

THE SOLDIER MUST BE TRAINED NOT TO FIGHT THE JUNGLE:
PREPARING THE U.S. ARMY FOR FUTURE OPERATIONS
IN A JUNGLE ENVIRONMENT

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General Studies

by

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE SOLDIER MUST BE TRAINED NOT TO FIGHT THE JUNGLE: PREPARING THE U.S. ARMY FOR FUTURE OPERATIONS IN A JUNGLE ENVIRONMENT, by Major Jonathan C. Leiter, 88 pages.

Since the closure of the United States Army Jungle Warfare Training Center (JWTC) at Fort Sherman, Panama in 1999 the United States Army has not possessed an organic jungle warfare capacity. In addition, FM 90-5, *Jungle Operations*, the Army's jungle doctrine, is over 35 years old and is not reflective of changes in military technology, enemy capabilities, or the operational environment. Increased global instability and forward presence initiatives such as regionally aligned forces (RAF) increase the risk that U.S. Army forces may be called upon to conduct operations in a jungle environment with limited preparation. In order to decrease this risk, it is necessary to ask how the United States Army should prepare to conduct future operations effectively in the jungle. This examination should be informed by history, past and current doctrine, and stakeholder considerations. Once this is determined, gaps may be identified, and short and long-term solutions proposed to fill them.

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ACRONYMS

AFRICOM	United States Africa Command
AOR	Area of Responsibility
BCT	Brigade Combat Team
CBA	Capabilities-based Assessment
CDM	Chief Decision Maker
DOTMLPF	Doctrine, Organization, Training, Material, Leadership and Education, Personnel, and Facilities
FAA	Functional Area Analysis
FNA	Functional Needs Analysis
FORSCOM	United States Army Forces Command
FSA	Functional Solutions Analysis
JOTC	Jungle Operations Training Center/Course
JWTC	Jungle Warfare Training Center
JWTB	Jungle Warfare Training Board
NORTHCOM	United States Northern Command
NWTC	Northern Warfare Training Center
PACOM	United States Pacific Command
PBOK	Professional Body of Knowledge
PDSI	Personnel Development Skill Identifier
POI	Program of Instruction
RAF	Regionally-aligned Force
SOUTHCOM	United States Southern Command
TRADOC	United States Army Training and Doctrine Command

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CHAPTER 1

INTRODUCTION

In jungle warfare, the soldier often fights two enemies: man and nature. The elimination of nature as an enemy and the use of the jungle itself as an ally are training objectives fully as important as the elimination of the human enemy. The soldier must be trained not to fight the jungle; he must be capable of living successfully in it and making it work for him against the human enemy.

— FM 72-20, *Jungle Warfare*

Looking at the green immensity below, I could only conclude that those manuals had been written by men whose idea of a jungle was the Everglades National Park.

— Philip Caputo, *A Rumor of War*

In early 1940, after the fall of France, Cresson H. Kearny found himself in Caracas, Venezuela and out of work. After following the rapid defeat of France, the government of Venezuela had reacted by rescinding all non-German foreign oil and mineral exploration rights, including those belonging to Mr. Kearny's recent employer, Standard Oil Company. Kearny, a star athlete, Cadet Corps Commander, and honors graduate at the Texas Military Institute, and, subsequently a Princeton-trained civil engineer and Rhodes Scholar had spent the last two years as an exploration geologist for Standard Oil in Central and South America. He had also participated in expeditions with the Royal Geographic Society in the Peruvian Andes and surveying the jungles of the Orinoco River basin in Venezuela. These experiences and childhood trips to visit his uncle, an Army officer on occupation duty in the Philippines, had imbued Kearny with a strong sense of patriotic duty and a unique understanding of what was needed to live and work in the jungle. Now unemployed and sensing that his nation would soon be at war, Cresson Kearny gathered his collection of jungle expedition equipment and some

prototypes of his own design and returned to Texas to become Second Lieutenant Kearny, United States Army.

Upon returning to San Antonio in 1940, Lieutenant Kearny set about agitating to anyone that would listen that the United States would soon find itself embroiled in a jungle war in the Pacific against an aggressive Japanese Empire, hungry for territory and raw materials like oil and rubber. During his time in the Venezuelan jungles, Kearny and his companions, also experienced “jungle hands”, had often discussed the merits and shortcomings of the state-of the-art civilian expedition equipment their employer had provided them. Kearny brought this equipment with him when he returned to the United States and sensing there would soon be a requirement for infantry jungle warfare equipment, he set about adapting it for military use.

Kearny’s knowledge, passion, and unique practical experience soon brought him to the attention of Major General Walter E. Prosser, a fellow Texan and the Commander of the Panama Mobile Force, an Army force responsible for defending the Panama Canal Zone. MG Prosser also saw the writing on the wall regarding Japan’s ambitions in the Pacific and in early 1940 he had ordered the first large-scale expedition in several decades to transit the Panamanian isthmus, a distance of nearly forty miles through dense primary and secondary jungle. This march had exposed many of the shortcomings in standard Army equipment when exposed to jungle conditions. General-issue leather boots and cotton equipment belts rotted when they were wet for days, as did the soldiers who wore them, suffering high rates of immersion injuries due to their clothing and bedding that never fully dried.

Recognizing the applicability of Kearny's modified commercial equipment to these environments, as well as his unique insight and passion, Prosser offered him a job as the first Jungle Experiments Officer of the Panama Mobile Force. In this capacity, Captain, later Major Cresson Kearny proved instrumental to establishing the Jungle Platoon; a unique organization which would later serve as the incubator for the jungle warfare tactics, training, and equipment which enabled American infantrymen to seize the initiative from the Japanese in the Pacific by 1943.

Extraordinarily prescient individuals with unique expertise have historically proven critical to providing the United States Army with skills or capabilities it is unable to generate or maintain internally; from Baron von Steuben and his *Regulations for the Order and Discipline of the Troops of the United States* to Major General Herman Haupt's management of the Union's railroads during the critical Civil War years of 1862 and 1863. Cresson Kearny epitomized this type of singular individual, uniquely educated and shaped by chance and life experience to provide much-needed expertise at a crucial moment. His contemporary, Charles Minot Dole, President of the National Ski Patrol and the founder of the 10th Mountain Division, provided a similar contribution in the areas of mountain and arctic warfare;¹ ultimately inspiring the creation of the ideal force to spearhead the Allied advance north through Italy. Sixty years later, 10th Mountain Division Soldiers, now mountain specialists in name only, found themselves rediscovering the forgotten doctrine and equipment needed to live and fight in the mountains of eastern Afghanistan. Similarly, United States Army doctrine, equipment,

¹ Peter Shelton, *Climb to Conquer: The Untold Story of World War II's 10th Mountain Division Ski Troops* (New York: Scribner, 2003), 13.

and training for jungle warfare currently lies neglected, as it has for much of its short history.

The Origins of Modern Army Jungle Warfare Doctrine

When thirteen-year-old Cresson Kearny visited his uncle, Major Charles Cresson at his posting with the Army in the Philippines in 1927, he observed the lingering legacy of the United States Army's first acquaintance with jungle warfare. Ironically, the American garrison force there would be first to succumb to the Japanese "jungle supermen" fifteen years later, in part due to the failure of the Army to develop and maintain a lasting jungle warfare capability from this conflict.

When Spanish rule of the Philippines concluded with the Treaty of Paris in 1898, most Filipinos assumed they would be granted their independence. Emilio Aguinaldo, previously a leader in the resistance to Spanish rule and now head of the revolutionary government-in-exile in Hong Kong declared the Philippines independent on June 12th, 1898. This did not sit well with the United States, whose defeat of the Spanish Navy in the Battle of Manila Bay, and capture of Cuba had compelled the dissolution of the Spanish colonial empire. When President William McKinley issued a Proclamation of Benevolent Assimilation in December, 1898, Aguinaldo demurred, and open hostilities commenced with the Battle of Manila on February 5th, 1899.

An initial period of open conventional warfare ensued resulting in consistent U.S. tactical victories. In response, Aguinaldo officially adopted guerilla tactics and ordered his forces into the dense jungles in September, 1899. American forces soon found they were ill-suited to combat this unconventional approach and the insurgency won several victories, gradually spreading throughout the main island of Luzon and to the adjacent

islands. Former revolutionary forces, now using irregular tactics, harassed U.S. garrisons and interdicted lines of communication, then withdrew to support areas deep in the heavily-forested valleys. The rural people supported the guerillas with food and supplies. This situation persisted for the next two years, leading the American public and even the U.S. President to openly question the effectiveness of the military strategy.

In 1901 two developments altered the course of the war. In March, U.S. forces captured President Aguinaldo using subterfuge and he was replaced by General Miguel Malvar, a passionate advocate of guerilla warfare. Later, Brigadier General J. Franklin Bell, a Medal of Honor winner who had come to the Philippines as a captain, assumed command of a sizeable portion of Luzon and began employing counterinsurgency tactics, including curfews, controlling distribution of food supplies, and the resettlement of noncombatants into concentration camps or “reconcentrados”. These camps were isolated from the surrounding area by a “free-fire” area where the rules of engagement allowed those attempting to enter or leave to be shot on sight.² General Bell described some of earliest U.S. jungle warfare tactics; “The men will operate in columns of 50 and will thoroughly search each valley, ravine, and mountain peak for insurgents and for food and destroy everything outside of towns. All able-bodied men will be killed or captured.”³ Descendants of these techniques, the Strategic Hamlet Program and search-and-destroy missions would reappear sixty years later in Vietnam. These harsh methods soon achieved the desired effects and General Malvar surrendered his forces in early 1902.

² Vic Hurley, *Jungle Patrol: The Story of the Philippine Constabulary* (New York: E. P. Dutton, 1938), 75.

³ Ibid., 74.

This effectively ended the Philippine-American War, and hostilities were declared concluded and the military governorship dissolved by President Theodore Roosevelt on 2 July, 1902.

Following the conclusion of the Philippine revolution, American involvement in the Philippines transitioned to a pacification role against the Pulahan religious sect in Leyte and Samar from 1902 to 1907 and the Igorot hill tribes from 1902 to 1913. These campaigns were simmering, low-intensity conflicts characterized by vicious ambushes and punitive raids fought largely in the jungles by a new paramilitary force constituted in 1901 under the authority of the Governor-General of the Philippines, the Philippine Constabulary. Vic Hurley, a prolific author and a veteran of the Army, Navy, and the Constabulary described these operations as “a job for men who specialized in jungle.”⁴

The Constabulary was comprised of Filipino enlisted soldiers officered by American volunteers. Typically, these young men were experienced adventurers, soldiers of fortune, and veterans of the Spanish-American and Indian wars. The first commander, Captain Henry Allen, who would later rise to the rank of Major General and serve as the Military Governor of Germany following World War One, stood out for his polish and West Point education. More typical were men like Captain Leonard Furlong, described by a fellow officer as having “the most remarkable disregard for wounds or death of any soldier with whom the writer had ever served.”⁵ Though only in his mid-twenties at his commissioning, Captain Furlong had already fought in the final battles of the Indian wars

⁴ Ibid., 43.

⁵ Russell Roth, *Muddy Glory: America's “Indian Wars” in the Philippines, 1899-1935* (W. Hanover, MA: Christopher Pub. House, 1981), 155.

in northern Minnesota, been wounded by the Spanish at Santiago, and been advanced to Corporal in the recent Philippine campaign before being discharged from the regular army. His contemporary, German Oscar Preuss first commissioned into the Prussian Death's-Head Hussars, participated in German military expeditions to China and southwest Africa, fought as a Kommando in the Boer War, and held commissions in both the Venezuelan and U.S. Army. Aggressive and innovative leadership by these experienced young officers gave the Philippine Constabulary a highly-successful record in these brutal wars of pacification, though the American personnel never exceeded five hundred at any time.

Unfortunately, little of this jungle expertise was transferred to the Regular Army. Hurley observed that "The Army could not do these things. They relied upon man-power and superior armament to carry them through. Sometimes it did carry them through-too often it failed."⁶ By the time young Cresson Kearny visited Fort McKinley in 1927, soldiers there wore a flannel belly band to prevent "stomach cramps and other tropical troubles"⁷ which the soldiers mistakenly believed afflicted non-natives in the tropical climate. Even young Cresson had the sense to notice that the American children he played outside with wore only light cotton clothing and suffered no ill effects. Such myths are typical of the periods of malaise associated with extended colonial occupations. This general discomfort with living and operating in the jungle contributed

⁶ Hurley, 43.

⁷ Cresson H. Kearny, *Jungle Snafus ... and Remedies* (Cave Junction, OR: Oregon Institute of Science and Medicine, 1996), 8.

to the collapse of defending U.S. Army forces to a numerically-inferior Japanese invasion force in 1941⁸ and continued to plague units in the Pacific theater of operations until well into the Solomon Islands campaign in late 1942.

Why is Jungle Warfare Still Important?

Jungles, also known as tropical forests, are estimated to cover approximately 6 percent of the Earth's surface,⁹ most in the developing world where conflict is nearly constant for many reasons, from raw resource access to unresolved post-colonial border disputes. They occur within the NORTHCOM, SOUTHCOM, PACOM, and AFRICOM areas of responsibility (AOR's). Tropical forests predominate in many regions of critical security concern to the United States; the major cocaine production area centered in Peru, Bolivia, and Columbia with its transnational cartels, central Africa where US Special Operations Command (USSOCOM) forces have pursued a protracted counterterrorism campaign since 2011, most notably against Joseph Kony and his Lord's Resistance Army (LRA), and throughout the "First Island Chain" that girds the South and East China Sea's and protects the core of China's strategic "defense in depth" strategy.¹⁰

⁸ C. Patrick Howard, "Behind the Myth of the Jungle Superman: A Tactical Examination of the Japanese Army's Centrifugal Offensive, 7 December 1941 to 20 May 1942" (Master's thesis, U.S. Army Command and General Staff College, Fort Leavenworth, KS, 2000), 20.

⁹ Bernard A. Marcus, *Tropical Forests* (Sudbury, MA: Jones and Bartlett Publishers, 2009), 3.

¹⁰ Andrew S. Erickson and Joel Wuthnow, "Why Islands Still Matter in Asia," China and the World Program, February 5, 2016, accessed January 20, 2017, <https://cwp.princeton.edu/news/why-islands-still-matter-asia-cwp-alumni-erickson-wuthnow>.

The wide geographic distribution of tropical forests within the band of instability surrounding the equator highlights the risk that United States Army forces will periodically find themselves engaged in military operations in jungle environments. This risk, combined with the conventional wisdom that successful military operations in the jungle depend upon Soldiers who are acclimated to the climate and comfortable in the jungle environment;¹¹ and fact that these goals require time and particular environmental conditions to achieve demonstrate that there is a substantial gap present in the U.S. Army's outdated jungle warfare capability that could cost precious time and lives to fill in an emergency.

Potential joint force operations typically follow some variation of the six-phase joint phasing construct described in Joint Publication 3-0 (See Figure 1). This phasing construct depicts the level of military effort across the phases of an operation or planned operation as a curve, initiating and eventually terminating with ongoing theater and global shaping operations.¹² Shaping Operations are "those that are designed to dissuade or deter adversaries and assure friends, as well as set conditions of the contingency plan. They are generally conducted through security cooperation activities,"¹³ and can be assumed to be continuously occurring. Phase I-V activities are generally understood to be conducted in response to a perceived emergent requirement or a directed mission.

¹¹ J. P. Cross, *Jungle Warfare* (Annapolis, MD: Naval Institute Press, 2008), 39-42.

¹² Joint Chiefs of Staff, Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Joint Chiefs of Staff, April 2011), V-6.

¹³ *Ibid.*, V-8.

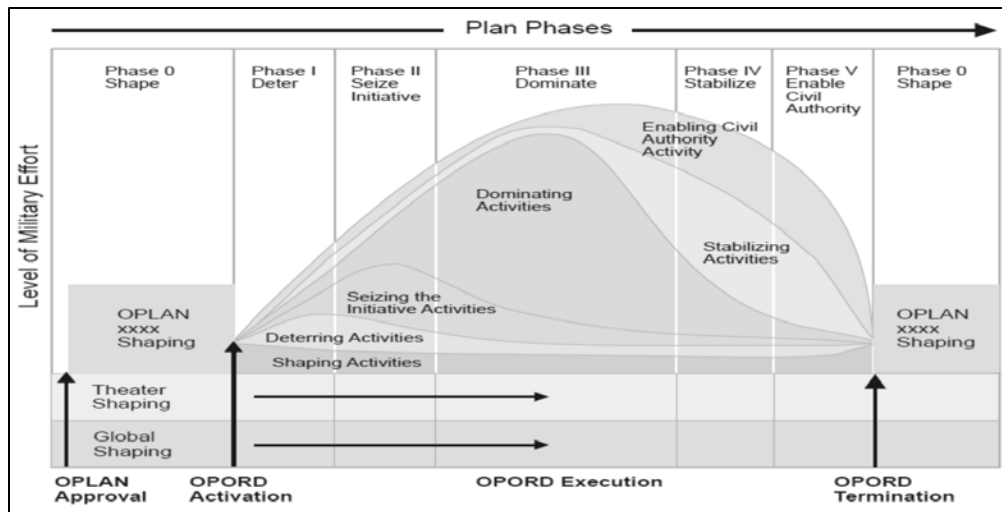


Figure 1. The Joint Phasing Construct

Source: Joint Chiefs of Staff, Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Joint Chiefs of Staff, April 2011), V-6.

Likely military scenarios which could necessitate some degree of jungle warfare capability include:

Security Cooperation: The armies of equatorial nations are by necessity specialized to some degree to fight in the jungles. A 2015 joint study of RAF implementation to-date in the PACOM, NORTHCOM, and SOUTHCOM AOR's conducted by the Asymmetric Warfare Group and Johns Hopkins University Applied Physics Laboratory observed that "the 25th Infantry Division's growing jungle expertise is a tool that can be leveraged to build PNF (Partner Nation Force) capacity." As of September 2015, the 25th Infantry Division Jungle Operations Training Center in Oahu, Hawaii, the only remaining location where Army units still regularly train for jungle warfare, had hosted an extraordinary 51 distinguished visitors in its two years of existence including the Chief of Staff of the Singapore Army, the Sergeant Major of the

Australian Army, and military delegations from New Zealand and China.¹⁴ In addition, the school has hosted exchange instructors from Cambodia, New Zealand, Great Britain, and Malaysia leading the Officer-in-Charge of the school to perceptively conclude that “everyone in the Pacific speaks a common language, and it seems that language is jungle.”¹⁵ If we wish to engage in this conversation, it is imperative that we maintain a credible jungle warfare training capability.

Foreign Internal Defense: Though it was a Special Operations-centric campaign, Operation Enduring Freedom-Philippines (OEF-P) provides a recent example of a limited conflict which occurred mostly in a jungle environment. Beginning in early February 2002, the United States deployed forces from Special Operations Command-Pacific (SOCPAC) to form the headquarters and nucleus of a Joint Special Operations Task Force (JSOTF) with the mission of assisting Philippine security forces in countering the Abu Sayyaf Group, Al Qaida, and other transnational threat organizations by increasing their capacity through mentoring and training. Under this mentoring guise, Philippine counter-terrorism (CT) forces were accompanied on real world missions in the jungles of Basilan, Mindanao, and Jolo by U.S. military personnel who, though they officially were

¹⁴ Noelle Wiehe, “Welcome to the Jungle-25th ID Trains Jungle Experts,” U.S. Army, September 22, 2015, accessed January 20, 2017, https://www.army.mil/article/155880/Welcome_to_the_Jungle___25th_ID_trains_jungle_experts.

¹⁵ Ibid.

not active combatants, retained and exercised their inherent right to self-defense under the rules of engagement.¹⁶

While OEF-P was prosecuted almost exclusively by special operations personnel due to ongoing and imminent requirements in Iraq and Afghanistan which consumed all available conventional Army and Marine Corps ground forces for more than ten years, this is no longer the case. Today, U.S. special operations forces are globally overcommitted¹⁷ due to an almost exclusive reliance on covert action and drone strikes in recent national security strategy. At the same time, conventional U.S. Army and Marine Corps elements are constantly forward-deployed in support of service regional alignment programs like the United States Army-Pacific's (USARPAC) "Pacific Pathways"¹⁸. A similar program exists in the United States Army-Africa area of responsibility in support of AFRICOM. Forward deployment and basing of regionally-aligned forces substantially increases the likelihood that an unprepared conventional force will be called upon to execute partnered or unilateral combat operations in a jungle environment with no advance notice.

¹⁶ Linda Robinson, Patrick B. Johnston, and Gillian S. Oak, *U.S. Special Operations Forces in the Philippines, 2001-2014* (Santa Monica, CA: Rand Corporation, 2016).

¹⁷ Kristen R. Hajduk, "Let SOF be SOF," *Defense 360*, December 2016, 2, accessed March 19, 2017, <https://defense360.csis.org/special-operations-forces-let-sof-be-sof/>.

¹⁸ Association of the United States Army, "The U.S. Army in Motion in the Pacific," April 6, 2015, 2, accessed January 20, 2017, <https://www.ausa.org/publications/us-army-motion-pacific>.

Major Combat Operations: While U.S. Army conventional ground forces have not engaged in major combat operations in a jungle environment since Operation Just Cause in Panama in 1989, the strategic possibility still exists. An attempt to project combat power against the Chinese mainland would require penetrating the “First Island Chain” ringing the East and South China Seas. This perimeter of natural and artificial islands is generally understood to run from Okinawa south through Taiwan, the Philippines, and Indonesia and comprises the final defensive line surrounding China’s immediate sphere of interests. Any large island in this area is likely to be covered in the type of heavy jungle familiar to American Soldiers and Marines at Guadalcanal.

Careful observation of United States military campaigns beginning with the invasion of Iraq in 1991 has informed extensive Chinese innovation and investment in advanced surface to air missiles (SAMS), anti-ship ballistic and cruise missiles, and conventional ballistic missiles.¹⁹ China is currently pursuing improved diplomatic and economic relations within the area to simultaneously improve military relations, as well as to deny access and basing to U.S. forces. Where cooperation proves difficult or gaps exist, China is using seafloor dredging to build and weaponize artificial islands. In the event of a conflict, it is believed China will attempt to create a multi-layered anti-air and anti-ship capability sufficient to deter and deny access and maintain U.S. and allied forces at a distance while simultaneously striking at intermediate staging bases in the

¹⁹ Andrew F. Krepinevich, Barry D. Watts, and Robert O. Work, *Meeting the Anti-Access and Area Denial Challenge* (Washington, DC: Center for Strategic and Budgetary Assessments, 2003), 93.

theater.²⁰ U.S. strategists have suggested that rapidly seizing and weaponizing these islands provides the best option for projecting force into the region.²¹

This is precisely the type of advanced anti-access area denial threat that the emerging concept of multidomain battle is designed to counter. General Robert Brown, Commander of United States Army Pacific, discussed a potential approach to solve this challenge in a recent *Military Review* article.²² General Brown suggests the employment of a Stryker battalion task force to secure Army and joint sensors and fires assets. In this scenario, the task force could find itself facing regular Chinese Army forces well-trained in jungle warfare tactics.²³

In summary, jungle warfare is still important because the United States remains a global power with a number of interests located in the developing and unstable tropical zone where jungles or tropical forests constitute a substantial portion of the environment.

²⁰ James R. Holmes, “Defeating China’s Fortress Fleet and A2/AD Strategy: Lessons for the United States and Her Allies,” *The Diplomat*, June 20, 2016, accessed February 11, 2017, <http://thediplomat.com/2016/06/defeating-chinas-fortress-fleet-and-a2ad-strategy-lessons-for-the-united-states-and-her-allies/>.

²¹ James R. Holden, “Defend the First Island Chain,” *Proceedings*, April 2014, accessed November 2016, <https://www.usni.org/magazines/proceedings/2014-04/defend-first-island-chain>.

²² Gen. Robert B. Brown, “The Indo-Asia Pacific and the Multi-Domain Battle Concept,” *Military Review* (March 2017): 6-8, accessed March 16, 2017, <http://www.armyupress.army.mil/Journals/Military-Review/Online-Exclusive/2017-Online-Exclusive-Articles/The-Indo-Asia-Pacific-and-the-Multi-Domain-Battle-Concept/>.

²³ Tim Mahon, “Chinese Seek Brazilian Assistance with Jungle Training,” *DefenseNews*, August 9, 2015, accessed March 16, 2017, <http://www.defensenews.com/story/defense/training-simulation/2015/08/09/chinese-seek-brazilian-assistance-jungle-training/31180643/>.

This intersection of interests and the jungle environment necessitates a modern, credible jungle warfare capability no longer present in U.S. Army conventional forces, resulting in risks to both the force and mission success.

Initial Personal Recommendations (R1)

The first step in Long's Professional Case Study Methodology is stating initial personal recommendations to solve the problem, or "R1". In this study, these recommendations represent initial working solutions to the problem developed by an experienced military officer prior to undertaking professional research. They reflect four years of formal and informal investigation of this problem and are offered with full knowledge and understanding of my personal biases. By discerning and declaring my biases, I am able to confront and account for them in the research design, subsequent analysis, and conclusions. This is an essential element of Long's methodology and ensures both the academic integrity and professional applicability of the final conclusions.

Past experience has demonstrated that it is too late to develop a modern jungle warfare capacity after a crisis has emerged.²⁴ Luckily, the Army retains many of the required components to a holistic jungle warfare enterprise; they simply require integration and updating. The following initial personal recommendations seek to accomplish this goal:

²⁴ Stephen Bull and Steve Noon, *World War II Jungle Warfare Tactics* (Oxford, UK: Osprey, 2007), 12.

Table 1. Initial Recommendations (R1)
1. Immediately rewrite and publish an updated Field Manual (FM) 90-5 incorporating updates to unit organizations and reflective of technological advances in areas such as infrared night vision, thermal imaging, unmanned ground sensors, satellite and digital communications, and the global positioning system. This will enable units to develop and conduct individual and collective training and tactics, techniques, and procedures (TTP's) and will serve as the basis for establishment of a program of instruction (POI) for a centralized Army Jungle Operations Training Course.
2. Establish an army jungle training center to serve as a proponent and custodian of the updated doctrine, train U.S. army and international partner units in jungle warfare tactics and techniques at the collective level, and serve as a focal point for foreign instructor exchange in order to enhance cooperation and gather foreign best practices.
3. Document individual jungle experience gained through regionally-aligned forces (RAF) cooperation events and other non-traditional experiences through the use of a Personnel Development Skill Identifier (PDSI) in the Integrated Personnel and Pay System-Army (IPPS-A).

Source: Created by author.

This research provides an opportunity not only to examine the state of jungle warfare in the United States Army, but also for professional “sense-making” of my ability to understand a difficult problem and develop quality recommendations to a chief decisionmaker which incorporate multiple, unbiased perspectives and a research orientation.

The Research Question

In order to determine the validity of these recommendations it is necessary to ask; how should the United States Army prepare to conduct future operations effectively in the jungle?

Secondary Research Questions

1. Have changes in the strategic environment, military technology, and operational experience created capability gaps in U.S. Army jungle warfare doctrine?
2. Have these changes created capability gaps in typical BCT organization?
3. Does the future strategic environment necessitate a change in how the U.S. Army prepares and trains units and individuals for jungle warfare?
4. Finally, are there existing, acceptable “stop-gap” measures which the Army could take now, or in the event of an imminent conflict to rapidly generate some degree of jungle warfare proficiency internally from existing sources?

Assumptions

This thesis and its recommendations necessarily assume the truthfulness of the following statements:

1. The United States will continue to pursue some strategic ends using military means.
2. Both the United States and likely adversaries will continue to choose to contest militarily in the land domain.
3. The presence of humans will remain “the distinguishing characteristic of the land domain.”²⁵ United States or potential adversary technological developments will not obviate this.

²⁵ United States Army, Army Doctrine Publication (ADP) 1, *The Army* (Washington, DC: Department of the Army, September 2012), 1-1.

4. The United States will continue to maintain an organized Army to “fight and win the Nation’s wars through *prompt* and *sustained* land combat.”²⁶ Prompt is defined as “required to provide combat-ready forces immediately.”²⁷
5. The United States Army will retain the responsibility to “organize, train, equip, and provide forces with expeditionary and campaign qualities,” to “conduct operations in all environments and types of terrain.”²⁸

Definition of Key Terms

Jungle: The word “jungle” derives from the Sanskrit *jangala*, meaning “uncultivated lands”²⁹ or “desert”³⁰ depending on the translation. FM 31-30, *Jungle Training and Operations*, the only U.S. jungle manual to attempt a succinct definition, describes a jungle as “an area located in the wet tropics and dominated by large trees and varied types of associated vegetation in which an abundance of animal, insect, and birdlife exists.”³¹ The term “tropical forest” is now more commonly used, though jungles

²⁶ Ibid., 1-8.

²⁷ Ibid.

²⁸ United States Department of Defense, Department of Defense Instruction (DODI) 5100.01, *Functions of the Department of Defense and Its Major Components* (Washington, DC: Department of Defense, December 2010), 29.

²⁹ Henry Yule, and A. C. Burnell, *Hobson-Jobson: a Glossary of Colloquial Anglo-Indian Words and Phrases, and of Kindred Terms, Etymological, Historical, Geographical and Discursive* (London, UK: Murray, 1903), 358.

³⁰ Bryan Perrett, *Canopy of War* (Wellingborough, UK: Patrick Stephens, 1990), 7.

³¹ United States Army, Field Manual (FM) 31-30, *Jungle Training and Operations* (Washington, DC: Department of the Army, 1965), 4.

in the military sense can include other associated terrain types such as swamps, savanna, and intermixed areas of human crop cultivation and habitation. Jungles occur in the tropical zone between 24° north and south of the equator (see figure 2) and cover approximately 6 percent of the Earth's surface area.³²

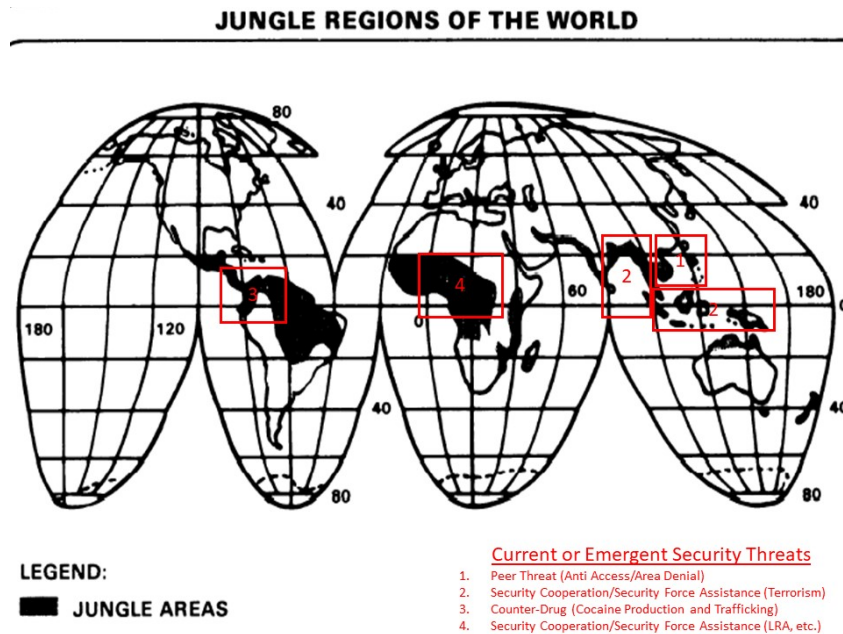


Figure 2. Jungle Regions of the World w/ Security Threats

Source: United States Army, Field Manual (FM) 90-5, *Jungle Operations* (Washington, DC: Department of the Army, August 1982), 1-2.

The jungle climate, though varied by latitude and topography, is characterized by three factors; high temperatures (averaging between 78 and 95 degrees Fahrenheit),

³² Marcus, 3.

heavy rainfall (as much as 400 inches annually), and high humidity (90 percent).³³ These factors combine to produce the dense vegetation with which it is most often associated. Jungles are further classified into two types based on this vegetation; primary and secondary (see figure 3). Primary jungle is undisturbed forest with large, mature trees and minimal undergrowth. Secondary jungle possesses few large trees but much thicker undergrowth and occurs mostly in disturbed areas or zones of transition. Dismounted movement is typically much more difficult in secondary jungle.



Figure 3. Comparison of Primary Jungle (L) and Secondary Jungle (R)

Source: Draft 25th Infantry Division Green Book (Schofield Barracks, HI: 25th Infantry Division, July 2015), 09-10.

³³ United States Army, Field Manual (FM) 90-5, *Jungle Operations* (Washington, DC: Department of the Army, August 1982), 1-2.

Geographic Combatant Commands (USPACOM, USSOUTHCOM, USAFRICOM): A *Unified Combatant Command* with an assigned geographic area of responsibility (AOR), established and designated by the President of the United States through the Secretary of Defense, within which missions are accomplished (See Figure 4) using assigned and attached forces. Geographic combatant commands execute broad continuing missions under a single commander with assigned forces provided to them by the military departments. They also perform command and control of assigned and attached forces for operations within their designated AOR's and advise the contributing services on training and requirements for apportioned forces.



Figure 4. Geographic Combatant Command AOR's w/ jungle region emphasized

Source: U.S. Department of Defense. "Commanders' Area of Responsibility." Defense.gov. <https://www.defense.gov/About/Military-Departments/Unified-Combatant-Commands> (accessed December 15, 2016).

Regionally-Aligned Forces (RAF): Regional alignment of Army forces was initiated by the Chief of Staff of the Army, General Raymond Odierno in 2013 in response to new Department of Defense Strategic Guidance which directed a shift away from engagement in the CENTCOM AOR and toward a more flexible forward presence.³⁴ RAF designated units are Total Army Force units which are based in the continental United States, but apportioned or assigned to a specified Geographic Combatant Command. RAF units are trained to basic “Decisive Action” standards, validated at a CTC, then conduct GCC-specified cultural, regional, and language (CReL) training to prepare for employment. A typical RAF mission would also seek to establish forward presence by deploying units and task-organized elements of leaders and staff to participate in scheduled security cooperation exercises in the GCC AOR. In the event of a crisis (see figure 5), the unit can rapidly consolidate and respond, allowing for more prompt availability of combat power proximate to the area of operations and leveraging accrued regional knowledge and relationships.

³⁴ Gen. Raymond T. Odierno, “Regionally Aligned Forces: A New Model for Building Partnerships,” *Army Live*, March 22, 2012, accessed March 24, 2017, <http://armylive.dodlive.mil/index.php/2012/03/aligned-forces/>.

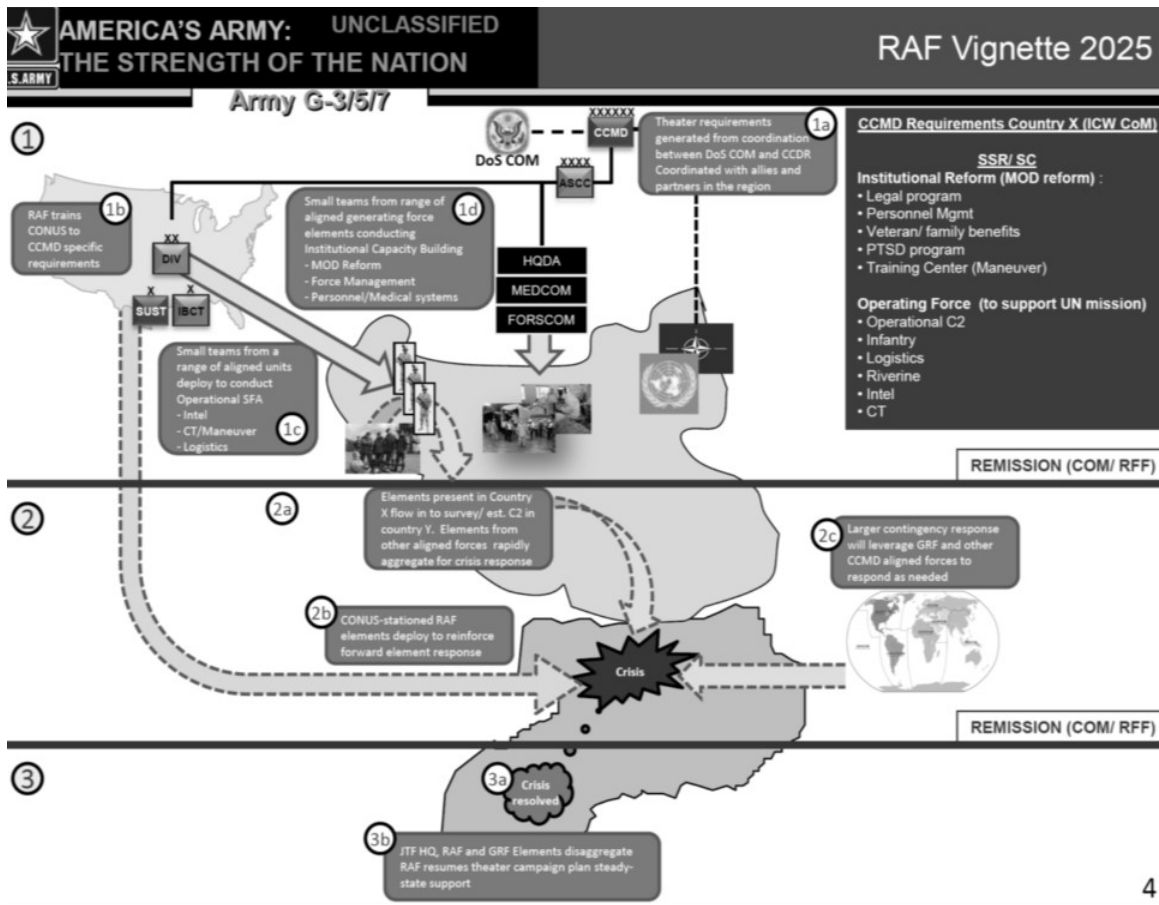


Figure 5. Description of RAF Process

Source: U.S. Army G-3/5/7, "Regional Alignment of Forces." army.pentagon.mil.
http://www.dami.army.pentagon.mil/g2Docs/DAMI-FL/Regionally_AlignedForces.pdf
 (accessed February 26, 2017).

Limitations

This thesis has been deliberately limited to consider and provide recommendations on jungle warfare doctrine, organization, and training. These three elements of DOTMLPF were determined by the author and the committee to be the most likely drivers of potential requirements and solutions. Possible improvements in material, leadership and education, personnel, facilities, and policy are discussed but are excluded

from the recommendations due to time constraints. Primary sources from historic U.S. and allied jungle operations provide context but were not utilized to conduct the capabilities-based assessment (CBA). Only unclassified sources were utilized for this study. This study used exclusively qualitative research methodologies; no quantitative or human research was conducted.

Scope and Delimitations

Though the United States Army has engaged in operations in jungle environments since the Spanish-American War, jungle warfare as a distinct practice and the resultant accompanying doctrine is a product of the early battles against Japanese forces in the Pacific Theater in the Second World War. Thus, although primary and secondary sources from earlier conflicts were examined for context, the scope of U.S. jungle warfare doctrine upon which this study is based encompasses only approximately the last seventy-six years.

Additionally, due to the time available to conduct the study, recommendations focus on doctrinal, organizational, and training gaps and solutions. Other potential solutions may be discussed throughout the study, but can be investigated in future research.

Significance of Study

This study is significant because it attempts to forestall two tragedies at minimal cost. First, the Jungle Operations Training Center at Fort Sherman ceased operations in 1999, 18 years ago. The last generation of United States Army Soldiers with practical experience in the jungle environment are approaching retirement, and with them will go

fifty years of accumulated jungle knowledge and practice. Second, and more importantly, innumerable lives were lost in 1941 and 1942 while the United States Army relearned lessons about jungle warfare that should have been captured in 1902. Regionally-aligned Soldiers are increasingly forward-based or deployed throughout the Pacific, Africa, and South America. We owe it to them and to the American people who entrust the privilege of leading them to us to ensure that they are never again called upon to fight in the jungle unprepared.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

How should the United States Army prepare to fight future wars in the jungle? The literature review for this thesis is intended to satisfy two requirements. First, it will provide a representative understanding of the existing Professional Body of Knowledge (PBOK) that contributed to the development of current United States Army jungle warfare doctrine. Second, the review serves as the Functional Area Analysis (FAA) for a modified Capabilities-Based Assessment (CBA) approach to defining United States Army jungle warfare requirements. This literature review covers a representative sample of sources in order to ensure a breadth of knowledge and diversity of opinion and was conducted in three distinct focus areas by time horizon; historical literature, current doctrine and literature, and future literature.

The first focus area is historical literature. This literature examines the development of “modern” jungle warfare from its genesis in the Pacific Theater of World War Two through the introduction of the current United States Army jungle doctrinal publication, FM 90-5, *Jungle Operations* in 1982. This grouping is comprised of published U.S. Army doctrine for jungle warfare, primary and secondary source accounts of jungle operations and training, and published academic and operational works from the period which relate to jungle warfare. This literature provides context and establishes an academic understanding of the development, evolution, and general characteristics of jungle warfare as practiced by the United States Army.

The second section is current doctrine and literature. This literature is comprised of U.S. Army service and unit-level doctrine and technique publications, as well as allied doctrine, products and curriculum material from the Panama and Hawaii Jungle Operations Training Centers, and contemporary publications on jungle warfare training from Great Britain. This literature is also intended to describe the current jungle warfare capabilities of the United States Army.

The third section is future literature. This literature is comprised of policy publications from government organizations and is intended to define and describe the future jungle warfare requirements of the United States Army.

Historical Literature

Field Manual (FM) 31-20, *Basic Field Manual for Jungle Warfare*, December 1941. The first official United States Army jungle warfare manual, FM 31-20, was released eight days after the Japanese attack on Pearl Harbor. It was derived from the interwar experiences of the Panama Mobile Force (PMF) in the Panama Canal zone and is geographically-specific to that environment. The manual focuses on individual survival skills, jungle health and hygiene, and general fieldcraft; what the British call “Jungle Craft”. Reflecting its origins with a patrol-focused security force, the emphasis is on the infantry as the primary fighting arm in jungle warfare. Horse-drawn and especially mechanized cavalry are considered unsuitable except on trails or in open areas. The manual also definitively states that “field artillery guns are unsuited for use in the jungle” due to “the limitations imposed on these weapons by their own bulk and weight and that of their ammunition” and “the dense jungle greatly confining the burst of their

projectiles.³⁵ The manual conceives of a linear operational framework, specifically referring to the requirement to guard unprotected flanks in the defense and prescribing envelopment as the primary objective of the attack; a tactic later used to great effect by the Japanese in Burma and New Guinea.

Owing to the lateness of its publication, FM 31-20 had little practical effect on early American jungle actions in the war. Resistance to the Japanese invasion of the Philippines, the first prolonged jungle combat experienced by U.S. forces, collapsed just four months later in March of 1942. Commanders in the Pacific soon realized that a more comprehensive doctrinal foundation for jungle operations was needed that encompassed modern elements like supporting arms, coordination with aircraft, and collective maneuver at greater than company level.

Field Manual (FM) 72-20, *Jungle Warfare*, October 1944. Reflecting nearly three years of jungle combat experience in the Pacific theater, FM 72-20 incorporates lessons learned for training and conditioning men for extended jungle warfare, combined arms integration, and long-range patrolling. The overarching theme of the manual, and the central idea of modern jungle warfare, is stated in the introduction; “the jungle is neutral”. This idea, that a man or a unit, well prepared, can not only survive but thrive in the seemingly inhospitable jungle environment was critical to undermining the aura of invincibility that surrounded the Japanese “jungle superman”³⁶ following the earlier

³⁵ U.S. War Department, FM 31-20, *Jungle Warfare* (Washington, DC: U.S. Government Printing Office, December 1941), 21-22.

³⁶ C. Patrick Howard, “Behind the Myth of the Jungle Superman: A Tactical Examination of the Japanese Army's Centrifugal Offensive, 7 December 1941 to 20 May

American defeats in the Philippines. The manual defined this preparation as not only strenuous physical conditioning and extended acclimatization, but also psychological hardening to inure men to the fear and insecurity that accompanied the stifling environment and gloomy darkness. Borrowing directly from the writings of Field Marshal Slim, British Commander in Burma, and reinforced by later American experiences with high psychological casualty rates in untrained units early in the Pacific campaign,³⁷ the manual states unequivocally that “morale is a most important factor in jungle warfare.”³⁸

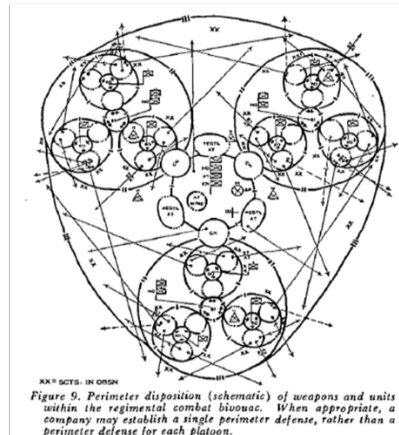
1942” (Master's thesis, U.S. Army Command and General Staff College, Fort Leavenworth, KS, 2000).

³⁷ Bull, 30.

³⁸ United States Army, Field Manual (FM) 72-20, *Jungle Warfare* (Washington, DC: Department of the Army, October 1944), 5.

■ 50. OCCUPATION OF CAMP.—When practicable, the march should be completed at such time as to permit all units to prepare and occupy the camp area prior to darkness. Unit bivouac areas are designated well to the right and left of the trail, and clearing is begun as soon as troops arrive. Only the small trees and underbrush should be cut, so that a canopy remains overhead. Usually battalions are allotted a large area which is subdivided into company areas. The subdivision of areas is made down to include squads, so that units will be kept together and control will be easier. In order to avoid confusion and disorder should the force be required to move out of the camp area quickly or at night, squad rallying points should be designated by each squad leader. In addition, arrangements are made for the orderly assembly and movement of the whole command.

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A comparison of the relative level of refinement attained between the publication of FM 31-20 in December 1941 (L) and FM 72-20 in October 1944 (R). The task described is establishment of a night defensive position.

Figure 6. Evolution of “Defensive Position” Task

Source: Created by author from content in FM 72-20, *Jungle Warfare* (Washington, DC: Department of the Army, October 1944), 72; FM 31-20, *Jungle Warfare* (Washington, DC: U.S. Government Printing Office, December 1941), 28.

This manual represents a substantial professionalization of the field of jungle warfare (see figure 6). It integrates supporting arms including artillery, armor, aircraft, signal; going so far as to state that whenever possible, infantry should be supported by other arms. The manual gives prescriptive guidance for the conduct of offensive and defensive operations in both day and night. Another innovation is early guidance for what will become known as close air support, aerial action in close proximity to, and integrated with ground force maneuver. Appreciating the limitations imposed on visibility of friendly and enemy forces and weapons effects by the jungle canopy, the manual recommends utilizing means available at the time including smoke pots hoisted into the tree tops, rifle smoke grenades burst in the canopy, mortar smoke, and even a

flamethrower discharged vertically. Other uses for aircraft are also touched upon including aerial photographic reconnaissance during the planning stages of jungle operations and perhaps most prophetically, the utility of aerial resupply to support and resupply units in the jungle.

Field Manual (FM) 31-30, *Jungle Training and Operations*, September 1965. Following the defeat of Japan, the importance of jungle warfare faded. Against the early cold war backdrop of late 1940's and 1950's the U.S. Army itself fought for relevancy, ultimately adapting to the post-nuclear battlefield and massive conventional maneuver against the Soviet Union in Europe as their *raison d'être*. The 1949 Field Service Regulations briefly acknowledged the special conditions of jungle warfare but directed that "while methods would differ, the essential features of conventional warfare would continue to apply."³⁹ Despite this primary focus, the emerging doctrine of containment⁴⁰ ensured that engagement in the post-colonial developing world was an eventuality worth preparing for. Two of the four major counterinsurgencies that the U.S. Army participated in prior or concurrent to the Korean War were fought in the jungles of former colonies; the Philippine conflict with the Huks and the French struggle to retain Indochina.⁴¹

³⁹ Robert A. Doughty, *The Evolution of US Army Tactical Doctrine, 1946-76*, vol. 1, Leavenworth Papers (Fort Leavenworth, KS: Combat Studies Institute, 1979), 2.

⁴⁰ United States Department of State, "Kennan and Containment, 1947," accessed March 01, 2017, <https://history.state.gov/milestones/1945-1952/kennan>.

⁴¹ Andrew J. Birtle, *U.S. Army Counterinsurgency and Contingency Operations Doctrine 1942-1976* (Washington, DC: United States Army Center of Military History, 2006), 31-73.

Against the backdrop of simmering revolutionary fervor throughout the tropics and the beginning of the Korean War, the Commanding General of U.S. Army, Caribbean (USARCARIB), successor to the war-era Caribbean Defense Command which had nurtured Cresson Kearny's radical ideas about jungle warfare in 1941 and trained the 158th Infantry "Bushmasters", was given the mission to "keep the art of jungle warfare alive in the Army."⁴² U.S. Army, Caribbean responded by issuing Training Memorandum Number 9 establishing the Jungle Warfare Training Board (JWTB) at Fort Sherman, Panama in April, 1951. The JWTB was initially charged with "continued research and study, analysis, and reporting of final findings and recommendations on changes or additions to established U.S. Army doctrine and techniques of jungle warfare and equipment designed for jungle operations."⁴³ The JWTB enthusiastically embraced this charter, capitalizing on the periodic unit training that was still occurring in the canal zone to develop programs of instruction (POI) for formal individual and unit jungle training. They also facilitated field exercise BRUSH BAY in May and June 1953 involving 2000 personnel from U.S. Army, Caribbean units, as well as a Battalion Combat Team from the 82nd Airborne. This exercise validated the capability for jungle training in Panama and the JWTB was formalized as 7437th Army Unit, Jungle Warfare Training Center (JWTC) in June 1953, and attached to the 33rd Infantry Regiment in November 1953. The JWTC operated in this manner at Fort Sherman until July 1963, training thousands of U.S. and allied soldiers and units through battalion-level.

⁴² History of the JOTC in Panama, October 13, 1999, accessed March 24, 2016, <http://junglefighter.panamanow.net/html/history.html>, 1.

⁴³ Ibid.

In July 1963, the mission of the JWTC was subsumed by the School of the Americas, and the course moved to Fort Gulick, Panama. The inexperience of the School of the Americas and a shortage of resources resulted in a shift of focus from combat operations in the jungle toward jungle survival. This shift is the origin of FM 31-30, *Jungle Training and Operations*.

FM 31-30, *Jungle Training and Operations* was published in September of 1965, approximately six months after the initial deployment of ground troops to Vietnam. It focuses almost exclusively on jungle-specific fieldcraft and survival skills. The chapters describing the jungle environment and specific training for individuals and units prior to engaging in jungle operations cover 174 of the 225 total pages of the publication. Minimal space is dedicated to tactics and techniques or modifications to standing doctrine when employed in the jungle. In addition to a lack of operational focus, the descriptions of the operational environment, edible flora, and fauna which comprise the bulk of the manual are geographically-specific to the Central American jungles found on Fort Sherman.

Perhaps the most glaring omission in FM 31-30 is the devotion of only one page to the employment of Army aviation-helicopters-in the jungle; stating “the types of tasks performed by Army aviation in support of jungle operations are not unlike those performed elsewhere.”⁴⁴ This lack of doctrinal prescience either ignores or fails to incorporate the lessons being learned during this time about air mobility and the effectiveness of pairing helicopters with light infantry, first by the 11th Air Assault

⁴⁴ Ibid., 205.

Division (Test) at Fort Benning, and later validated in November 1965 by the 1st Cavalry Division at the Battle of the Ia Drang Valley where air mobility proved to be the deciding factor. The tactical advantage afforded by employment and integration of helicopters and the rapid mobility they provided would eventually prove to be one of the defining lessons of the U.S. Army experience in Vietnam.⁴⁵

The beginning of large-scale U.S. involvement in ground combat operations in Vietnam had brought, just as it had during the early years of World War Two, an increased appreciation for the value of jungle operations training and doctrine. Feedback from units and individuals who had received training at the school prior to deployment to Vietnam confirmed its value and the school grew, graduating 9145 students in 1967, an increase of almost 7500 from earlier in the decade.⁴⁶

Canopy of War, Bryan Perrett, 1990. Bryan Perrett is a professional military historian and former British armor officer. He has authored dozens of books on military history, primarily concentrating on D-Day and the German Army. During the early 1990's Perrett produced a series of historical surveys focusing on operations in special environments. Canopy of War, the second work in the series, relates the British historical experience with jungle warfare. Perrett begins by describing how modern jungle warfare can be understood as the most extreme adaptation of combat in forests and restricted areas. An initial vignette illustrates these parallels by relating how Arminius, the Cherusci rebel commander at the Teutoburger Wald, utilized the thick concealment and severely-

⁴⁵ Doughty, *The Evolution of US Army Tactical Doctrine, 1946-76*, 31.

⁴⁶ "History of the JOTC in Panama."

restricted terrain to negate the superior combat power of Publius Quintilius Varus's *Legio. XVII-XIX*, ambushing and defeating them in detail. Perrett then proceeds to explain how British experiences and adaptations to combat in the dense forests of colonial North America, the Caribbean, and Africa informed early jungle warfare doctrine. His introduction to the formative years of modern jungle warfare culminates in the first clash between regular troops of modern armies in a jungle environment, the British campaign to wrest control of Cameroon from the German garrison force in August 1914.

Once Perrett has defined the theoretical and experiential underpinnings of jungle warfare, he relates the development and validation of British tactics against the Japanese in the Pacific theater in World War 2, focusing first on the Australians in New Guinea and later on Field-Marshal Slim's divisions and Major-General Wingate's Chindits in Burma. Perrett concludes with an examination of the post-colonial experiences of the British and French in Burma and Malaya, and French Indochina respectively. The study concludes with American involvement in Vietnam.

Field-Marshal Slim and his subordinate, Major-General Orde Wingate perfectly personify the two sides of the recurring philosophical debate in jungle warfare circles between the creation of selected specialist forces for jungle combat and familiarizing generalist combat forces for employment in the jungle. Orde Wingate was an eccentric visionary who raised several Chindit brigades consisting of selected volunteers from British forces throughout the China-Burma-India theater. He personally trained them to penetrate Japanese lines using long-range patrols and other non-traditional methods to

disrupt Japanese supply lines. Despite their special selection and training, the Chindits suffered substantial casualties without producing conclusive results.

Field-Marshal Slim, another key figure in jungle warfare tactics, felt that the Chindits and other specialist units “did not give, militarily, a worth-while return for the resources in men, material and time they absorbed.”⁴⁷ This conclusion presaged the preferred approach by most major armies to jungle warfare; familiarization training for generalist forces. Slim himself pioneered this approach. Wingate’s Chindits did however inspire the creation of a similar U.S. element; the 5703rd Composite Unit (Provisional) or “Merrill’s Marauders”. The knowledge and experience gained by Merrill’s Marauders informed much of late-war and post-war United States Army jungle warfare doctrine. Both the Vietnam-era Long-Range Reconnaissance Patrols (LRRP’s) and modern-day 75th Ranger Regiment are descended from the Merrill’s Marauders. Despite these creditable successes, Slim’s approach ultimately came to be seen as the better value because it didn’t strip quality volunteers from the entire force in order to create units whose utility was limited to a specific environment, conditions, or method.

Defeat into Victory, Field-Marshal Viscount Slim, 1956. Field-Marshal William Joseph Slim, first Viscount Slim, was a self-made soldier, a veteran of both world wars, and attained the positions of Chief of the Imperial General Staff (CIGS) of the British Army and Governor-General of Australia. Slim is best remembered for his campaigns in Burma, both his fighting withdrawal from Burma in 1942, and his subsequent reconstitution and retraining of the “Forgotten” Fourteenth Army for the successful

⁴⁷ William Joseph Slim, *Defeat into Victory* (London: Macmillan, 1986), 546.

campaign to recapture Burma in 1945. Slim came to understand during the withdrawal from Burma that the Japanese, who used specially-trained and equipped forces to fight in Burma had a great initial advantage over his soldiers who had not received this training.⁴⁸ Slim observed that these hardened Japanese forces, with few vehicles and lighter equipment depended on a familiarity with the severely-restricted jungle terrain to continuously envelop the road-bound British columns. The British soldiers, especially the Gurkha's were capable of defeating the Japanese in an even fight, but were reluctant to enter the unfamiliar and foreboding forest.⁴⁹ While he reconstituted his army in India, Slim set about addressing these challenges.

Reflecting on the challenges he had faced, Slim prescribed the following remedies, "to learn how to move on a light scale, to become accustomed to the jungle, to do without so much transport, to improve our warnings of hostile movements, and above all to seize the initiative from the enemy."⁵⁰ Slim translated these areas of focus into an eight-point training plan which he communicated to his command in late 1942:

I. The individual soldier must learn, by living, moving, and exercising in it, that the jungle is neither impenetrable nor unfriendly. When he has once learned to move and live in it, he can use it for concealment, covered movement, and surprise.

II. Patrolling is the master key to jungle fighting. All units, not only infantry battalions, must learn to patrol in the jungle, boldly, widely, cunningly, and offensively.

⁴⁸ Ibid., 118.

⁴⁹ Ibid., 29.

⁵⁰ Ibid., 32-33.

III. All units must get used to having Japanese parties in their rear, and, when this happens, regard not themselves, but the Japanese, as surrounded.

IV. In defence, no attempt should be made to hold long continuous lines. Avenues of approach must be covered and enemy penetration between our posts dealt with at once by mobile local reserves who have completely reconnoitered the country.

V. There should rarely be frontal attacks and never frontal attacks on narrow fronts. Attacks should follow hooks and come in from flank or rear, while pressure holds the enemy in front.

VI. Tanks can be used in almost any country except swamp. In close country they must always have infantry with them to defend and reconnoitre for them. They should always be used in the maximum numbers available and capable of being deployed. Whenever possible penny packets must be avoided. The more you use, the fewer you lose.

VII. There are no non-combatants in jungle warfare. Every unit and sub-unit, including medical ones, is responsible for its own all-round protection, including patrolling, at all times.

VIII. If the Japanese are allowed to hold the initiative, they are formidable. When we have it, they are confused and easy to kill. By mobility away from roads, surprise, and offensive action we must regain and keep the initiative.⁵¹

Slim moved his divisions out of his Indian garrisons and into the jungle environment to implement his training plan. Those who initially resisted such treatment were rapidly brought to heel. The constant exposure to the jungle built a sense of familiarity with the environment and his soldiers soon became less apprehensive about moving off the roads. Living in the jungle corresponded with an expanded focus on small unit patrolling to enhance combat proficiency. Together, these two actions, along with Slim's gifted leadership built the morale of his army. This training and acclimation program would prove decisive two years later when the combined allied forces in Burma

⁵¹ Ibid., 142-143.

undertook their final campaign to retake the peninsula from the Japanese. In many cases, the Japanese found themselves outclassed at their own tactics.⁵²

Bushmasters: America's Jungle Warriors of World War II, Anthony Arthur, 1987.

Bushmasters recounts the experiences of the 158th Infantry Regiment of the Arizona National Guard in Panama and the Pacific theater during World War 2. The 158th Infantry represented the character of the state of Arizona. Companies drawn from Pima, Navajo, and Apache reservations and from predominately Hispanic areas were largely ethnically homogenous in the composition of their men and officers. Many of the soldiers read or spoke English only with difficulty. Despite these challenges and the dissimilarity of the Arizona climate, the regiment would perform in the jungle with distinction.

The 158th Infantry Regiment was federalized for service in September 1940 and gained early distinction from its then-revolutionary use of Navajo “code talkers” during the 1940-41 Louisiana Maneuvers. The unit was subsequently designated to augment security in the Canal Zone, the first elements departing for Panama on December 8th, 1941. In Panama, the 158th was incorporated into the Panama mobile force, and provided the soldiers for Cresson Kearny’s research and development of jungle tactics and equipment. Kearny envisioned the 158th as functioning in two ways; “as commandos in the jungle and as the spearhead for the main effort.”⁵³ Kearny defined the necessary qualities and skills as:

Each man must think for himself... Each individual must possess superior physical fitness, initiative, resourcefulness, and aggressiveness; the ability to

⁵² Ibid., 539.

⁵³ Anthony Arthur, *Bushmasters: America's Jungle Warriors of World War II* (New York: St. Martin's Press, 1987), 23.

make long marches; the ability to advance, attack, defend, and maneuver in the jungle, individually and in small units; perfection in scouting and patrolling, and in the use of cover and concealment; and the ability to operate in the jungle for considerable periods of time, conserving and using only his initial supplies and rations. Moreover, he must master the elements, learning how to prevent serious illness and ailments through his own application of preventative measures.⁵⁴

Besides focusing on tactics and techniques, the 158th's training also included mental and physical conditioning, as well as deliberate research on the physiological requirements of combat operations in the jungle. For example, experimental psychologists subjected the soldiers to twenty-mile forced marches with varied food, water, and load weights in order to determine the limits of human endurance in the tropical environment.⁵⁵ In another instance, jungle trainers deliberately tested the National Research Council's published nutritional requirements; establishing 4500 calories as the daily caloric requirement for soldiers in a jungle environment.⁵⁶ These training missions also accomplished practical objectives. The Bushmaster's continuous security patrols resulted in several enemy agents watching the Panama Canal being captured or disrupted.

After nearly two years of continuous training, the 158th Infantry Regiment, now incorporating elements of the pre-war 5th Infantry shipped to Brisbane, Australia to join in allied operations to re-capture New Guinea. The 158th distinguished itself in the Pacific with companies earning the Presidential Unit Citation and Meritorious Unit

⁵⁴ Ibid., 23-24.

⁵⁵ Ibid., 25.

⁵⁶ Ibid., 26.

Commendation, as well as the entire regiment earning the Philippine Republic Presidential Unit Citation for assisting in the liberation of Luzon in 1944 and 1945. General Douglas MacArthur recognized them at the end of the war, saying “No greater fighting combat team has ever deployed for battle.”⁵⁷

Jungle Snafus...and Remedies, Cresson H. Kearny, 1996. *Jungle Snafus* is the memoir of retired U.S. Army Major Cresson Kearny and recounts his personal experiences in various jungles, as well as his lifelong crusade to improve American jungle warfare equipment. Kearny is ideally placed in 1941 as the Jungle Experiments Officer of the Panama Mobile Force to observe and influence the development of U.S. Army jungle warfare doctrine during the critical opening years of the Second World War, when Japanese forces in the Pacific appear unstoppable. While the majority of the book is devoted to descriptions of various material solutions for jungle warfare like personal boats for river crossings and waterproof rifle bags, Kearny’s discussion of the service bureaucracy which fought the adoption of jungle warfare equipment after Pearl Harbor, and again after the Army was committed to Vietnam is just as relevant today.

Current Literature

Field Manual (FM) 90-5, *Jungle Operations*, August 1982. FM 90-5 has been the current jungle warfare doctrine of the U.S. Army for over 30 years. The manual is a typical product of the post-Vietnam doctrine revitalization initiated by LTG William

⁵⁷ Brad Melton and Dean Smith, *Arizona Goes to War: The Home Front and the Front Lines During World War II* (Tucson: University of Arizona Press, 2003), 85.

DePuy in that it provides clear, task-based, prescriptive guidance for “how to fight” with a definite enemy and operational environment in mind.⁵⁸

Jungle Operations begins by describing the distribution and characteristics of various types of jungle. It also devotes a chapter to living in the jungle. The wildlife, medical, and fieldcraft information provided is similar to previous U.S. Army jungle publications. This chapter also briefly describes the use of available jungle equipment.

The real value of this manual for the purposes of this study is contained in the third chapter which describes preparation and training a unit to deploy to jungle areas. This chapter describes subjects to be addressed prior to deployment and provides individual and unit training outlines as well as recommended areas of emphasis for each subject.

The manual also describes possible guerilla and conventional threats in three likely areas of jungle conflict; Latin America, Sub-Saharan Africa, and Southeast Asia, and attempts to define how each enemy will likely fight. Warsaw Pact forces, weapons, and tactics figure prominently throughout.

The bulk of the manual is devoted to necessary modifications to conducting operations, support, and sustainment functions in a jungle environment. As in previous U.S. Army doctrine, operations at company-level and below figure prominently. Patrols, both combat and reconnaissance, receive greater emphasis than in general operations due to the difficulty in definitively locating the enemy through the jungle canopy. Defense in

⁵⁸ Paul H. Herbert, *Deciding What Has to be Done: General William E. DePuy and the 1976 Edition of FM 100--5, Operations* (Fort Leavenworth, KS: Combat Studies Institute, 1988), 7.

the jungle is generally positional in nature due to the limited trafficable avenues of approach available and focuses heavily on maintaining a perimeter due to the inability to maintain interlocking sectors of fire and the ease of infiltration. The manual also discusses mechanized operations, airmobile operations, and incorporation of indirect fire and aircraft in the jungle at length.

The appendices of *Jungle Operations* describe in detail various techniques and procedures necessitated by operations in the jungle. These include negotiating vertical slopes and water obstacles, waterborne movement, construction and employment of expedient antennas, construction of shelters and individual fighting positions, and NBC operations in the jungle. Though many of the systems discussed in these appendices are obsolete, the principles are still applicable.

Though elements of FM 90-5 are timeless, like the general characteristics of the jungle environment and the tactical constraints it imposes on operations, the majority of the manual is woefully obsolete. This obsolescence is compounded by the system-specific nature of doctrinal publications of that era. Vehicles and aircraft such as the M113 Armored Personnel Carrier, the RB-15 Pneumatic Assault Boat, the UH-1 Iroquois “Huey” Utility Helicopter, and equipment like the RC-292 Antenna and All-purpose Lightweight Individual Carrying Equipment (ALICE) are no longer in general use and tactics, techniques, and procedures (TTP’s) for their employment need to be replaced. Paradigmatic shifts in the conduct of warfighting functions such as intelligence and mission command brought about by technological developments and combat experience since 1982 are not captured. Finally, U.S. Army integration of night vision and thermal imaging technology at the individual Soldier level has, since the publication of FM 90-5,

overcome the general rule which still holds throughout most of the world that attempting to move in the jungle at night is impossible. These omissions alone are sufficient to necessitate a drastic update to bring doctrine in line with current practice. This has largely been accomplished over the last 30 years by the issuance of jungle technique publications.

CALL HANDBOOK 95-5, *Winning in the Jungle: for Squad through Battalion Operations*, May 1995. The Center for Army Lessons Learned (CALL) at Fort Leavenworth, Kansas published *Winning in the Jungle* in support of the Jungle Operations Training Battalion in May, 1995 to incorporate current technology and trends and to enable Army units to prepare for deployment to the JOTC or to a jungle environment. The handbook references historical precedent in this goal, specifically the success of the Japanese Army in adapting to jungle warfare with little preparation. The focus of the handbook is on unit training and preparation from squad to battalion echelons. Information is organized by Battlefield Operating System (BOS) and is presented in a “lessons-learned” format. The final addendum to the handbook contains “*B-720 Tips*”, an update of an individual techniques document originally developed by Long -Range Surveillance (LRS) Teams during the Vietnam War. The tactics, techniques, and procedures presented in this handbook assumedly correspond to those being taught and evaluated at the JOTC at the time and rectify many of the shortcomings of FM 90-5.

Draft 25th Infantry Division *Green Book*, July 2015. The 25th Infantry Division *Green Book* was an outgrowth of the 2013 effort to reestablish a jungle warfare training capability in the division in support of the “Pacific Pivot” and anticipated regional

alignment requirements. The book was developed using FM 90-5 and UK jungle warfare doctrine as a base and incorporating lessons learned from the design and validation of the Jungle Operations Training Course (JOTC) then being established at East Range, Schofield Barracks, Hawaii.

Reflecting its specific regional intent, the characteristics of the jungle environment including plant and animal life described in the *Green Book* are peculiar to the PACOM AOR. Discussion of enemy tactics and construction and employment of improvised explosive devices and booby traps is also regionally-specific to PACOM. Finally, much of the U.S. equipment depicted throughout is either relatively specific to Infantry Brigade Combat Teams (IBCT's) or was specially procured by the division in support of the anticipated jungle missions.

Army Field Manual for Operations in Specific Environments, *Tropical Operations*, September 2003. United Kingdom doctrine comprises a standard base tactical doctrine, Army Field Manual Volume 1, *Battlegroup Tactics*, and a full set of environmentally-specific publications which modify the practice of those standard tactics. *Tropical Operations* describes the specific effects on operations imposed by the tropical “jungle” environment. It is primarily a unit collective manual; the individual techniques and skills are described elsewhere in a *Jungle Survival and Safety Guide*. *Tropical Operations* acknowledges the traditional primacy of the infantry in jungle warfare and describes incorporation of supporting arms. Perhaps most useful is a section on the history and likely future of jungle warfare, a number of vignettes and a selected bibliography for additional reading to enable leaders to develop a truly broad, multi-dimensional understanding of the subject.

Jungle Warfare, J.P. Cross, 2007. Lt Col. J.P. Cross OBE is a former officer in the Gurkha Regiment, serving from 1943 to 1982. He first experienced jungle warfare against the Japanese in Burma in 1944 and 1945, and saw extended jungle service in the counterinsurgency campaigns in Malaya and Borneo. He also commanded the UK Jungle Warfare School in Malaya and has written extensively on the subject. *Jungle Warfare* is intended to “present a dispassionate and clinical record of jungle warfare.”⁵⁹ Cross describes a short history of jungle warfare practice in the British Army, fleshed-out by his own substantial experiences, and then presents generalized guidance for successful operations in the jungle with a focus on the individual soldier. He also attempts to analyze the contemporary environment and discern connections between the nature of jungle warfare and current operations.

Future Literature

2014 Quadrennial Defense Review, 2014. Rebalancing is the primary theme of the *2014 Quadrennial Defense Review*. The review describes a national defense strategy which physically rebalances forces from the Middle East toward the Asia-Pacific region and refocuses them from away from protracted stability operations toward a broader spectrum of conflict. This strategy is comprised of three pillars; protecting the homeland, building security globally, and projecting power and winning decisively.

Two of these pillars, building security and projecting power and winning, suggest a clear need for jungle warfare capability, especially against the backdrop of a “pivot to

⁵⁹ Cross, 4.

the Pacific.” The review mentions the employment of “regionally-focused forces to provide additional tailored packages that achieve critical global and regional objectives, including in critical areas such as the Asia-Pacific region”⁶⁰ as a solution the Department of Defense is pursuing to enhance the effectiveness of our forward-deployed forces. This regional focus would necessitate jungle competency in regions in which it is a common environment. Ultimately, the 2014 QDR suggests that future forces should be regionally-focused, skilled at engaging with and working through partner forces, and capable of defeating a hybrid enemy if the need arises.

2017 Defense Posture Statement, 2016. The 2017 Defense Posture Statement reaffirms the progress of the strategic transitions identified in the 2014 QDR including the physical pivot toward the Asia-Pacific region and the shift in focus toward conventional warfighting competency. The DPS further focuses effort on Europe and the Pacific, observing that great power competition with Russia and China in these theaters is a possibility for the first time in 25 years. Within jungle regions, countering Chinese influence will involve reassuring allies and partners, which the DPS suggests should be done by implementing forward posture initiatives (like U.S. Army-Pacific’s Pacific Pathways) and by continuing to develop partnerships to enhance the regional security framework. Jungle warfare training will increase U.S. interoperability with these regional partners, as well as enhancing the effectiveness of U.S. forces should the need arise.

An additional consideration is the denied nature of potential conflict in the region. In the event of a conflict, China would likely seek to deny physical access to the area of

⁶⁰ Office of the Secretary of Defense, *2014 Quadrennial Defense Review* (Washington, DC: Government Printing Office, 2014), 23.

operations to reinforcements and necessary logistics. Forces within the theater would likely experience degradation of capabilities across all domains. The inability to depend on traditional U.S. advantages like air superiority and unchallenged logistics demands an expeditionary mindset and increased proficiency at the individual level. Forward presence necessitates Soldiers be capable of fighting alone and with little notice.

Conclusion

In conclusion, the practice of jungle warfare in the U.S. Army has progressed significantly since its origins in the Pacific Theater during World War Two. Tactics have improved through experience to incorporate new technology and combined arms. Army jungle warfare doctrine progressively improved throughout this period to capture these lessons, but has lately failed to keep pace with advances in technology and new challenges due to the lack of a proponent for the doctrine.

The obsolescence of our current doctrine notwithstanding, experience and the professional body of knowledge reveal three timeless and universal truths; Soldiers must be in excellent physical condition, they must be acclimated to the mental and physical stresses imposed by the environment, and they are more effective when they have developed the peculiar skills necessary to overcome the challenges of the jungle. Though these requirements are expressed throughout the doctrine, no current venue exists to accomplish them through training.

The future literature indicates that Soldiers will be expected to maintain a forward posture for the foreseeable future. They will be expected to have or rapidly gain increased regional understanding, including the physical environment of the region. They will be expected to interface effectively with allied and partner forces to build relationships.

When called upon, they will be expected to rapidly fight and win in a denied environment.

CHAPTER 3

METHODOLOGY

Introduction

The intent of this study is to analyze a set of recommended modifications to existing Army jungle warfare practices informed by a qualitative analysis of pertinent contemporary and historical materials available on the subject and an examination of possible future requirements to determine capability gaps. These materials represent the Professional Body of Knowledge (PBOK) available on United States Army jungle warfare practices and include doctrinal and technique publications, journal articles, studies, unit and individual histories, other scholarly publications, interviews, and statements, and represent a mix of primary and secondary sources. A systematic and thorough comparative investigation of current Army jungle warfare doctrine, Field Manual (FM) 90-5; Jungle Operations, published in 1982, and generalized themes from the PBOK yielded three initial recommended changes to current doctrine, organization, and training (R1) which were further analyzed in subsequent chapters.

Organization and Structure of the Study

This study utilizes Long's Applied Professional Case Study methodology to investigate the research question through the TRADOC Capabilities-Based Assessment (CBA) process. The CBA process ensures that the analysis of required capabilities follows an approved structure and that recommendations are couched in the correct manner to persuade the Chief Decision Maker (CDM) and support further action by stakeholders and decision makers.

Long's Applied Case Study Methodology

Long's Applied Professional Case Study Methodology (See Figure 7) was developed by Dr. Kenneth E. Long, an Assistant Professor at the United States Army Command and General Staff College and member of the committee for this thesis. He developed this method to solve practical problems in professional fields through disciplined and systematic research to provide informed solutions for implementation to a Chief decision maker (CDM).

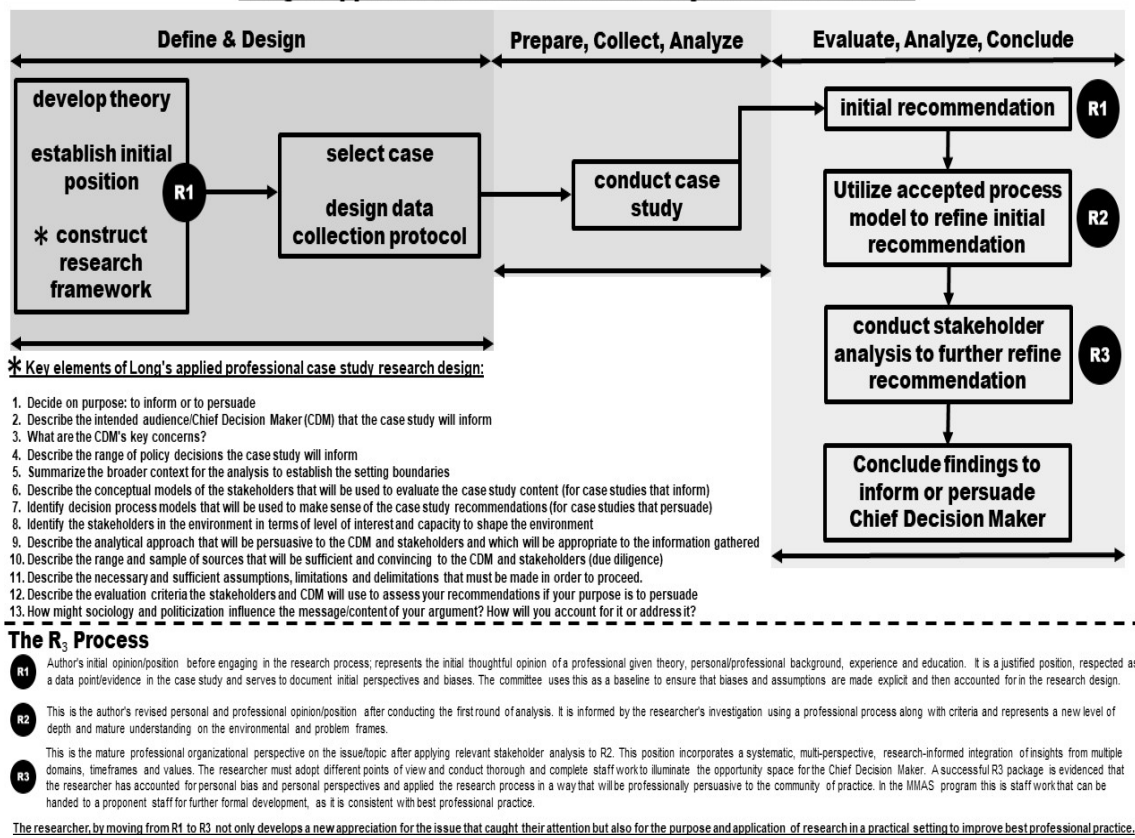


Figure 7. Long's Professional Case Study Methodology

Source: Adapted from Michael A. Woodhouse, "Transforming Air Defense Artillery: Network Centric Training" (Master's thesis, U.S. Army Command and General Staff College, Fort Leavenworth, KS, 2017)

The Capabilities-Based Assessment

Chairman of the Joint Chiefs of Staff Instruction 3170.01G; Joint Capabilities

Integration and Development System defines the CBA as follows:

capabilities-based assessment (CBA) – The CBA is the Joint Capabilities Integration and Development System analysis process. It answers several key questions for the validation authority prior to their approval: define the mission; identify capabilities required; determine the attributes/standards of the capabilities; identify gaps; assess operational risk associated with the gaps; prioritize the gaps; identify and assess potential non-materiel solutions; provide recommendations for addressing the gaps.⁶¹

Within the Army context, the CBA is the “intellectual foundation upon which TRADOC executes its Capability Development mission for the Army.”⁶² Figure 8 illustrates the three phases of the CBA process and their initial inputs and associated outputs.

The CBA is conducted in three sequential phases; Functional Area Analysis (FAA), Functional Needs Analysis (FNA), and Functional Solutions Analysis (FSA). The FAA is used to review existing guidance, doctrine, or concepts to ascertain the capabilities needed for the force to fight and sustain themselves effectively in a contemporary or near-future jungle warfare scenario.

⁶¹ Joint Chiefs of Staff, Chairman of the Joint Chiefs of Staff Instruction 3170.01G, *Joint Capabilities Integration and Development System* (Washington DC: Joint Chiefs of Staff, 2009), GL-3.

⁶² U.S. Army Training and Doctrine Command, *TRADOC Capabilities-Based Assessment Guide Version 3.1* (Washington DC: Department of the Army, 2010), F-1.

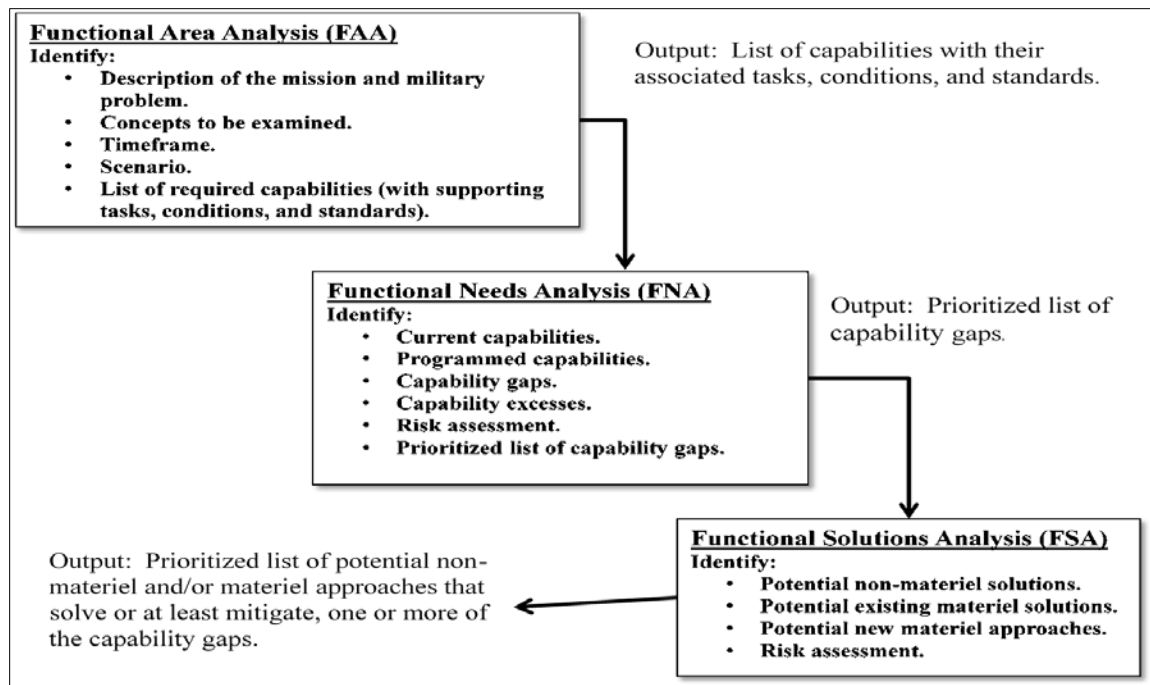


Figure 7. The CBA Process

Source: TRADOC Capabilities-Based Assessment (CBA) Guide Version 3.1 (Fort Eustis, VA: HQ TRADOC, May 2010), pg. 5.

In this study the FAA was conducted, and these capabilities were identified during the review of literature, the “Professional Body of Knowledge” (PBOK), in chapter 2. The second phase in the CBA process, the FNA, is used to “identify and prioritize gaps that impede the future force from accomplishing its mission.”⁶³ This phase is conducted and reported during analysis in chapter 4.

The final phase of the CBA is the FSA. FSA analyzes the prioritized list of gaps and recommends solutions to the gaps, expressed within the context of DOTMLPF. In this study, the analysis was conducted and presented in Chapter 4 in the form of revised

⁶³ Ibid., C-1.

individual recommendations (R2). This study focuses on a subset of DOTMLPF consisting of proposed changes to doctrine and supporting modifications to organization and training in order to narrow the scope of possible solutions to those adjudged by the author and committee to be most likely to produce relevant solutions.

Stakeholder Analysis

In the second level of the analysis, the proposed solutions are evaluated against a list of Army jungle warfare doctrine stakeholder evaluation criteria. The identified stakeholders are described below with a description of their functions and assumed values:

The Generating Force: represented by United States Army Training and Doctrine Command (TRADOC): “TRADOC develops, educates, and trains Soldiers, Civilians, and leaders; supports unit training; and designs, builds and integrates a versatile mix of capabilities, formations, and equipment to strengthen the U.S. Army as America’s Force of Decisive Action.”⁶⁴ The key concerns for Training and Doctrine Command are training and maintaining a ready force that is prepared for any likely contingency. In addition, TRADOC will be concerned with discerning future trends and preparing solutions to them. As the proponent for doctrine development, TRADOC will likely be responsible for implementing any approved recommendation; determining the manner in which changes are disseminated to the force.

⁶⁴ U.S. Army Training and Doctrine Command, TRADOC Regulation 10-5, *Organization and Functions* (Fort Eustis, VA: Headquarters, U.S. Army TRADOC, 2013), 10.

The Operating Force: represented by United States Army Forces Command (FORSCOM): “FORSCOM trains and prepares a combat ready, globally responsive Total Force in order to build and sustain readiness to meet Combatant Command requirements.”⁶⁵ The key concerns for Forces Command are training and providing forces to meet the stated and anticipated needs of combatant commanders. FORSCOM will be most concerned with ensuring the readiest forces possible, ensuring the standardization and interchangeability of forces, and providing forces which best meet known combatant commander requirements for forces.

The stakeholder analysis employs the “Feasible-Acceptable-Suitable” criteria for testing course of action validity found in the Military Decision Making Process (MDMP). This study applies the term definitions developed by De Leon.⁶⁶ A solution is feasible if it is practical and possible within current constraints. A solution is suitable if it solves the problem and is fitted for the situation. A solution is acceptable if it meets the needs and concerns of the user and stakeholders. The applied standard will be reasonable professional judgement based on a preponderance of the evidence. The final result of this process is refined recommendations for implementation improved by the stakeholder insights presented in chapter 5, the conclusion.

⁶⁵ HQ, U.S. Army Forces Command, “U.S. Army Forces Command,” accessed March 23, 2017, <https://www.army.mil/info/organization/unitsandcommands/commandstructure/forscom#org-about>.

⁶⁶ Paul N. De Leon, “Educating for Innovation: Finding balance in the Army’s Professional Military Education System” (Master’s thesis, U.S. Army Command and General Staff College, Fort Leavenworth, KS, 2016), 36.

Conclusion

The intent of this study is to analyze a set of recommended modifications to existing Army jungle warfare doctrine derived from a qualitative analysis of pertinent contemporary and historical materials available on the subject to determine existing capability gaps. The capabilities-based assessment was used to locate these gaps in existing jungle warfare doctrine, organization, and training and to develop proposed solutions. The solutions were then subjected to stakeholder analysis to determine their feasibility, suitability, and acceptability.

This methodology requires the researcher to document an initial position on problems and solutions before conducting research in order to account for existing biases developed from the researcher's education, experiences, or previous reflection on the topic. The initial position typically evolves after the first phase of analysis of the literature review and then through the second phase of analysis which incorporates the perspectives of multiple stakeholders. This research design allows the researcher to document and apply professional judgement in the final professional recommendations developed for the chief decision maker. In this way, the methodology maintains the research stance and rigor, while developing the analytical and staff work skills of the researcher for the benefit of the profession.

CHAPTER 4

ANALYSIS

Introduction

The intent of this study is to analyze a set of recommended modifications to existing Army jungle warfare doctrine, organization, and training practices by a qualitative analysis of pertinent current and historical doctrine and materials available on the subject and an examination of possible future requirements to determine capability gaps. These materials represent the Professional Body of Knowledge (PBOK) available on United States Army jungle warfare practices and include doctrinal and technique publications, journal articles, studies, unit and individual histories, other scholarly publications, interviews, and statements, and represent a mix of primary and secondary sources. The results of this investigation are described in Chapter 2 and comprise the Functional Area Analysis (FAA).

Once completed, this investigation will be analyzed against the potential future requirements to identify and prioritize capability gaps. The results of this analysis comprise the Functional Needs Analysis (FNA) and are reported as prioritized capability gaps below. The initial recommendations reported in chapter 1, (R1), are then analyzed against these prioritized gaps to produce revised doctrinal, organizational, or training recommendations informed by the PBOK (R2). These revised recommendations comprise the Functional Solutions Analysis (FSA).

Finally, these revised recommendations are subjected to stakeholder analysis to determine their feasibility, acceptability, and suitability to the jungle warfare stakeholders described in chapter 3; TRADOC, and FORSCOM. The results of this second analysis

comprise the final recommendations refined by stakeholder insights (R3) and are presented for implementation to a Chief decision maker (CDM) in chapter 5.

Functional Needs Analysis (FNA)

The review of the jungle warfare doctrine and associated material which comprises the Professional Body of Knowledge (PBOK) described in chapter 2 revealed several essential jungle warfare requirements which are universal and enduring:

Table 2. Soldiers must be physically fit and conditioned prior to deployment	
Physical conditioning is a prerequisite for successful jungle operations and training, specifically because it eases or shortens acclimation to tropical climates, increases task effectiveness in the environment, and lessens or prevents heat injuries and dehydration.	
FM 31-20.	“Unless the <u>physical condition</u> of a command is excellent, many casualties will result.” p. 3
FM 72-20.	“During training for jungle operations, continuous emphasis must be placed on <u>physical conditioning</u> . Officers and men must follow a strict program designed to increase stamina. In the final periods of training all work should be done in the field.”
FM 31-30.	“Troops must not only be physically hardened,”. p. 33
FM 90-5.	“ <u>Exercise</u> is the best method for acclimation, because troops in good condition will adapt easily to new climates.” p. 3-3
AFM2: TO.	“ <u>Physical fitness</u> for all ranks involved in jungle operations is a must, - and it will take quite a large proportion of the training time available to ensure that adequate standards are reach.” p. 23
25 ID GB.	“ <u>Physical preparation</u> is critical for operations in the jungle. Soldiers who are more fit will acclimatize more quickly, they will lose less strength and endurance during long duration operations, and they will be able to fight harder during the intense, short-duration combat that characterizes jungle warfare.” p. 19
Summary.	Basic Army physical fitness standards as described in FM 7-22 <i>Physical Readiness Training</i> , the authoritative doctrine which guides the creation of unit physical training programs, are insufficient to prepare Soldiers to adapt to, and operate effectively and safely in a jungle environment. Likely areas for increased focus prior to deployment are endurance under combat loads, foot marching, swimming, and lower body strength and endurance for ascending and descending terrain features.
Gap.	1. There is no existing doctrinal guidance for physically conditioning Soldiers and units for jungle operations. (Doctrine)

Source: Created by author.

Table 3. Soldiers must be acclimated/acclimatized prior to deployment	
Due to the unique and generally unfamiliar climate associated with the jungle, and the tropics; it is essential for Soldier and health and effectiveness that they be acclimated/acclimatized prior to deployment into a jungle environment.	
FM 31-20.	“Inhabitants of the temperate zones, when transported to the Tropics, require a <u>period of physical adjustment</u> to the increased heat and humidity and the greater power of the sun’s rays before they can undertake long periods of hard physical exertion without discomfort and loss of efficiency. This period of gradual conditioning is usually from 6 to 8 weeks for seasoned troops and a correspondingly longer time for recruits.” p. 3
FM 72-20.	“Prior to entering a jungle combat area, troops from temperate zones should undergo <u>a special period of training, gradually increasing in hardship, in a jungle area of similar climate and terrain</u> to that in which they are to fight. This training period is required regardless of the physical condition of the troops, although good physical training will permit considerable shortening of the period. For seasoned troops, a period of four weeks should suffice. Longer periods result in staleness and a decrease in efficiency.” p. 27
FM 31-30.	“The first concern of commanders who are faced with the task of preparing individuals for jungle combat is the <u>physical and mental acclimation</u> of troops to the oppressive jungle environment.” p. 33
FM 90-5.	“The first priority in preparation for jungle warfare is <u>acclimation</u> (getting accustomed to jungle climate). Troops who are not conditioned properly will not perform jungle warfare tasks reliably.” p. 3-3
AFM2: TO.	“The climatic conditions of the tropics and in particular, the jungle, are very different from those of Europe and it is essential that all servicemen are <u>fully acclimatized before they take part in jungle operations</u> . The time required for acclimatization will depend entirely on the physical health of the formation and any recent experience in a jungle environment...As a guide this should be for at least a period of 2 to 3 weeks for troops who are already reasonably fit.” p. 2-3
25 ID GB.	“Units must prepare their Soldiers to operate in the jungle...and <u>a full acclimatization period</u> .” p. 5
Summary.	In addition to a rigorous physical fitness program, Soldiers and units deploying to a tropical or jungle environment must acclimate in a jungle environment immediately prior to deployment in order to safely and effectively execute jungle tasks.
Gap.	2. There is no standardized location or venue for acclimating units and individuals prior to deploying to jungle environments. (Training)

Source: Created by author.

Table 4. Soldiers must have the opportunity to develop “Jungle Craft”	
<p>“Jungle Craft” is a British concept which describes “the way in which the adverse conditions of the jungle are overcome by an individual soldier.”⁶⁷ The term encompasses “the ability to live and fight in the jungle; to be able to move from point to point and arrive at an objective fit to fight; to use ground and vegetation to the best advantage; to be able to melt into the jungle when necessary; to use his eyes, ears, and sense of smell like an animal, and to move silently in darkness, where necessary, while having the ability to retrace his steps.”⁶⁸ Within the context of U.S. doctrine and training it can be understood to be the product of individual training in jungle-specific skills or techniques and practical experience in the jungle environment.</p>	
FM 72-20.	<p>“The soldier must be trained not to fight the jungle; he must be capable of living successfully in it and making it work for him against the human enemy. The jungle is a strict taskmaster; unless an individual adjusts himself to the conditions imposed by jungle environment, he will be unable to exist long, even if there is no human enemy.” p. 1</p>
FM 31-30.	<p>“It is essential that the individual soldier be conditioned to the peculiarities and the unique jungle environment before he is committed to actual combat in this type of terrain. If not properly acquainted with the jungle, troops are liable to become occupied solely with their surroundings and give little attention to the assigned mission.” p. 35</p>
FM 90-5.	<p>“The degree to which soldiers are trained to live and fight in harsh environments will determine their unit’s success or failure.” p. 2-1</p>
AFM2.	<p>“Until troops have adequate time to train with the correct equipment and weapons in a jungle environment they will not be effective.” p.iv</p>
25 ID GB.	<p>“It is not sufficient for the unit to be technically and tactically proficient. Commanders must emphasize and prepare their Soldiers for, the mental, physical, and psychological aspects of operating in a jungle environment.” p.18</p>
Summary.	<p>Baseline proficiency in individual Soldier tasks is not a sufficient predictor of effectiveness in a jungle environment. The environmental challenges of living and operating in the jungle are so all-encompassing that the only way to overcome them is through exposure and adaptation- developing “jungle craft”.</p>
Gap.	<p>3. No standardized location or venue for training Soldiers and units in jungle-specific skills. (Training) 4. No designated proponent for developing and disseminating jungle “best practices” to the force. (Doctrine) 5. No method for documenting personnel with jungle experience. (Organization)</p>

Source: Created by author.

⁶⁷ Royal Army, AFM Vol 2 Pt 2, *Tropical Operations* (London, UK: Ministry of Defence, 2003), 2-1.

⁶⁸ Ibid.

Prioritization of Capability Gaps

The identified gaps are prioritized below according to the criteria for characterization of military risk prescribed in the Joint Risk Analysis Methodology; risk to force and risk to mission.⁶⁹ Risk is expressed as a numerical value of one through five; one being “no probability or consequence,” five being “high probability or consequence”. A numerical value is also assigned for the degree of challenge in mitigating the gap; one being “immediately executable with negligible effects on the total force,” five being “requires major total force effort”. Challenge represents the expected difficulty of implementing a reasonable solution to fill the gap. Totals are summed to provide an overall prioritization score.

Table 5. Prioritization of Capability Gaps				
<u>Gap</u>	<u>Risk to Force</u>	<u>Risk to Mission</u>	<u>Challenge</u>	<u>Score</u>
3. Jungle Training Venue	4	3	4	11
2. Jungle Acclimation Venue	2	3	4	9
4. Doctrinal Proponent	2	2	3	7
5. Skills/Experience Documentation	4	3	1	8
1. Physical Conditioning	2	2	2	6

Source: Created by author.

⁶⁹ Joint Chiefs of Staff, Chairman of the Joint Chiefs of Staff Manual 3105.01, *Joint Risk Analysis* (Washington, DC: Joint Chiefs of Staff, October 2016), B-4.

Functional Solutions Analysis (FSA)

The Functional Solutions Analysis (FSA) revises the initial recommendations (R1) in light of the prioritized capability gaps revealed in the Functional Needs Analysis to produce revised recommendations (R2). The initial recommendations (R1) were:

Table 6. Initial Recommendations (R1)
1. Immediately rewrite and publish an updated Field Manual (FM) 90-5 incorporating updates to unit organizations and reflective of technological advances in areas such as infrared night vision, thermal imaging, unmanned ground sensors, satellite and digital communications, and the global positioning system. This will enable units to develop and conduct individual and collective training and tactics, techniques, and procedures (TTP's) and will serve as the basis for establishment of a program of instruction (POI) for a centralized Army Jungle Operations Training Course.
2. Establish an army jungle training center to serve as a proponent and custodian of the updated doctrine, train U.S. army and international partner units in jungle warfare tactics and techniques at the collective level, and serve as a focal point for foreign instructor exchange in order to enhance cooperation and gather foreign best practices.
3. Document individual jungle experience gained through regionally-aligned forces (RAF) cooperation events and other non-traditional experiences through the use of a Personnel Development Skill Identifier (PDSI) in the Integrated Personnel and Pay System-Army (IPPS-A).

Source: Created by author.

A comparative examination reveals the following association of gaps and recommended mitigations:

Table 7. Capability Gap Mitigation	
<u>Gap</u>	<u>Mitigated By:</u>
3. Jungle Training Venue	2
2. Jungle Acclimation Venue	2
4. Doctrinal Proponent	2
5. Skills/Experience Documentation	3
1. Physical Conditioning	1

Source: Created by author.

And generates the following revised recommendations (R2):

Table 8. Revised Recommendations (R2)
1. Immediately rewrite and publish an updated Field Manual (FM) 90-5 incorporating updates to unit organizations and reflective of technological advances in areas such as infrared night vision, thermal imaging, unmanned ground sensors, satellite and digital communications, and the global positioning system. “Incorporate jungle-specific pre-deployment unit physical readiness training (PRT) plans to enable units to prepare for the rigors of jungle warfare.” Assign a FORSCOM unit with an appropriate RAF mission to collaborate with the proposed Jungle Operations Training Center to continuously generate and validate best practices for incorporation into training and doctrine.
2. Establish a United States Army Jungle Operations Training Center to serve as the proponent and custodian of the updated doctrine, train U.S. Army and international partner units in jungle warfare tactics and techniques at the individual and collective levels, and serve as a focal point for foreign instructor exchange in order to enhance cooperation and gather foreign best practices. Make the center available to provide a pre-deployment acclimation course for units with a jungle operations mission.
3. Document individual jungle experience gained through regionally-aligned forces (RAF) cooperation events and other non-traditional experiences through the use of a Personnel Development Skill Identifier (PDSI) in the Integrated Personnel and Pay System-Army (IPPS-A). Transition to an Additional Skills Identifier (ASI) after establishment and accreditation of a jungle operations course. Ensure this information is query-able and augment units deploying on a jungle RAF mission with experienced individuals to increase effectiveness and mentor inexperienced personnel.

Source: Created by author.

Stakeholder Analysis

The final step of analysis is to subject the informed recommendations (R2) to stakeholder analysis to determine if the proposed gap mitigation solutions are feasible, acceptable, and suitable to the two likely jungle warfare stakeholders; the “generating force” represented by United States Army Training and Doctrine Command, and the “operating force” represented by United States Army Forces Command. Each recommendation is analyzed against the stated or assumed stakeholder interests in chapter 3 and given a numerical value of one through five for presumed feasibility, acceptability, or suitability with higher scores being preferred.

Table 9. Results of Stakeholder Analysis						
	<u>Feasibility</u>		<u>Acceptability</u>		<u>Suitability</u>	
<u>R2</u>	<u>TRADOC</u>	<u>FORSCOM</u>	<u>TRADOC</u>	<u>FORSCOM</u>	<u>TRADOC</u>	<u>FORSCOM</u>
1. Doctrine Update	4	4	4	3	4	4
2. JOTC	3	3	2	3	3	4
3. PDSI	4	4	2	3	4	4

Source: Created by author.

Conclusion

A Functional Area Analysis (FAA) was conducted in Chapter 2 and informed a Functional Needs Analysis (FNA) and subsequent Functional Solutions Analysis (FSA) in this chapter which, together with the initial recommendations (R1) provided in Chapter 1 produced revised recommendations (R2). These revised recommendations were then

subjected to stakeholder analysis to determine their feasibility, acceptability, and suitability and produced refined recommendations (R3) to present to the chief decisionmaker for action in chapter 5.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

Introduction

The intent of this study is to analyze a set of recommended modifications to existing Army jungle warfare practices informed by a qualitative analysis of pertinent contemporary and historical doctrine and materials available on the subject and an examination of possible future requirements to determine capability gaps.

Refined Recommendations (R3)

In the preceding chapter, a set of revised recommendations (R2) underwent stakeholder analysis to determine feasibility, acceptability, and suitability to two jungle warfare stakeholders; the “generating force” represented by TRADOC, and the “operating force” represented by FORSCOM. The resulting informed recommendations, further refined by stakeholder analysis (R3), are reported below.

Table 10. Refined Recommendations (R3)	
Recommendation 1. Update Doctrine	
Feasibility	Both stakeholders will likely find this solution to be extremely feasible as the current doctrinal publication, FM 90-5 is currently in the process of being rewritten.
Acceptability	Both stakeholders will likely find this solution to be moderately to extremely acceptable. FORSCOM commanders may find the additional doctrinal guidance as being unnecessarily difficult and directive and disregard it. Also, FORSCOM may be unwilling to stabilize RAF taskings preventing BCT's from ever developing sufficient jungle expertise.
Suitability	Both stakeholders will likely find this solution suitable.
(R3)	Immediately rewrite and publish an updated Field Manual (FM) 90-5 incorporating updates to unit organizations and reflective of technological advances in areas such as infrared night vision, thermal imaging, unmanned ground sensors, satellite and digital communications, and the global positioning system. Incorporate a menu of jungle-specific pre-deployment unit physical readiness training (PRT) plans to enable units to prepare for the rigors of jungle warfare. Work with FORSCOM to identify units with appropriate RAF missions to collaborate with the proposed Jungle Operations Training Center to continuously generate and validate best practices for incorporation into training and doctrine.
Recommendation 2. Establish Jungle Operations Training Center	
Feasibility	Both stakeholders will likely initially find this solution only moderately feasible given competing priorities for manning and resourcing.
Acceptability	Both stakeholders will likely find this solution to be only moderately acceptable given the financial and personnel costs associated. TRADOC will be likely to explore alternative means of delivering training and continuing to assume risk on a large-scale solution until there is an immediate need. Both stakeholders will insist on prioritized, protected funding to support this mission. FORSCOM, specifically 25 th Infantry Division has already dedicated significant effort to establish a division troop school at East Range, Schofield Barracks, Hawaii which has achieved considerable success. This effort could be co-opted to meet force-wide requirements.
Suitability	Both stakeholders will likely find this solution suitable.

(R3)	Capitalizing upon the work of the 25 th Infantry Division, establish a United States Army Jungle Operations Training Center at East Range, Oahu, Hawaii to act as the custodian of the updated doctrine, train U.S. Army and international partner units in jungle warfare tactics and techniques at the individual and collective levels, and serve as a focal point for foreign instructor exchange in order to enhance cooperation and gather foreign best practices. Make the center available to provide a pre-deployment acclimation course for units with a jungle operations mission.
Recommendation 3. Document Jungle Experience	
Feasibility	Both stakeholders will likely find this solution very feasible.
Acceptability	Both stakeholders are likely to find this solution only moderately acceptable as it has the potential to cause a high amount of instability in the force depending on the tempo of deployments which require jungle skills. Additionally, personnel may become unacceptably specialized and unavailable for necessary broadening assignments.
Suitability	Both stakeholders are likely to find this solution very suitable.
(R3)	Document individual jungle experience gained through regionally-aligned forces (RAF) cooperation events and other non-traditional experiences through the use of a Personnel Development Skill Identifier (PDSI) in the Integrated Personnel and Pay System-Army (IPPS-A). Transition to an Additional Skills Identifier (ASI) after establishment and accreditation of a jungle operations course. Ensure this information is query-able and augment units deploying on jungle RAF missions with experienced individuals to immediately increase effectiveness and mentor inexperienced personnel.

Source: Created by author.

Implementation

This section describes proposed actions for implementation of the refined recommendations (R3). The proposed actions are categorized by time frame; immediate, near-term, and far-term. Immediate actions can be executed within 180 days. Near-term actions may be executed within the next five years. Far-term actions will take longer than five years to execute.

Table 11. Implementation Actions (by time frame)	
Recommendation 1. Update Doctrine	
Immediate	Solicit and incorporate input from the 25 th Infantry Division Jungle Operations Training Center (JOTC), the Marine Corps Jungle Warfare Training Center (JWTC), and the Asymmetric Warfare Group (AWG) into ATP 3-90.97, <i>Techniques for Jungle Warfare</i> . Incorporate emerging capabilities and doctrinal concepts such as space and cyber support to jungle warfare and jungle maneuver in support of multi-domain battle. Publish the updated doctrine to the force as soon as possible.
Near-term	Assign JOTC as the proponent for maintaining Army jungle warfare doctrine. Utilize ongoing battalion-level JOTC rotations as a test bed to develop, validate, and incorporate updated jungle warfare tactics, techniques, and procedures into doctrine.
Far-term	Utilize JOTC as a venue for major joint and multinational jungle warfare exercises to enhance interoperability and encourage cooperative relationships with other jungle nations. Utilize these partnership events to work toward a joint jungle warfare doctrine.
Recommendation 2. Establish Jungle Operations Training Center	
Immediate	Assist the current 25 th Infantry Division JOTC to achieve TRADOC “Institute of Excellence” accreditation for the Jungle Operations Training Course. Use the Northern Warfare Training Center as a model. Manage limited the JOTC rotational capacity at HQDA G3 in order to best support Geographic Combatant Commander priorities and regional alignment of forces.
Near-term	Establish a Table of Distribution and Allowances (TDA) for the JOTC as a separate FORSCOM-tenant unit under U.S. Army Pacific (USARPAC). Use the Northern Warfare Training Center as a model. Establish Mobile Training Teams (MTT’s) to export limited “JOTC-light” capability to deployed elements, joint and partner forces, etc.
Far-term	Acquire access to additional training land to facilitate Brigade Combat Team-level maneuver and live fire training.
Recommendation 3. Document Jungle Experience	
Immediate	Establish a “Jungle Experience” board to evaluate and award PDSI’s based on documented jungle training or operational experience. Ensure this is searchable and managed at Human Resource Command (HRC) to provide instant to regionally-aligned units with a possible jungle mission.
Near-term	Award a “Jungle Expert” Additional Skill Identifier (ASI) for successful completion of the accredited Jungle Operations Training Course. Manage this ASI to support regionally-aligned units with a possible jungle mission.
Long-term	Code appropriate Modified Table of Organization and Equipment (MTOE) slots in regionally-aligned Brigade Combat Teams (BCT’s) to ensure sufficient proficiency and knowledge exists to plan and execute jungle training with limited notice. Manage qualified Soldiers to ensure this knowledge and experience is developed and retained through appropriate operating and generating force assignments.

Source: Created by author.

A Model for Implementation

A possible model for near-term implementation of a jungle warfare capability exists in the Army Northern Warfare Training Center (NWTC) at Black Rapids, Alaska. The NWTC opened in 1948, inheriting the World War Two mountain and arctic warfare legacy developed at Camp Hale, Colorado by the 10th Mountain Division. For 70 years, the school has been the primary active army training center and doctrinal proponent for mountain and cold weather operations.

Today the NWTC is an accredited TRADOC School of Excellence assigned to United States Army, Pacific and U.S. Army Alaska. The NWTC's mission is:

NWTC provides Cold Weather and Mountain Warfare training to US military and designated personnel, in order to enhance war-fighting capabilities of US and coalition partners. On order, assists in rescue and recovery operations worldwide. Conduct outreach missions that incorporates mountain and cold regions operations in support of the USPACOM Theater Security Cooperation Plan (TSCP). Conducts missions in support of a memorandum of agreement between U.S. Department of Interior and USARAK for high altitude rescue vicinity Denali National Park in Alaska.⁷⁰

The school's three mission essential tasks are to train and certify Soldiers and leaders on cold regions and mountain skills to facilitate their ability to conduct unilateral operations, develop tactics, techniques, procedures and enhance cold regions and mountain joint forces doctrine, and to assist in rescue and recovery operations worldwide.⁷¹

NWTC fulfills its training and certification tasks by conducting several home station and mobile training team (MTT) courses each year in support of U.S. Army

⁷⁰ U.S. Army, "Northern Warfare Training Center," June 24, 2016, accessed May 10, 2017, <https://www.army.mil/article/170432>.

⁷¹ Ibid.

Alaska and global requirements. The school also awards the special qualifications identifier (SQI) “E” to Soldiers who complete the Basic Military Mountaineering Course and retains training records.

A second, equally important responsibility of the Northern Warfare Training Center is to serve as the U.S. Army proponent for cold region and mountaineering doctrine and practice. This function enables the school to coordinate with joint and allied schools and units with similar missions, as well as civilians in related fields to not only maintain the general body of knowledge, but also to maintain relationships and foster a greater cold weather and mountain warfare community of practice. This function directly supports U.S. Army, Pacific’s Theater Security Cooperation Plan.

Recommendations for Further Research

During the course of this research, the need for a substantial concurrent investigation of the available material solutions which support Army jungle warfare capability became apparent. Much of the jungle-specific equipment presently available was initially developed by Cresson Kearny during the early years of World War Two. Examples include the “Jungle Boot”, the jungle hammock, the 5-quart canteen, and the machete and sheath. These items were issued with little refinement during the Vietnam War and the conflicts in Central and South America during the 1980’s and are now nearing obsolescence. While material solutions are outside the limits of this investigation, a revitalized jungle warfare capability will require a commensurate investment in jungle warfare equipment to generate real effectiveness.

Small wars, especially those involving security force assistance and foreign internal defense have moved increasingly within the realm of special operations forces.

Substantial recent jungle warfare experience has likely been accumulated by U.S. Army special operations forces in Columbia, central Africa, the Philippines, and elsewhere. A deliberate study of this experience focusing on best practices for post-1980's technology such as wearable night vision devices and thermal imaging could inform the development of modernized conventional force doctrine and training.

Lessons Learned

The opportunity to academically investigate a problem that I am passionate about has been both personally and professionally rewarding. The most startling revelation was the extent to which the military staff process allowed for bias without deliberately accounting for it. Proposed solutions to problems, sometimes the problems themselves, are often derived solely from the experiences and preconceived notions of individual staff officers and commanders. While this approach can assist in generating more readily-implementable solutions initially, it can also stifle creative thinking and fails to capitalize upon the greater professional body of knowledge available on the subject through research. A research-based approach to staff work, perhaps employing Long's Applied Professional Case Study Methodology, enables a professional staff officer to identify biases in thinking and remain aware of them as he develops informed solutions. In this manner, bias is not eliminated, as it can add value, it is simply accounted for throughout the process.

Conclusion

But as long as our armed forces do not have at least sizeable numbers of infantrymen well equipped and trained to fight and win even a small prolonged jungle war, the United States will continue to have inferior capabilities to advise

and help jungle forces deemed useful to the preservation of our national interests.⁷²

With the new-found commitment to shaping the operational environment through enduring partnerships, and fighting with and through these partners, our success in future wars likely hinges more on our ability to enable others rather than to defeat adversaries ourselves. Credibility in this regard demands more than just continuing presence, it demands that we be capable of providing value. To provide this value, we must embrace how our partners fight and seek to enhance it with our own unique capabilities. Only by committing to a strategy of enhancement rather than transformation will we be successful in these future conflicts. For many of our partners, especially in the developing world, they will by necessity fight in the jungles.

Beyond partnership, when we do engage in direct combat, it is likely to be on short notice and in a denied environment. In this scenario, a Brigade Combat Team (BCT) in the continental United States is a BCT unavailable to us for the fight. As it did in 1941 in the Philippines, success or failure in the initial battles of future wars will likely depend on the training and experience of the units immediately available in theater. For a Soldier in a regionally-aligned BCT, deployed to the PACOM, SOUTHCOM, or AFRICOM areas of responsibility, this first battle could occur in an unfamiliar jungle, against a jungle-trained enemy, and without the advantages American Soldiers have come to depend upon. It is for this tired, wet, and scared Soldier that we must commit to answering how the United States Army should prepare to conduct future operations effectively in the jungle. His or her life may depend on it.

⁷² Cresson H. Kearny, *Jungle Snafus...and Remedies*.

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