge of the Carolinas and Kastiyu plateau. Eleven of the recorded sites were determined to be WWII-era civilian and military refuge features within steep karst limestone formations, some fortified by Japanese military for prolonged defense and others perhaps just visited by civilians briefly for fortuitous use of natural shelters, as ethnohistoric information cited above indicates. Many showed signs of combat and are assumed to have been used briefly during the battle for Tinian in July of 1944. Two sites were determined to be likely pre-WWII Okinawan and rural Japanese farmsteads, one with a complex of cisterns and concrete pads, and the other with stone-lined garden plots. One other pre-war site consisting of an isolated concrete cistern had sustained considerable damage during WWII. A large cave on top of the plateau was also visited and the mixed remains of civilian and military wartime refuge and tragedy recorded. Of these sites, one pre-war cistern impacted by combat, three civilian refuges and military defenses, and the large refuge cave are revisited here.

### **Site T-CHT-11 Okinawan Civilian Cistern**

Site T-CHT-11 consists of a partially intact water catchment cistern with a single collapsed side, showing obvious damage from WWII-era fighting (Figure 4). The cistern walls are poured concrete slabs, which are now heavily cracked, and extend above ground surface. The southern

wall is entirely intact and is met by a raised concrete pad that may have served as a step to access the cistern. The eastern wall is partially collapsed and is clogged with rubble and vegetation but appears to contain some water.

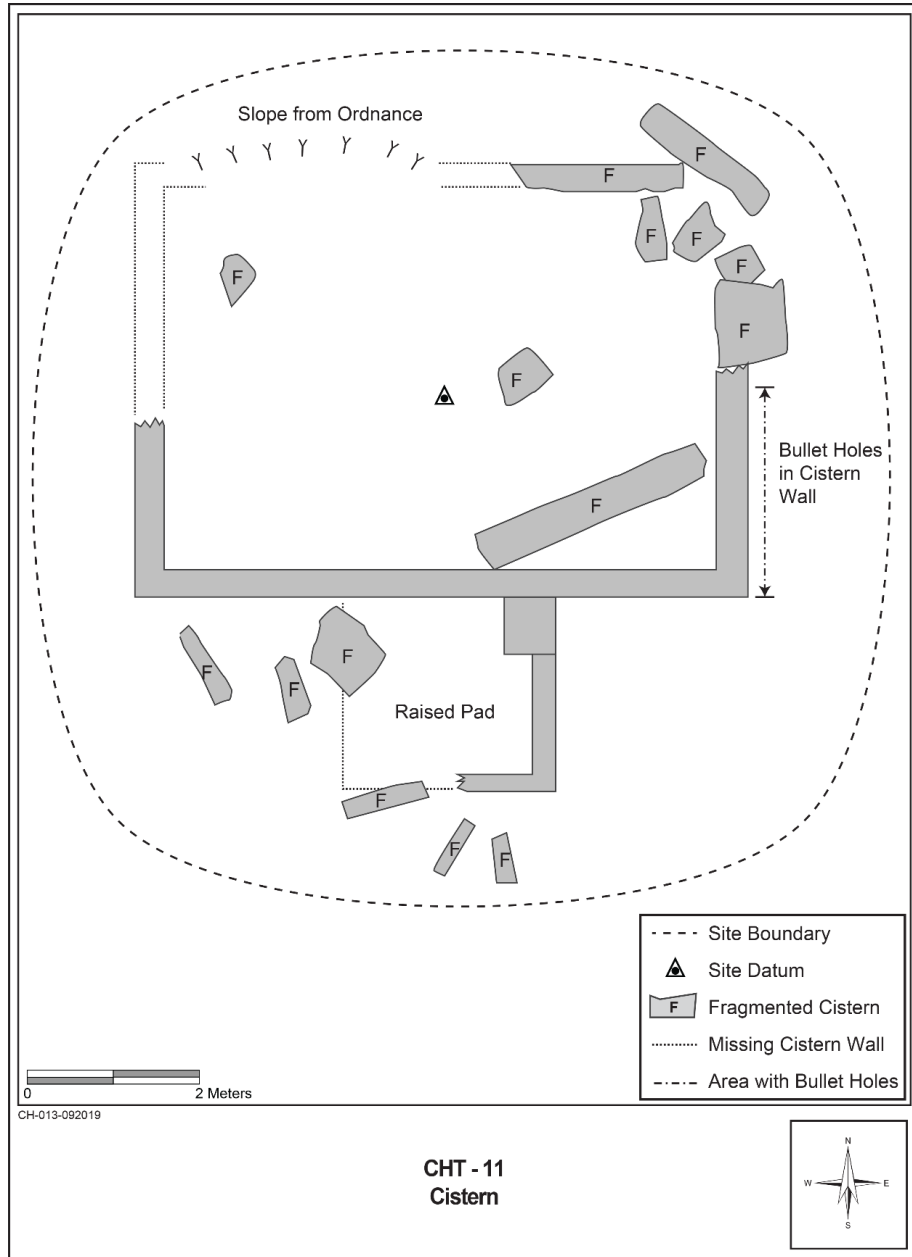


Figure 4. Okinawan cistern map. Site CHT-11. (Source: Dixon et al. 2019.)



*Figure 5: Okinawan cistern with bullet holes and concussion spalls. Site CHT-11. (Source: Dixon et al. 2019.)*

Much of the northern and western walls have collapsed into the cistern, and a sloping of the ground surface in the northwest corner of the cistern may indicate a hit by a large artillery round. The area nearby has several large concrete fragments, probably distributed by explosive impact. The exterior of the cistern, especially along the intact portion of the eastern wall, shows extensive bullet impacts and concussion spalls consistent with small arms fire (Figure 5). Nearby depressions in the ground surface may indicate WWII-era impact craters.

### **Site T-CHT-3 Japanese Military Fortified Refuge**

Site T-CHT-3 consists of several small fortifications in a network of interconnected limestone fissures and small caves. However, it is possible that these fissures connect with other adjacent defensive positions. The site is located in an area of thick vegetation typical of secondary limestone forests and the ground surface adjacent to the fissures is dominated by pandanus.

The site consists of three small and fortified niches, two open areas, and at least three narrow caves (Figure 6). The site is located where the plateau is heavily faulted, forming a series of natural interconnected limestone fissures. The defensive positions and artifact scatters occupy one such deep crevasse, where narrow passages have been fortified by makeshift walls that would have allowed them to be defended by Japanese troops from USMC and Army infantry while sheltered from aerial bombardment.

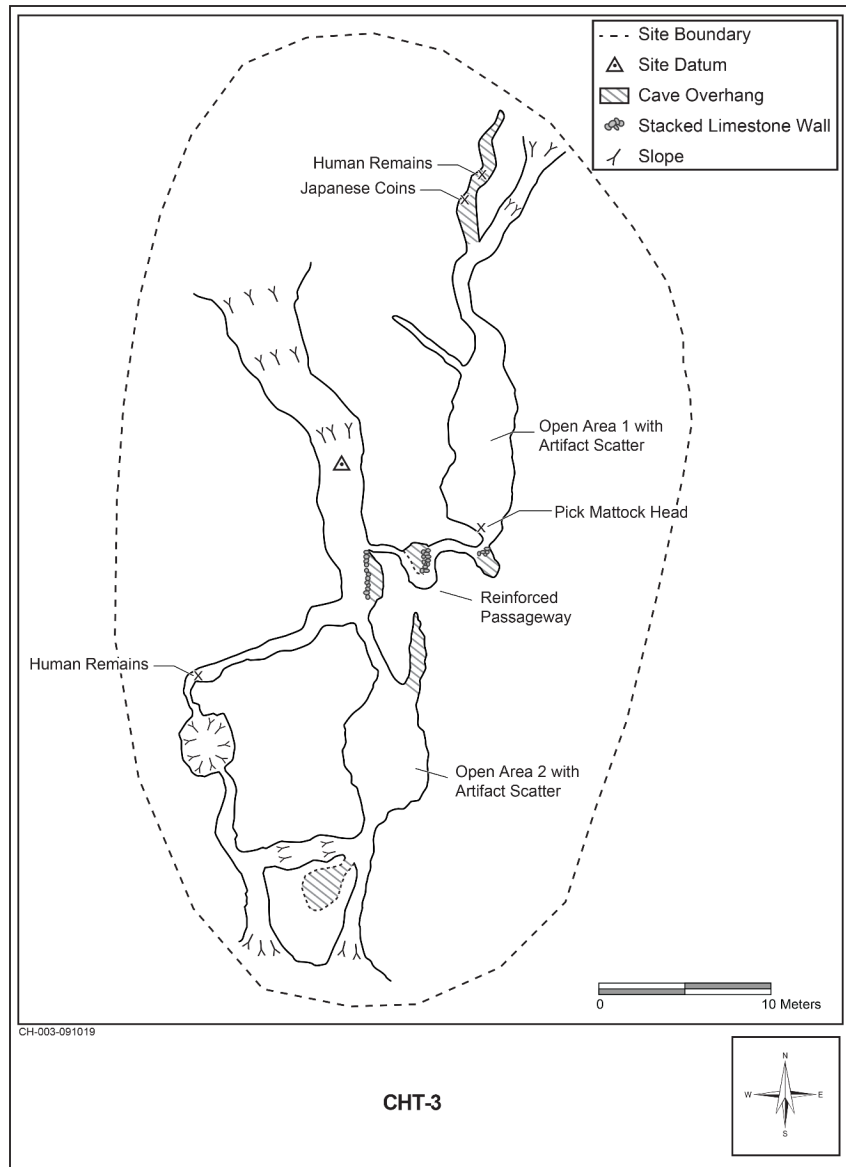


Figure 6. Japanese military fortified refuge. Site CHT-3. (Source: Dixon et al., 2019.)



*Figure 7.* Japanese military artifacts, bottles, rice cooker, ceramic lid, metal tray. Site CHT-3. (Source: Dixon et al., 2019.)

The primary cluster of defensive positions is located at a juncture between three narrow fissures in the bedrock, each of which connects to an open area. The site is accessible from the north via a gently sloping and narrowing fissure. The fortifications consist of low walls built of dry-stacked limestone cobbles and boulders, located at the mouths of shallow niches. All three would have served to provide cover for a one- or two-man fire-team. The open areas adjacent to these fortifications contain scatters of brown glass beer bottles, blue sake bottles, damaged enamelware and metal cooking pots, and miscellaneous metal fragments (Figure 7). A single human long bone was encountered on the surface in one of these narrow fissures, and another human bone fragment was encountered in a narrow cave at the north end of the site.

The cave also contained unfired rifle rounds, probably Arisaka rifle or carbine rounds, some still in their stripper clip, and several small Japanese coins. These coins had been rested on ledges in the narrow cave; they are badly weathered but may be Japanese 10-sen coins (Figure 8). A single pick mattock head was found resting on a ledge near one of the defensive positions, but the site seems to have been located to take advantage of natural features and manual modification of the area was minimal.



*Figure 8.* Japanese 10-Sen coins Site CHT-3. (Source: Dixon et al., 2019.)

### **Site T-CHT-6 Japanese Military Defense and Okinawan Civilian Refuge**

Site T-CHT-6 is a WWII defensive position with a possible civilian component, that consists of several stacked stone defensive features situated in a natural limestone fissure (Figure 9). The site is located in an area of relatively dense pandanus, though the fissure itself is fairly clear

of vegetation. The site is situated west of the cliff line where the plateau begins to form large north to south oriented fissures, probably due to block faulting. The site occupies one such fissure, which is only accessible from the south end.

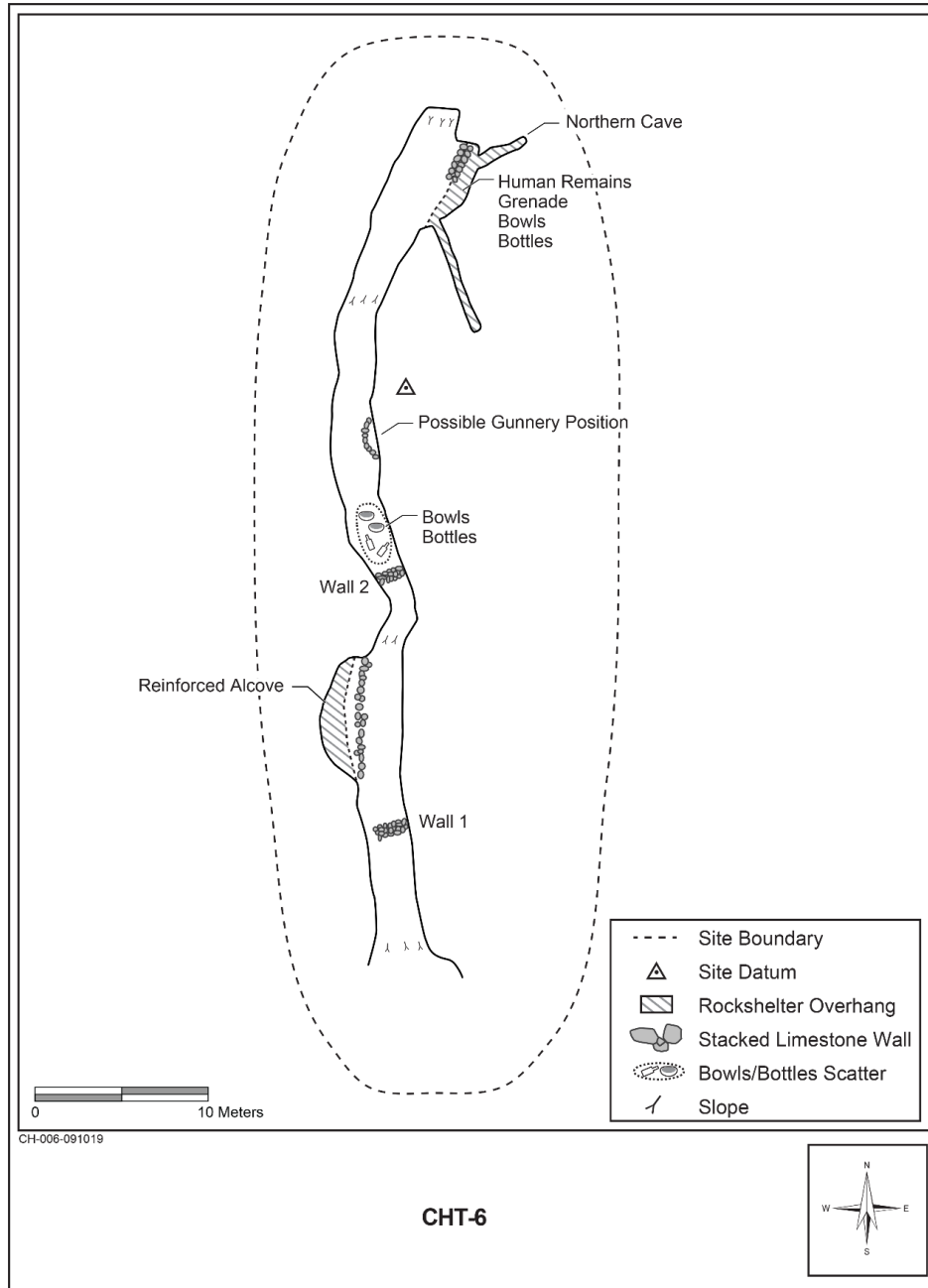


Figure 9. Japanese military and Okinawan civilian refuge map. Site CHT-6. (Source: Dixon et al., 2019.)



The site consists of three stacked rock walls built across the narrow fissure, as well as two partially walled off rock shelters or caves and a diffuse scatter of WWII-era bottles, domestic cookware and military hardware. The southernmost wall is built across the fissure, leaving a narrow opening on the western side that would have allowed passage of a single individual. This wall is collapsed and badly damaged. Just north of Wall 1, on the western face of the fissure, is a deep natural alcove that has been enforced with a limestone wall. North of Wall 1 is a second low wall which is also collapsed. This wall appears to have been built entirely across the fissure and lacks an opening for foot traffic. Farther north along the fissure, a small semicircular wall is located against the eastern face of the fissure that forms a gunnery position or shelter.

Artifacts at the site include brown, clear, and green glass bottles; metal and enamelware cooking pots (Figure 10); porcelain and stoneware bowl fragments; fragments of artillery shells; and grenades (Figure 11). In the northernmost cave, a single human vertebra was recorded. The majority of the artifacts are found in a central scatter, though the cave at the northern end of the site also contains a collection of artifacts including the grenade, and a single eroded possible 10-sen Japanese coin.

### **Site T-CHT-7 Japanese Military Defense and Okinawan Civilian Refuge**

Site T-CHT-7 is a WWII defensive redoubt located in a series of limestone caves. The site consists of multiple narrow chambers spread along a deep fissure in the local bedrock. The caves open to the uneven base of the fissure, which is accessible only via a few points along the edge, or by climbing down the steep sides of the fissure. There are four chambers, each with an associated artifacts scatter (Figure 12); however, it is possible that these fissures connect with other adjacent defensive positions.



*Figure 10.* Okinawan civilian artifacts. Enamel bowls, rice cooker, bottles. Site CHT-6. (Source: Dixon et al., 2019.)



*Figure 11.* Japanese military and Okinawan civilian artifacts. Type 97 hand grenade, Arisaka rounds, rice cooker, ceramic and enamel bowls. Site CHT-6. (Source: Dixon et al., 2019.)

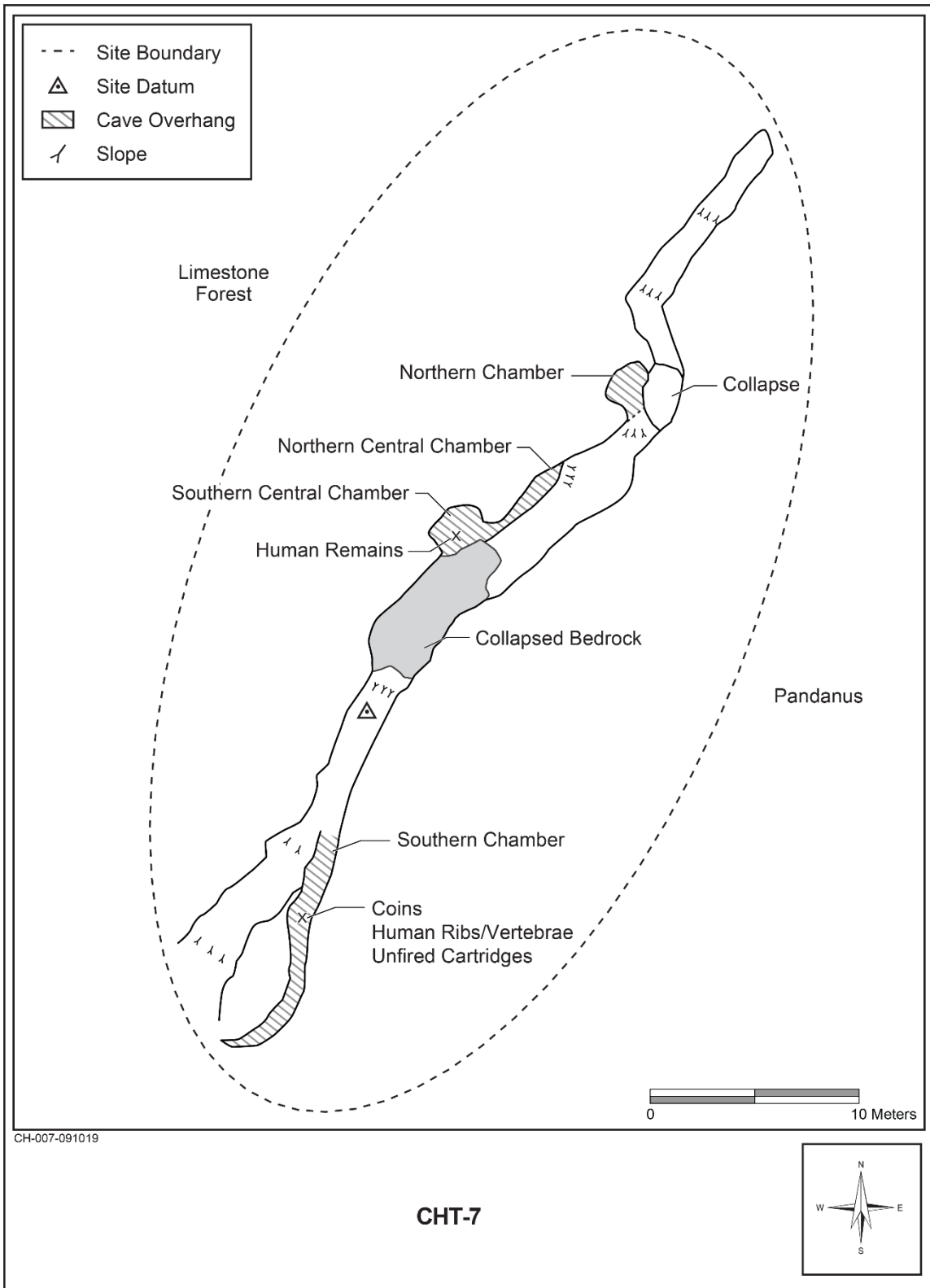


Figure 12. Japanese military and Okinawan civilian refuge map. Site CHT-7. (Source: Dixon et al. 2019.)

The site consists of four unfortified caves, all of them narrow and difficult to access. The site is located where the plateau is heavily faulted forming a series of natural crevasses and caves. The caves are only accessible via a steep sloped fissure, and none are reinforced. However, the depth and narrowness of the caves would have allowed them to serve as effective shelters from aerial bombardment. The northernmost cave is accessible from a pile of collapsed limestone that partially blocks the entrance or from a central portion of the fissure, which can be accessed via a steep climb. It is relatively narrow and contains an artifact scatter including a leather boot and porcelain bowl fragments.

The north-central cave is accessible via the central portion of the fissure after a steep climb. It contains a scatter of pig bones that appears to have been butchered, as well as Dainippon beer bottles, porcelain plate and bowl fragments, and miscellaneous metal fragments, including a belt buckle. Like the northern cave, it is narrow and deep, with difficult access and minimal field of fire, making it more appropriate as a shelter or hiding place than a defensive position. The south-central cave is accessible from the central portion of the fissure or the north-central cave. It contains an artifact scatter including a tea pot, sake bottle, and cooking vessels. It also contains a likely human long bone and several other possible human bones, including a rib.



*Figure 13.* Japanese military and Okinawan civilian artifacts. Arisaka rounds, leather boot, crockery, porcelain teacup, sledge hammer head. Site CHT-7. (Source: Dixon et al., 2019.)

The southernmost cave can be accessed via a steep slope from the south or via the central collapsed bedrock section. It contains a scatter including leather boot soles, a sledgehammer head, porcelain fragments (Figure 13), an unspent Japanese hand grenade, and heavily weathered unfired Arisaka rounds. Two fired American .50 caliber bullets were noted in the cave, likely from aerial strafing or personal combat -- these bullets contained deformations consistent with ricocheting. Possible human remains, including a rib, were noted in deep crevasses within the cave.

### Liyang Mohlang Cave

Liyang Mohlang (a placename of Chamorro origin) is a cave that was used as a civilian and military refuge during the war. The site consists of a large, multi-chamber flank-margin cave in the limestone. The cave was mapped by Stafford and Taborosi in 2002 (Stafford, et al., 2004) with a number of smaller sub-chambers (Figure 14).

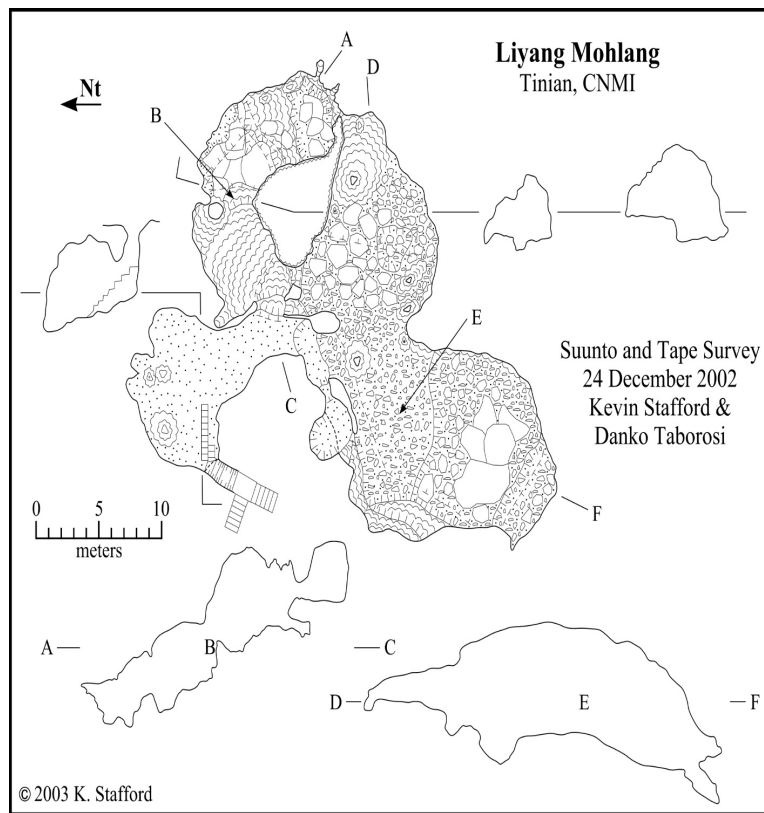


Figure 14. Liyang Mohlang Survey Map. (Source: Stafford, et al., 2004.)

The site includes a small shrine and improved vehicle access points, occupies a clearing covered in tall grasses. Access to the cave is limited and steep, but the cave itself could shelter dozens of people and would have served as a primary refuge for people in the area.

The cave is accessed via two separate surface entrances which lead down at steep angles into the cave. The primary entrance has been improved by the construction of a set of cinderblock stairs that lead from the surface down to the primary chamber. A rope has been installed to run along the stairs to aid access, and the area outside the entrance has a set of stairs and railings leading to the cave. The cave contains an extensive collection of artifacts, all of which are heavily weathered. Metal buckles and swivels, bolts, nails, gas mask components and miscellaneous metal fragments were common throughout the cave. A single deformed and punctured metal canteen was observed as well. A damaged carabao cart and hitch (Figure 15) occupy the central chamber, and several wheel rims were observed. Knife-opened food tins, rusted mess kits, pipe fragments and some fragmented metal pots were also recorded.



*Figure 15.* Okinawan civilian artifacts. Partial carabao cart and hitch. Liyang Mohlang. (Source: Dixon et al. 2019.)

Glass objects include Dainippon brown glass beer bottles and blue glass sake bottles, some of which are heat-deformed. A glass bottle stopper was noted, along with extensive glass fragments. Shoe soles, both civilian and military, were common in the cave. Other domestic objects included toothbrushes, belt buckles, and porcelain bowl fragments. Some of the cave walls show signs of drawings, probably in charcoal, which are difficult to discern but may pre-date the use of the cave during WWII. These drawings are indistinct and may also represent post-war graffiti. There are signs (including modern beer and other beverage bottles) that the cave is still visited and used periodically.

The area directly around the cave on the surface contains several fragmented porcelain bowls, some metal cookware fragments, and other miscellaneous metal. A small shrine with giant clam shells and beer bottles has been constructed with concrete just northeast of the cave entrance and is mostly overgrown with vegetation. Several likely human skeletal elements were observed in the cave, though these are generally smaller elements found in cracks. At least one dozen human teeth were observed, some of which have been shattered. Evidence of incendiary weapons, including heat deformation and sooting, was observed in the assemblage, along with concussion deformation of metal objects.

### **Description of the Laderan Kastiyu Battlefront**

The design and construction of WWII battlefronts of the northern Marianas Islands appear to have involved a considerable amount of effort and forethought by the military. Months of consideration and preparation for the most opportune fields-of-fire overlooking expected American beach landings were obvious on invasion day, as were well-built concrete headquarters and fortified strongholds inland. This pattern appears to have been conceived in terms of engagement evolving from a “defense-at-the-waters-edge” tactic used unsuccessfully in Tarawa and Peleliu toward a “defense-in-depth” posture eventually used more effectively in Iwo Jima and Okinawa (Dixon, et al. 2018).

Comparatively little consideration and preparation of ample refuges and fortified defenses for the large civilian population is evident, although prevailing Japanese military thought in early 1944 was that the

American invasion would not occur until November (Farrell 2018). Such “karst defenses,” as defined archaeologically and by local knowledge on Saipan (Mushynsky 2021:70), included formal man-made tunnel complexes and caves modified for long-term occupancy. In addition, larger natural caves that could accommodate relatively organized groups of people were put into service. On the other end of the scale was the more expedient construction and minimal modification of limestone bedrock outcrops. These were used by smaller groups for shorter periods of time, such as recorded at Laderan Kastiyu and the Carolinas escarpment on Tinian.

During the last days of the Battle for Tinian in July of 1944, elements of the 2<sup>nd</sup> Marines pursued Japanese defenders along the east coast of the island and up onto the Carolinas Plateau, eventually positioning themselves above Suicide Cliffs and its caves where fighting was intense and military surrenders were few. Sites recorded by O’Day and Vernon (2014) to the south of the current project area included both American foxholes on the plateau for nightly advances, and fortified Japanese rock shelters and caves on the steep and rocky slopes below. Wartime photographs show American Howitzers tethered on the cliffs above to fire down upon defenders in their caves.

The defensive positions encountered during the 2017 survey could have been created by Japanese infantrymen without heavy machinery or engineers; walls were generally dry-stacked and made from locally available irregular cobbles. No evidence of blasting, shaping, or enlarging of existing cave systems was noted at the defensive sites; a single pick mattock head at site T-CHT-03 provides evidence of hand-tool use, but otherwise the defensive positions all made expedient use of local landforms and raw materials consistent with unplanned or quickly created defensive positions. Many of these, especially on the top of the plateau, may have been created on July 30<sup>th</sup> or 31<sup>st</sup>, 1944, when Admiral Kakuta and Colonel Ogata both fell back to the southern redoubt near Marpo Point and the Carolinas Plateau. The area was described in an account of the battle:

The terrain occupied by the Japanese main force was rugged, difficult to reach or traverse and well-suited for defense. Outside of Tinian Town the gentle landscape ended, with the ground rising to a high plateau 5,000 yards



long and 2,000 yards wide, with altitudes higher than 500 feet. The plateau was rocky and covered with thick brush. There were many caves. Along the east coast, the cliff walls rose steeply and appeared impossible to scale. The approaches to the plateau were blocked by many cliffs of this sort as well as by jungle growth. A road in the center of the plateau, leading to its top, was reported by a prisoner to be mined. The plateau was the enemy's last redoubt (Harwood, 2015).

The following day, Marine forces reached the top of the plateau and began the final push towards the cliffs (Figure 3). Resistance was intermittent on the plateau itself, but the large number of cliff line caves and ravines continued to shelter Japanese soldiers well after the island was declared secure on August 1<sup>st</sup>, 1944. Groups of civilians fleeing the caves were encountered by U.S. soldiers and taken to safety. Groups of Japanese soldiers continued to stage small group assaults for several days, and “mop up” operations in the area of the cliff lines were particularly dangerous. Many Japanese soldiers remained hidden in caves, waiting to attack when U.S. Marines came to investigate. There were also reports of Japanese soldiers forcing civilians into groups before killing them with explosives, and both civilians and soldiers took their own lives at Suicide Cliffs. Before the end of 1944, 542 Japanese soldiers were killed and 400 captured in the area; 38 Marines were killed during the mop up efforts (Rottman, 2004).

### **Archaeological Remains of the Laderan Kastiyu Battlefield**

WWII battlefronts of the northern Marianas Islands appear to reflect far less forethought and preparation for the impending typhoon of the American invasion in June of 1944 than might be expected. Little evidence has been recorded archaeologically for the stockpiling of military or civilian foods and medical supplies, or of construction tools and materials for sustained use. What is found in the archaeological record of the Laderan Kastiyu survey area are the remains of the last desperate days of hand-to-mouth survival for both Japanese military and civilians, often clustered uncomfortably together with rapidly dwindling resources. These objects included well-worn footwear, personal effects such as toothbrushes and coins, the occasional butchered pig, rice cookers and enamel bowls, a few ceramic bowls or cups, and beer or

sake bottles. Also present were military hand grenades, canteens or mess kits, and - at most - a few clips of Arisaka rounds for machine guns or rifles.

Japanese defenses recorded there included fortified gunnery positions, fortified fissures, and caves and rock shelters. The three refuge sites and one cave chosen for this study contain a mixture of military and civilian material culture. This pattern likely reflects the firsthand accounts of Okinawan survivors of the battle, in which they discuss families taking refuge in the caves along the eastern edge of the plateau, only to have their hiding places co-opted by Japanese soldiers during the final defense of the island. Sites such as T-CHT-03 and T-CHT-06 contain clearly defensive structures, but also contain domestic cookware and other artifacts (such as coins and civilian shoes) that may indicate civilian use of the position.

Some amount of domestic cookware can be attributed to items taken by soldiers during the retreat or left by civilians and later used by soldiers. Sake and beer bottles, which were ubiquitous in the project area, may have been repurposed by soldiers to carry water, given the scarcity of fresh water. U.S. soldiers reportedly engaged in water-denying tactics in the area, and access to water would have been an important factor during the final days. Evidence of such tactics, in the form of canteens with bullet and bayonet holes as well as destroyed water drums, was noted during the survey. Use of civilian containers may have been a response to the water situation during the battle, resulting in civilian glassware on military sites.

Items of clothing, shoes, and collections of diverse cookware are less easy to attribute to military scavenging and were likely brought to the sites by civilians fleeing the bombing campaign. In particular, the assemblages at Liyang Mohlang show strong indicators of civilian use and were likely the location of civilian refuges prior to use by the Japanese military. Discriminating mixed-use sites from purely military or purely civilian sites is important to reconstructing the military landscape and to understanding the experience of civilians fleeing the battle. It may also have implications for the post-war reburial or more recent removal

of human remains found at such sites (Mike Dega and Richard Schaefer personal communication, 2021).

The nature of the defensive sites recorded during this survey reflect the accounts of U.S. Marines who were charged with clearing the area during the last days of the battle. Small, concealed defenses holding only a few men were reported throughout the cliff line area. Many of the sites recorded here showed signs of having been subject to both heavy ordnance and small arms fire; collapsed walls and concussion deformations on metal artifacts were common at defensive sites. Likewise, the nature of close clearing operations is attested to by fire-blackened caves and melted glass at several other sites; flamethrowers were often employed to clear tight defenses with devastating effect.

Civilian accounts are relatively rare, but the large quantities of civilian domestic wares encountered at some refuge sites reflect the historic record, which describes thousands of civilians taking refuge in the caves as seen in rare color footage of their surrender at the end of the battle (Astroth, 2020). More than 75 years later, the material culture of the battle, and those that were swept up in it, is still readily visible in the network of caves and redoubts that cover the eastern cliff lines of the Carolinas Plateau.

### **Interpretations**

Access to Japanese and American first-hand accounts of actual events, has helped clarify some of the relationships between the participants and their built surroundings. Initially, military defenders may have used concrete water cisterns such as site T-CHT-11 to delay the first American probing of the Japanese battle line after the civilian occupants had fled (Figure 3). The next line of defense was hastily built by the soldiers upon their exhausted arrival and appeared to have been constructed for only one or two defenders, lightly armed with a rifle or hand grenades. These insubstantial redoubts such as site T-CHT 3 consisted of a low wall to kneel behind, situated where unsuspecting invaders might be funneling one-by-one through a narrow gap between razor-sharp karst outcrops to their demise. Or if they got that far, invaders might then crawl through a darkened crevasse into a constructed field-of-fire between two walls, with nothing but the sound

and smell of the occupants inside to guide them into a dead-end, such as site T-CHT-6. This defensive posture may have been effective as a stalling tactic but would hardly have halted the advance of an enemy who could counter with evasive tactics and call in a flame thrower, bazooka, or satchel charge to seal the entrances.

A focus on artifacts recovered at Laderan Kastiyu quickly reveals a difference in quantity and variety of potential food preparation and serving items relative to non-military times; perhaps reflecting the group size and length of time to prepare before combatants arrived. Mushynsky (2021, 113) reflects that in the large Liyang Mohlang cave, in the flickering light, the defenders and invaders might have encountered, “surprisingly, (that) civilians brought practical ceramic vessels to the caves, such as teacups and rice bowls that could be used for both food and drink as well as various sizes of plates and pickle dishes. Considering that a traditional Japanese meal was centered around a personal bowl of miso soup and/or rice with other items served on communal plates, it appears that these civilians tried to hold on to some semblance of home life.”

To contrast, in the minimally prepared crevasses such as sites T-CHT-3, 6, and 7, few Japanese military canteens and mess kits were encountered that would suggest that the infantry arrived equipped for anything but self-survival. Perhaps some had cooking gear and bottles of beer or sake taken from the farmsteads above or from terrified civilians who had called this cramped shelter home for their last few hours or days. The presence of combat boot heels, Arisaka rounds, and hand grenades suggests that the civilians had little choice but to give up what they had brought with them to the soldiers. And of course, the terror and desperation in the eyes of the young soldiers would have elicited a humane response from many rural countrymen. The presence of scorched walls in other crevasses implies that many took their last breaths together when the Americans arrived with flame-throwers.

The obvious lack of Japanese military preparation of troops and civilians for the horrors of WWII combat, self-defense, and surrender after a prolonged defense, should not be surprising. The effective use of American submarines and Naval air patrols had all but brought Japanese

supplies for the islands to a standstill by early 1944 (Lotz, 2018). Japanese and immigrant labor from Korea and Okinawa were forced to work on military construction projects day and night. The influx of Japanese troops also brought housing pressures to the island as soldiers were billeted in civilian homes. Schools were closed and used to house new troops, while students were put to work (Russell, 1995). The situation may have varied in Laderan Kastiyu and the Carolinas plateau more distant from preparations for the American invasion in the northern beaches, but the distance from Tinian Town likely meant less access to remaining food and supplies. The use of napalm in sugarcane fields and rural farmsteads would have only heightened the terror of having endured the prolonged intensive bombing delivered by sea, air, and land from Saipan.

**We do not remember days, we remember moments.**

**-Cesare Pavese, 1935-1950**

## Acknowledgements

The senior author owes a debt of gratitude to many people. In the Northern Mariana Islands, I have been able to ask for knowledge from Scott Russell of the NMI Humanities Council, Rita Chong and Jim Pruitt of the CNMI Historic Preservation Division, and for wisdom on all things Tinian from Don Farrell and the late Carmen Sanchez. On Guam, archaeologist Lon Bulgrin of NAVFACMAR and the staff of the Micronesian Area Research Center at the University of Guam, including Mike Carson, Carlos Madrid, and emeritus director Hiro Kurashina, all tolerated my questions. Alexander Astroth generously provided books, videos, and personal documents from his extensive research into the last days of the battle for Tinian. Mike Dega and Rick Schaefer similarly shared both documentation and harrowing stories of their work in the Carolinas plateau, as did Julie Mushynsky from Saipan. Pat O'Day and Cacilie Craft spent the better part of a day showing me around their portion of Laderan Kastiyu. Alexandra Garrigue and Akiko Mori shared their knowledge of Okinawan oral histories and Japanese literature on the historical period in the islands. Maria Kottermair produced the excellent map of Tinian and John Scott shared military maps from his archives. Brenda Tenorio provided interviews with five manamko on Saipan who had undergone similar trauma as children. And of course, Dave Tuggle and Wakako Higuchi have shared my passion for Tinian for over two decades. Robert Jones and Danny Welch conducted two weeks of arduous survey while Isla Nelson transformed the results into an exceptional report with the help of Travis Gahm, Edie Mertz, and the faith of Terry Rudolph in this project. The senior author would also like to thank Mary Spencer with her professional staff and reviewers at Pacific Asia Inquiry who were most helpful and supportive during a difficult time on Guam.

## References

- Astroth, A. (2019a). *Japanese civilian suicides in the Marianas, Manchukuo, and Karafuto and Okinawa Prefectures, 1944–1945*. Manuscript in possession of the author.
- Astroth, A. (2019b). *Mass suicides on Saipan and Tinian, 1944: An examination of the civilian deaths in historical context*. Jefferson, NC: McFarland & Company Inc., Publishers.
- Astroth, A. (2020). *Marianas peoples: The battles of Saipan & Tinian (film)*. Northern Marianas Humanities Council, Saipan, CNMI. [https://drive.google.com/file/d/1Ctifu67e5oEoF6\\_CRIpob3uKZpD\\_E\\_eI6/view?usp=sharing](https://drive.google.com/file/d/1Ctifu67e5oEoF6_CRIpob3uKZpD_E_eI6/view?usp=sharing).

- Bodner, C. (1997). *Intensive archaeological survey and testing of the MPLC Carolinas Homesteads Subdivision, Tinian, Commonwealth of the Northern Mariana Islands*. Prepared for Marianas Public Land Corporation, Saipan, CNMI. Honolulu: International Archaeological Research Institute, Inc.
- Carson, M. (2018). *Archaeology of Pacific Oceania: Inhabiting a sea of islands*. London: Routledge, Taylor & Francis Group.
- Department of the Navy. (1944). *Northern troops and landing force operations report, phase III (Tinian). 12 August 1944*. Office of the Chief of Naval Operations; Office of Naval Records and Library. Northern Troops and Landing Force, Headquarters, in the Field. College Park, Maryland: Record Group 38: Records of the Office of the Chief of Naval Operations, National Archives.
- Dixon, B. (2004). Archaeological patterns of rural settlement and class on a pre-WWII Japanese plantation, Tinian, Commonwealth of the Northern Mariana Islands. *International Journal of Historical Archaeology*, 8(9), 281-299.
- Dixon, B. (2015). Okinawa as transported landscape: Understanding Japanese archaeological remains on Tinian using Ryukyu ethnohistory and ethnography. *Asian Perspectives*, 54(2), 174-204.
- Dixon, B. (2020). Reflecting on archaeological evidence of Japanese sugarcane plantation laborers in the Northern Mariana Islands of Micronesia. *People and Cultures of Oceania*, 36, 39-56.
- Dixon, B., Garrigue, A., & Jones, R. (2020). Archaeological examination of Japanese photographs and archival data from the Pre-WWII Okinawan diaspora: Tinian, Commonwealth of the Northern Mariana Islands. In K. Ozawa & D. Ross (eds.), *Japanese diaspora archaeology*, *International Journal of Historical Archaeology*. <https://doi.org/10.1007/s10761-020-00565-5>.

Dixon, B., Lash, E., & Schaefer, R. (2018). Pagan: The archaeology of a WWII battle never fought in the Northern Mariana Islands. *Journal of Conflict Archaeology*.

<https://doi.org/10.1080/15740773.2018.1533667>.

Dixon, B., Jones, R., Welch, D., & Nelson, I. (2019). *Final report: archaeological survey of 50 hectares in the Carolinas Heights Region, Tinian, Commonwealth of the Northern Mariana Islands*. Boise, Idaho and Guam: Cardno GS.

Dixon, B., Tenorio, B., Walth, C., & Mowrer, K. (2019). *Yellow Beach 2 after 75 Years: The archaeology of a WWII invasion beach on Saipan and historic context in the Commonwealth of the Northern Mariana Islands*. Oxford: ArchaeoPress Access Archaeology.

Dixon, B., & Welch, D. (2002). Archaeological survey of the West Tinian Airport Improvement Area, Commonwealth of the Northern Mariana Islands. Honolulu: IARII.

Farrell, D. (2011). *History of the Mariana Islands to partition*. Commonwealth of the Northern Mariana Islands, Saipan: Public School System.

Farrell, D. (2012). *Tinian, a brief history*. Honolulu: Pacific Historic Parks.

Farrell, D. (2018). *Tinian and the bomb: Project Alberta and Operation Centerboard*. Saipan: Marianas Publications.

Farrell, D. (2021). *Camp Chulu: The Tinian Refugee Internment Camp*. University of Guam, Mangilao, Guam: Paper delivered at the 5<sup>th</sup> Annual Marianas History Conference.

Fritz, G. (1989). *The Chamorro: A history and ethnography of the Marianas*. Saipan, CNMI: Division of Historic Preservation.



- Griffin, A.E., Carson, M., Peterson, J., Steffy, R., & Kerr, A. (2010). *A Study of potential traditional cultural properties in Tinian*. Mangilao, Guam: Micronesian Area Research Center, University of Guam, for the Department of the Navy, Naval Facilities Engineering Command Pacific, Pearl Harbor, HI.
- Griffin, A., McCurdy, T., Dixon, B., & Jones, R. (March, 2015). *Final identification and evaluation of traditional cultural properties on the Island of Tinian, Commonwealth of the Northern Mariana Islands*. Prepared for Department of the Navy, Naval Facilities Engineering Command Pacific, Joint Base Pearl Harbor and Hickam.
- Harwood, R. (2015). *Close encounter: The Marine landing on Tinian*. In: *Marines in World War II, commemorative series*. Washington, DC: Marine Corps Historical Center.
- Higuchi, W. (1998). Appendix. In Moore, D. R., Hunter-Anderson, R.L., Wells, E. F., and Amesbury, J. R.: *Archaeological and historical research at the Tinian Power Plant site, San Jose Village, Tinian Island, Commonwealth of the Northern Mariana Islands*. Mangilao, Guam: Telesource, Inc., Micronesian Archaeological Research Services.
- Higuchi, W. (2012). *Nan'yō Kōhatsu in the Marianas: The sugar industry during the Japanese Administration*. Saipan, CNMI: Paper presented at the 1st Annual Marianas History Conference.
- Higuchi, W. (2015). Interview with Tamayama Kensuke and Asato Uto. In Griffin, A., McCurdy, T., Dixon, B., & Jones, R. *Identification and evaluation of traditional cultural properties on the Island of Tinian, Commonwealth of the Northern Mariana Islands*. Appendix B. Oral Interviews. Guam: Cardno GS.
- Lotz, D. (2018). *Patrol Area 14 US Navy World War II submarine patrols to the Mariana Islands*. San Bernardino, CA: Xlibrus.

- Mushynsky, J. (2021). *The archaeology, history and heritage of WWII karst defenses in the Pacific cultures of conflict*. Springer, Switzerland: Contributions to Global Historical Archaeology.
- O'Day, P. & Vernon, N., with Garcia and Associates. (November, 2011). *Historic resources of the Carolinas Heights Region, Island of Tinian, Commonwealth of the Northern Marianas*. Saipan. CNMI: Commonwealth of the Northern Mariana Islands Historic Preservation Office.
- O'Day, P. & Vernon, N. (2014). The archaeology of landscape transformation in colonization and conflict: Historic Japanese cultural resources of the Carolinas Heights Region of Tinian Island, Commonwealth of the Northern Marianas Islands. In *Pan-Japan, The International Journal of the Japanese Diaspora*, 11(1-2, Spring/Fall), pp. 1-20.
- Okinawa Culture Development Association, Archival Management Historical Materials Edition Office. (2002). *Okinawa Prefecture History, Historical Materials, 15 (1 or 2 volumes), Photographic Records related to the Former Nanyo Archipelago (Vol. 1), Contemporary Period 4*, 315 pp. Naha: Okinawa Prefecture Board of Education.
- Ono, K. & Ando, T. (2007). A study of urban morphology of Japanese colonial towns, in Nan'yo Gunto, Part 3: Origins of the model Japanese sugar plantation town in Taiwan. *Journal of Architecture, Planning and Environmental Engineering*, 612, 177-184. Okinawa: University of the Ryukyus.
- Ono, K., Lea, J., & Ando, T. (2002). A study of urban morphology of Japanese colonial towns, in Nan'yo Gunto. Part 1: Garapan, Tinian, and Chalan Kanoa in Northern Marianas. *Journal of Architecture, Planning and Environmental Engineering*, 566, 333-339. Okinawa: University of the Ryukyus.

- Pavese, C. (2009). *This business of living: Diaries 1935-1950*. London: Routledge, Taylor & Francis Group.
- NHK World Japan. (2020). *War victims die twice*. <https://www3.nhk.or.jp/nhkworld/en/ondemand/video/3016094/>.
- Mori, A. (2019). A history of the excluded: Rethinking the sugar industry in the Northern Mariana Islands under Japanese rule. *Historische Anthropologie: Kultur-Gesellschaft-Alltag*, 27 (3).
- Peattie, M. (1988). *Nanyo: The rise and fall of the Japanese in Micronesia, 1885-1945*. Honolulu: University of Hawai'i Press.
- Rottman, G. (2004). *Saipan and Tinian 1944, Piercing the Japanese Empire*. Oxford: Osprey Publishing.
- Russell, S. (1983). *Rising sun over the Northern Marianas: Life and culture under the Japanese Administration (1914-1944)*. Saipan: CNMI Division of Historic Preservation.
- Russell, S. (2015). (1995). *Tinian: The final chapter*. Saipan: CNMI Division of Historic Preservation.
- Russell, S. (1999). *Tiempon Aleman: A look back at German rule of the Northern Mariana Islands 1899-1914*. Saipan: CNMI Division of Historic Preservation.
- Stafford, K., Mylroie, J., & Jenson, J. (September, 2004). *Technical report #106, karst geology of Aguijan and Tinian, Commonwealth of the Northern Mariana Islands: Cave inventory and structural analysis of development*. Guam: University of Guam, Water and Energy Research Institute.
- Tuggle, D. (2014). The archaeological landscape of Japanese era Tinian, Mariana Islands. In B. Dixon & D. Tuggle (Eds.), *Pan-Japan, the International journal of the Japanese Diaspora*, 11 (1&2), 74-115.

Tuggle, D., & Higuchi, W. (2012). *Concrete terraces and Japanese agricultural production on Tinian, Mariana Islands*. First Marianas History Conference, *Guampedia*.

Welch, D., & Bodner, C. (2014). Japanese farmsteads in southern Tinian: Archaeology, history, and recollections. In B. Dixon & D. Tuggle, *Pan-Japan, the International Journal of the Japanese Diaspora*, 11 (1;2), 121-164.

Young, F. (1989). *Soil survey of the Islands of Aguijan, Rota, Saipan, and Tinian, Commonwealth of the Northern Mariana Islands*. Washington, D.C.: U.S. Department of Agriculture, Soil Conservation Service.

### **Figures Cited**

Figure 1. Location of Tinian within the Commonwealth of the Northern Mariana Islands. (Source: Maria Kottermair.).

Figure 2. NKK Tinian Direct Management Farms and Agricultural Lands. (Source: Okinawa Culture Development Association, 2002, 4.).

Figure 3. American (Red) and Japanese (Blue) WWII Positions on Laderan Kastiyu, 1944. (Source: John Scott.).

Figure 4. Okinawan Cistern Map. Site CHT-11. (Source: Dixon, et al., 2020.).

Figure 5. Okinawan Cistern with Bullet Holes and Concussion Spalls. Site CHT-11. (Source: Dixon, et al., 2020.).

Figure 6. Japanese Military Fortified Refuge Map. Site CHT-3. (Source: Dixon, et al., 2019.).

Figure 7. Japanese Military Artifacts. Bottles, Rice Cooker, Ceramic Lid, Metal Tray. Site CHT-3. (Source: Dixon, et al., 2019.)

Figure 8. Japanese 10-*Sen* Coins. Site CHT-3. (Source: Dixon, et al., 2019.)

Figure 9. Japanese Military and Okinawan Civilian Refuge Map. Site CHT-6. (Source: Dixon, et al., 2019.)

Figure 10. Okinawan Civilian Artifacts. Enamel Bowls, Rice Cooker, Bottles. Site CHT-6. (Source: Dixon, et al., 2019.)

Figure 11. Japanese Military and Civilian Artifacts. Hand Grenade, Arisaka Rounds, Rice Cooker, Ceramic and Enamel Bowls. Site CHT-6. (Source: Dixon, et al., 2019.)

Figure 12. Japanese Military and Okinawan Civilian Refuge Map. Site CHT-7. (Source: Dixon, et al., 2019.)

Figure 13. Japanese Military and Okinawan Civilian Artifacts. Arisaka Rounds, Leather Boot, Crockery, Porcelain Teacup, Sledgehammer Head. Site CHT-7. (Source: Dixon, et al., 2019.)

Figure 14. Liyang Mohlang Cave Survey Map. (Source: Stafford et al., 2004.)

Figure 15. Okinawan Civilian Artifacts. Partial Carabao Cart and Hitch. Liyang Mohlang. (Source: Dixon, et al., 2019.)