

Department of Defense Plan for Managing Vegetative Encroachment at Training Ranges



Section 342 Report to Congress Implementation Update

15 March 2011

Preparation of this study/report cost the
Department of Defense a total of
approximately \$25,950 in Fiscal Years
2010 - 2011.
Generated on 2011Mar22 1523 RefID: C-74B9DF4

Table of Contents

1.0	Introduction	1
1.1	Purpose	1
1.2	Overview	1
2.0	Army	2
2.1	Vegetative Encroachment: Assessment and Identification	2
2.2	Vegetative Control Plan	4
3.0	Navy	8
3.1	Vegetative Encroachment: Assessment and Identification	8
3.2	Vegetative Control Plan	8
4.0	Air Force	11
5.0	Marine Corps	13
5.1	Vegetative Encroachment: Assessment and Identification	13
5.2	Vegetative Control Plan	16
5.3	Marine Corps Summary	17
6.0	DoD Plan to Address Vegetative Encroachment	18
7.0	Summary	18
A1	FY2010 NDAA Conference Reporting Requirement	20

Figures and Tables

Figure 1. Plant species (or groups) most commonly identified by 63 installations as negatively impacting training	3
Table 1. Army -- Installations and Training Ranges Reporting Impacts to Training by Uncontrolled Vegetation	5
Table 2: Navy -- Installations and Training Ranges Reporting Impacts to Training by Uncontrolled Vegetation	8
Table 3: Air Force -- Installations and Training Ranges Reporting Impacts to Training by Uncontrolled Vegetation	11
Table 4: Marine Corps -- Installations and Training Ranges Reporting Impacts to Training by Uncontrolled Vegetation (representative examples)	15

1.0 Introduction

1.1 Purpose

The National Defense Authorization Act For Fiscal Year 2010, Title III Operations and Maintenance, Subtitle E Reports, Section 342 “Plan For Managing Vegetative Encroachment at Training Ranges” requests that DoD submit a report to the congressional defense committees that includes the following: (1) an assessment of the extent to which vegetation and overgrowth limits the use of military lands available for training of the Armed Forces in the United States and overseas; (2) an identification of the particular installations and training areas at which vegetation and overgrowth negatively impact the use of training space; and (3) a plan to address training constraints caused by vegetation and overgrowth.

1.2 Overview

Effective military training relies on high-quality training areas that are available when needed. Representative terrain and land cover type are important factors in many types of training missions, and can influence where, when and how training is conducted. The types, locations and densities of vegetation (trees, grasses, etc.) can either enhance or inhibit realistic training, and may influence other range or installation activities that support the training function. Vegetation’s important habitat and ecosystem contributions also help define the natural environment on DoD lands.

As a manager of the public lands entrusted to its care, DoD strives for sound stewardship of its natural resources as a part of its overall range management activities. However, in certain land withdrawal situations within the United States, land management responsibility is retained by the underlying owning agency. Vegetative management practices at overseas ranges and other training locations outside of the United States are typically subject to host nation laws, regulations and practices, and the U.S. military typically does not own or fully control the land in question. Any vegetative encroachment must therefore be managed in coordination with other Federal agencies as appropriate, or in line with any specific host nation considerations.

Each of the military services manages its ranges and training areas to satisfy its own unique military requirements and readiness needs. The following sections summarize each Service’s assessment of vegetative encroachment on its facilities, and discuss how they are managing any impacts.

2.0 Army

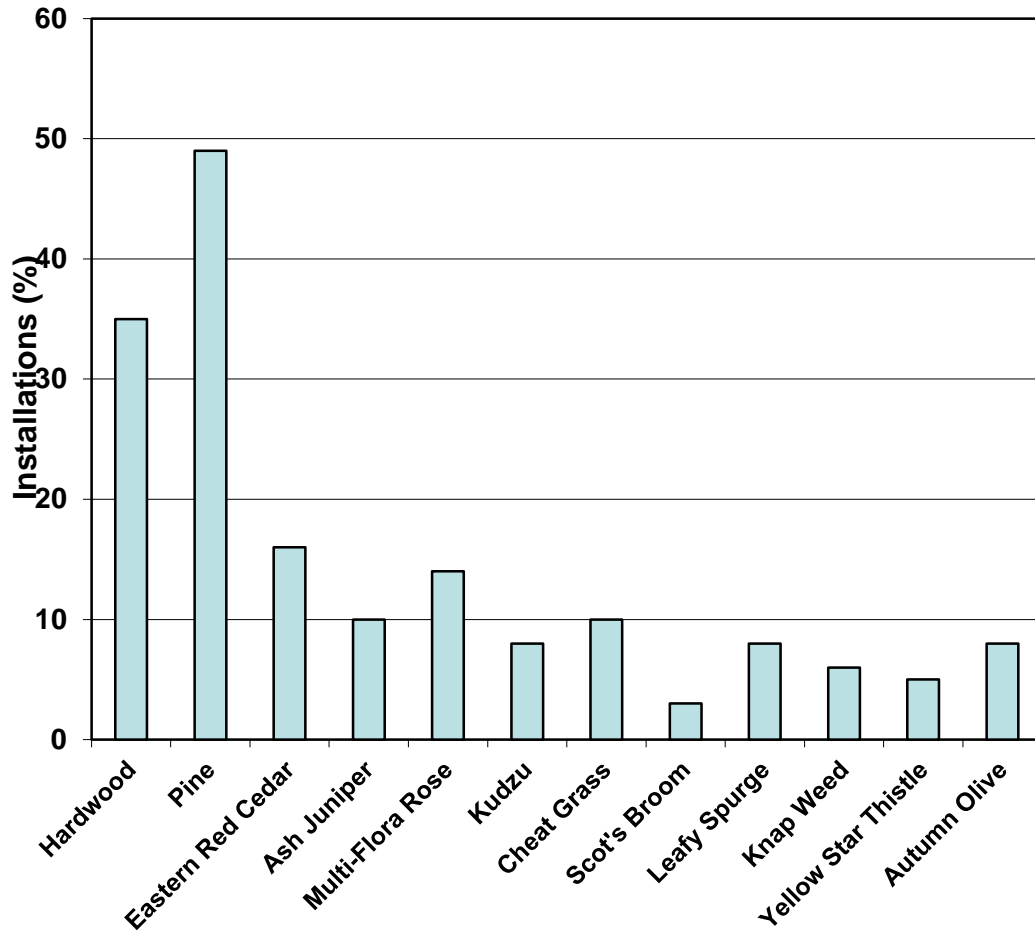
A total of 101 installations were surveyed representing about 12.4 million acres, or about 94% of Army's total training acreage in CONUS. Of these 101 installations, 63 reported having constraints from vegetative encroachment. This report discusses the data provided by those 63 installations. The survey was completed collaboratively by the installation Range/Integrated Training Area Management program managers and Environmental/Natural Resources program managers. For the survey, mounted maneuver was defined as predominately heavy maneuver using tracked vehicles and heavy wheeled vehicles and equipment. Dismounted maneuver was defined as predominately light maneuver comprised of maneuver on foot and using light wheeled vehicles and equipment.

2.1 Vegetative Encroachment: Assessment and Identification

On the 63 installations that identified at least some degree of impact, the total acreage affected by uncontrolled vegetation was 783,537 acres. It should be noted that this means that acreage is unusable for some designated training purpose, but not all training purposes. This acreage represents approximately 6.3% of total training land acreage for the reporting installations. Approximately 93.7% of training lands do not have any impacts to any type of training from "uncontrolled" vegetation. For those acreages where vegetation does affect training, forests, primarily in eastern United States, affect training more than any other vegetation type; i.e., more so than shrublands or grasslands. Figure 1 shows that forests dominated by pine trees constrained training on 48% of those installations reporting constraints. Hardwood trees constrained training on about 35%. Among forests, the next most common vegetation types that constrain training are cedar and juniper stands, which constrained training on about 16% and 10% of installations, respectively. Cedar and juniper occur throughout the United States, but dense stands most commonly occur in the Great Plains and eastern United States. The least common vegetation types that constrain training are invasive species, including Autumn Olive, Yellow Star Thistle, Knap Weed, Leafy Spurge, Scot's Broom, Cheat Grass, Kudzu, and Multi-flora Rose. While many of the invasive species causing encroachment challenges occur primarily in the western United States, this is a nation-wide issue (for example, Kudzu and Multi-flora Rose are a common problem in the eastern United States). Figure 1 shows that, typically, any one invasive species constrains training on less than 10% of installations reporting constraints.

Installations reported on seven categories of training restrictions caused by vegetation encroachment: (1) Loss of Line of Sight (i.e., inability to see targets, ineffective MILES); (2) Impenetrable Density for Mounted Maneuvers (i.e., too thick to drive heavy vehicles through); (3) Impenetrable Density for Dismounted Maneuver (i.e., too thick to walk through); (4) Soldier Safety Hazard (e.g., Yellow Star Thistle, vegetation stems in a drop zone); (5) Equipment Damage (e.g., Scot's Broom damaging tracks of vehicles); (6) Structural Damage (e.g., Kudzu restricting target lifter operation); and (7) other.

Figure 1. Plant species (or groups) most commonly identified by 63 installations as negatively impacting training.



As summarized in Table 1, mounted maneuver training is restricted by vegetation encroachment on about 423,000 acres. Line of sight issues are reported on about 134,000 acres. Constraints to dismounted training were reported on about 130,000 acres. Vegetation that can cause equipment damage is reported on about 71,000 acres. Risk of injury to Soldiers from vegetation encroachment is reported on about 38,000 acres. About 1,000 acres are reported as causing structural damage. Another 27,000 acres are under the category of “other”.

In general, dismounted training operations are most often impacted by understory (shrubs) and mounted maneuver is most commonly impeded by tree spacing. Line of sight issues, caused by dense vegetation, can negatively affect many types of training and is usually a seasonal problem as leaves block line of sight and effective operation of Multiple Integrated Laser Engagement System (MILES) gear. It should also be noted that the term “unusable” land due to vegetation is a very misleading term as almost no land is absolutely unusable for all types of training.

2.2 Vegetative Encroachment: Plan

The Army recognizes the importance of maintaining and sustaining our training lands, to include vegetative condition, to fully enable current and future training operations across the entire installation. Installations use the Integrated Natural Resources Management Plan (INRMP) as the framework for the conservation and rehabilitation of natural resources in accordance with requirements of the Sikes Act for “no net loss of training.” The INRMP is a comprehensive plan, addressing management of forests, vegetation, wetlands, soil and water, floodplains, invasive species, fish and wildlife and threatened and endangered species, wildland fire, and other components. Forestry reimbursables, conservation compliance, and real property services accounting for routine maintenance and repair are also particularly relevant to Army training lands management. Additionally, the Integrated Training Area Management Plan defines work required to sustain realistic maneuver training conditions. These plans and supporting projects have been very effective at ensuring no net loss of training and the sustainment of realistic training conditions on Army training lands.

In order to improve effectiveness to an even greater degree, the Army is developing an installation multi-disciplined team approach for a Range Complex Master Planning Process that incorporates a strong Training Land component into the Installation’s Range Complex Master Plan (RCMP). The RCMP integrated planning team includes representatives from all installation offices involved in training land management including Directorate of Public Works facilities, environment, conservation, forestry, Integrated Training Area Management (ITAM), and Range Operations. This team is responsible for mapping installation training area needs to land management practices and prescriptions. The RCMP Land Section details what vegetation conditions are required across the entire installation’s training lands. The RCMP process will increase the coordination and effectiveness of all training land management programs on the desired training land conditions.

Nearly all installations are actively managing unwanted vegetation. The most common methods of control are mechanical (disc, plow, shredder, dozer, bush-hog); chemical (herbicides); and prescribed fire. Other less common techniques include vegetation removal by hand (axe, chain saw) and biological control (insects and fungi to control undesirable plants). Typically, installations use a combination of the above mentioned management techniques to control unwanted vegetation.

The Army has a successful history in managing and controlling vegetation in support of training. This is evidenced by the relatively low percentage (6.3%) of training area acreage negatively impacted for some aspect of training. It should also be noted that having a small number of acres “negatively impacted” for some aspect of training does not equate to the inability to perform the training mission at that installation. Challenges remain, but with the implementation of the Army’s integrated planning process in support of the Range Complex Master Plan, installation land management programs will be focused, prioritized, and synchronized to ensure training land access and capabilities are sustained.

Table 1*. Army -- Installations and Training Ranges Reporting Impacts to Training by Uncontrolled Vegetation

Installation Range Name	State	Total Training Acreages	Unusable Training Acreages	Acres Line of Sight Impacts	Acres Impenetrable Density for Mounted Maneuver	Acres Impenetrable Density for Dismounted Maneuver	Acres Soldier Injury Hazard	Acres Equipment Damage Impacts	Acres Structural Damage Impacts	Acres Other Impacts
88TH RSC - WI	WY	11,388	3,213	420	830	778	787	398	-	-
9TH MSC	HI	2,000	15	5	-	10	-	-	-	-
ABERDEEN PROVING GRD	MD	64,250	6,000	5,000	-	-	-	-	-	1,000
CAMP ATTERBURY	IN	31,889	266	48	49	75	16	-	2	76
CAMP BOWIE	TX	8,697	300	20	200	75	-	-	-	5
CAMP CROWDER	MO	4,098	160	-	-	120	40	-	-	-
CAMP DODGE JOHNSTON TS	IA	591	587	-	587	-	-	-	-	-
CAMP GRUBER	OK	46,887	8,500	3,000	7,000	3,500	200	1,000	-	-
CAMP MAXEY	TX	6,562	50	-	-	-	-	-	-	-
CAMP RIPLEY	MN	50,929	4,000	3,000	-	-	-	-	-	1000
CAMP SWIFT	TX	11,663	2,000	30	1,000	500	-	-	-	470
CASWELL/LORING	ME	1,053	700	-	500	200	-	-	-	-
CTA CAMP MC CAIN	MS	12,741	10	-	10	10	-	-	-	-
DEVENS RESERVE TRNG	MA	4,588	100	70	20	30	-	-	-	-
FORT A P HILL	VA	74,263	51,900	-	50,000	1,200	-	-	-	700
FORT BENNING	GA	168,119	35,000	635	28,000	2,800	150	28,000	500	-
FORT CAMPBELL	KY	94,121	55,316	-	50,822	-	-	-	-	4494
FORT CARSON	CO	358,504	104,845	-	2,048	8,407	-	-	-	94432
FORT CHAFFEE MTC	AR	61,452	44,900	7,000	12,000	21,000	900	4,000	-	-
FORT CUSTER TC	MI	7,487	130	-	-	100	20	-	5	5
FORT DRUM	NY	98,524	24,341	-	14,469	9,872	-	-	-	-
FORT EUSTIS	VA	5,072	1,410	384	838	188	5	-	-	-
FORT GORDON	GA	49,149	13,407	2,581	8,044	2,681	100	-	5	-
FORT HOOD	TX	199,758	33,000	33,000	-	6,000	6,000	-	-	-
FORT HUACHUCA	AZ	73,840	2,368	-	-	-	2,368	2,368	-	-
FORT HUNTER LIGGETT	CA	153,872	15,000	-	-	5,000	10,000	-	-	-
FORT KNOX	KY	101,220	254	178	-	-	-	-	76	-
FORT LEE	VA	3,097	2,360	472	1,079	236	-	-	-	573

Installation Range Name	State	Total Training Acreages	Unusable Training Acreages	Acres Line of Sight Impacts	Acres Impenetrable Density for Mounted Maneuver	Acres Impenetrable Density for Dismounted Maneuver	Acres Soldier Injury Hazard	Acres Equipment Damage Impacts	Acres Structural Damage Impacts	Acres Other Impacts
FORT LEWIS	WA	77,577	3,104	633	995	1,056	36	364	15	5
FORT MCCLELLAN ARNG	AL	3,000	1,280	200	-	1,080	-	-	-	-
FORT PICKETT MTC	VA	38,699	1,220	1,200	-	-	10	10	-	-
FORT POLK	LA	138,126	100,000	50,000	30,000	16,000	-	-	-	4000
FORT RICHARDSON	AK	54,541	34,945	22,040	34,945	17,826	13,762	34,945	-	5
FORT SAM HOUSTON	TX	27,600	9,396	-	9,396	-	-	-	-	-
FORT SILL	OK	85,002	6,000	-	6,000	301	-	-	-	-
FORT STEWART	GA	274,291	152,273	-	152,273	-	-	-	-	-
FORT W H HARRISON	AK	6,314	1,000	-	-	-	-	-	-	1,000
FORT WOLTERS	TX	4,061	250	-	20	-	-	-	-	230
HUNTER ARMY AIRFIELD	GA	2,742	169	169	-	-	-	-	-	-
MACON TS	MO	3,062	175	-	25	100	50	-	-	-
MARSEILLES MTA	IL	2,617	1,000	500	700	900	-	-	-	-
MIRAMAR	FL	1,000	100	100	100	100	-	-	-	-
MTA CAMP CLARK	MO	997	86	-	-	86	-	-	-	-
MTA CAMP RILEA	OR	4,188	220	128	-	80	-	-	-	12
MTA CAMP SHELBY	MS	133,193	21,768	532	6,618	14,618	-	-	-	-
MTA LIMESTONE HILLS	MT	19,120	2,000	-	-	-	-	-	-	2,000
MTA-L CAMP WILLIAMS	UT	25,000	1	-	-	1	-	-	-	-
MTC CAMP BLANDING	FL	68,543	10,930	-	-	10,930	-	-	-	-
MTC-H CAMP GRAYLING	MI	147,711	130	50	-	-	80	-	-	-
MTCH CAMP GUERNSEY	WY	35,062	21,779	101	-	-	-	-	-	21,678
NEWTON FALLS/UTES 1	CA	2,879	360	-	-	100	260	-	-	-
RILEY-BOG BROOK TS	ME	341,015	70	-	70	-	-	-	-	-
SCHOFIELD BARRACKS	HI	11,442	50	-	17	33	-	-	-	-
SPARTA TRAINING SITE	IL	2,617	100	-	100	50	-	-	-	-

Installation Range Name	State	Total Training Acreages	Unusable Training Acreages	Acre Line of Sight Impacts	Acre Impenetrable Density for Mounted Maneuver	Acre Impenetrable Density for Dismounted Maneuver	Acre Soldier Injury Hazard	Acre Equipment Damage Impacts	Acre Structural Damage Impacts	Acre Other Impacts
STEAD TRAINING SITE	NV	360	25	-	-	-	-	-	-	25
VTS CATOOSA	TN	1,515	50	25	-	25	-	-	-	-
VTS MILAN	TN	2,391	92	60	-	32	-	-	-	-
VTS TULLAHOMA	TN	6,553	45	-	45	-	-	-	-	-
W.H. FORD REG TNG CTR	KY	7,174	1,548	-	1,548	1,548	-	-	-	-
WEST POINT MIL RES	NY	14,101	549	21	-	175	280	-	70	3
WETS TRN SITE	NM	5,200	2,606	2,606	2,606	2,606	2,606	-	-	-
YAKIMA TRNG CTR	WA	324,313	81	61	-	-	-	-	20	-
YUMA PROVING GRD	AZ	1,033,361	3	-	3	-	-	-	-	-
Army Total		4,611,181	783,537	134,269	422,957	130,429	37,670	71,085	693	131,713

* The sum of the acreage among subcategories of restrictions (columns 5-11) for many installations does not equal the total Unusable Training Acreage (column 4). In some cases, the total of the subcategories is more than total Unusable Training Acreage because the vegetation on any one acre restricts more than one subcategory of mission use.

3.0 Navy

3.1 Vegetative Encroachment: Assessment and Identification

The vast majority of Navy ranges or installations did not report vegetative encroachment as a substantial problem. However, specific concerns were identified at San Clemente Island, CA. These issues are briefly discussed here and are detailed in Table 2.

Overgrowth of dense brush and cactus at the Navy's San Clemente Island (SCI) presents significant challenges to ground training for Naval Special Warfare and the U.S. Marine Corps, and complicates the ability of the Navy to conduct required unexploded ordnance (UXO) clearance, range maintenance, and target placement. This in turn affects numerous training activities in the larger SOCAL Range Complex that rely on the SCI land targets/live-fire impact areas. These impacts, and plans to address them as part of a larger integrated natural resource management effort, are discussed further in the following table.

3.2 Vegetative Encroachment: Plan

The Navy manages vegetative encroachment as part of its integrated range management practices. To ensure it is able to use its ranges while also meeting environmental protection requirements and providing sound natural resources stewardship, the Navy uses its Integrated Natural Resources Management Plans and related environmental management processes, as well as the National Environmental Policy Act (NEPA) process where appropriate.

Table 2: Navy -- Installations and Training Ranges Reporting Impacts to Training by Uncontrolled Vegetation

Service / Com-mand	Installation /Range Name	State	Total Training Acreage	Unusable Training Acreage	Description of negative training impacts from vegetation and overgrowth	Description of plan/approach to address training constraints caused by vegetation and overgrowth
US Navy	San Clemente Island (SCI)	CA	37,200	40% south of VC3 = 9920 15% north of VC3 = 1860 Note - 80% of TAR 21 is covered with cactus (=66 acres), and therefore unusable by Naval Surface Warfare for live fire OTB and I MEF infantry maneuvers. Total = 11,846 acres	<u>Cactus (non-indigenous)</u> Restricts Naval Special Warfare and other Special Operation commands operating in assigned training areas. Restricts planned USMC (I MEF and EWTGPAC) training expansion on SCI (per SOCAL EIS/OEIS, 2009) for Battalion Landings, Reconnaissance, and six other training activities included in SOCAL EIS/OEIS ROD. Density of cactus prevents operational range clearance, EOD, and range personnel from accessing target areas ISO range ops, maintenance, & sustainment. Unless dead, cactus holds moisture and	CINCPACFLT to develop Environmental Assessment (EA) to address island-wide controlled burns that facilitate follow-up UXO sweep of all historical and current ranges. EA will tier off existing SCI Fire Management Plan EA (2009) developed for SCI. Fuel management actions depicted in EA will be an ongoing requirement in areas currently used for live-fire training including (at a minimum), SHOBA, MIR, 20 TARs, and nine BTS. Based on historical consultation with the US Fish and Wildlife Service on fire management on SCI, anticipate requirement to further restrict training activities on SCI as trade-off for increased fuel management practices.

					<p>does not readily burn, and provides an umbrella-like canopy that hinders aerial dropped, fire retardant, fuel breaks from filtering down to the shorter vegetation and subsequent ground. The inability to get retardant to the ground allows the shorter grasses to burn under the cactus, transporting the fire across the fuel breaks.</p>	
US Navy	SCI	CA	37,200	Limited use in 12,848	<p><u>Dense Brush (non-native grasses)</u> Brush (up to 4 ft tall) hides Unexploded Ordnance (UXO) and hinders Operational Range Clearance (ORC) and Explosive Ordnance Disposal (EOD) Operations. Brush could be removed using controlled burns, but environmental documentation to support controlled burns is not included in the 2008 EA and associated regulatory Biological Opinion (2008). Until thorough UXO sweeps are conducted in accordance with DoD-mandated Operational Range Clearance (ORC) guidelines, operational training areas and ranges are permanently off limits for readiness training (ref. SOCAL EIS, 2009) and environmental monitoring (ref SCI Biological Opinion, 2008).</p>	<p>CPF to develop Environmental Assessment (EA) to address island-wide controlled burns that facilitate follow-up UXO sweep of all historical and current ranges. EA will tier off existing SCI Fire Management Plan EA (2009) developed for SCI. Fuel management actions depicted in EA will be an ongoing requirement in areas currently used for live-fire training including (at a minimum), SHOBA, MIR, 20 TARs, and nine BTS.</p>
US Navy	SCI	CA	37,200	Island-wide distribution (37,200) of six listed plant species results in restricted utilization across the entire island	<p><u>Endangered Plants</u> Boundaries of the Assault Vehicle Maneuver Corridor (AVMC) were restricted to avoid listed plants. Specifically, presence of <i>Sibaria filifolia</i> (Santa Cruz Island rockcress) restricted the size of the Infantry Operational Area and Artillery Firing Position One used during nine USMC training events including Battalion Landings. Federally-listed plant species on SCI have no Recovery Plan, yet presence of species impacts Title 10 training activities in following manners: - Limits use of Gators and front loaders to remove range debris during ORC. - Limits use of herbicide for killing cactus and establishing fuel breaks. - Limits areas where</p>	<p>Species conservation is being addressed in the SCI Integrated Natural Resources Management Plan. However, until the USFWS develops recovery criteria in a Recovery Plan, restrictions on training activities will continue and likely expand to mitigate potential impacts to increases in the listed plant species populations around the island. The plant species of SCI were the first six species listed by USFWS under ESA in the 1970's. While these species were included in a general Recovery Plan developed in 1984, the Recovery Plan needs to be identified by USFWS as a priority for updating.</p>

					<p>controlled burns could be conducted.</p> <ul style="list-style-type: none">- Limits use of bulldozers to fight fires and establish fuel breaks. <p>Establishment of additional listed plant species colonies (per 2008 SCI Biological Opinion Terms and Conditions issued by DoI to DoN) around San Clemente Island will increase the number of areas off limits to tracked vehicle, land detonations and large troop maneuvers. There are currently no success criteria for any of the six listed plant species on San Clemente Island.</p>	
--	--	--	--	--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

4.0 Air Force

Vegetative encroachment is not a pervasive problem for Air Force training because most test uses coexist well with resident flora. AF training ranges typically host targets and instrumentation and provide safety and security buffers in support of air training operations. Natural vegetative land cover therefore does not pose a significant encroachment challenge in most situations.

Only one range, the Barry M. Goldwater Range – East in Arizona, reports encountering specific vegetative management challenges. This is primarily associated with an increase in invasive plants and grasses, which in turn can heighten the threat of disruptive wildland fires that complicate both training and effective ecosystem management.

Table 3: Air Force -- Installations and Training Ranges Reporting Impacts to Training by Uncontrolled Vegetation

Service (Command)	Installation/Range Name	State	Total Training Acreage	Unusable Training Acreage	Description of negative training impacts from vegetation and overgrowth.	Description of plan/approach to address training constraints caused by vegetation and overgrowth.
USAF, AETC	Barry M. Goldwater Range-East	AZ	1,050,126	0	<p>Training was interrupted in 2005 during a wildland fire.</p> <p>The minimum altitude at which aircraft may release flares increases when and where the threat of wildland fire is more severe.</p>	<p>At BMGR-East, the impacts of vegetation on training are related to fire. A wildland fire on BMGR-East can disrupt training and damage the ecosystem. The growth and spread of invasive vegetation increases the risk of wildland fire.</p> <p>To mitigate against the spread of vegetation that increases the fire risk and can disrupt training, the range:</p> <ol style="list-style-type: none"> 1. conducted several on-the-ground projects, ranging in size up to over 40 hectares, to eradicate invasive vegetation that can carry fire 2. Routinely monitors for outbreaks of invasive vegetation 3. Participates in regional invasive species working groups 4. provided in-house funding and encouraged outside collaborators to conduct research that will elucidate dynamics of how invasive species spread in the desert, and how to combat the invasion
ACC	Poinsett Electronic Combat Range	SC	12,520	0	None, however, overgrowth of grass and small brush could occur if not managed by maintenance.	Managed via mechanical removal and prescribed fire, in accordance with range INRMP.

ACC	UTTR	UT	1,490 Sq Miles	0	Cheat grass is an invasive non-native plant that increases the fire threat on large portions of the UTTR.	Presently the Natural Resources Department at Hill is working to reduce the invasive plants presence on the range by planting other types of vegetation that will replace the Cheat grass. Until the invasive plant is removed from Range property, controls consist of watching high fire areas, performing controlled burns, and instituting remediation plans to reduce fire potential.
ACC	Avon Park AFR	FL	100,929	45,000 (if mgt actions not applied)	Visual and physical obstructions, extreme fire hazard, poor target definition/identification	Prescribed burning, herbicide, mechanical removal (to include cattle grazing program), IAW INRMP and CRP.
ACC	Saylor Creek Range	ID	112,000	0	Climate forces vegetation to go dormant. Climate factors induce fire risk ratings to be applied. Activities are restricted as fire risk category increases. Approximately 150 days per year, aircraft are restricted to dropping ordnance when firefighters are on duty. Firefighters are on duty 12 hours per day during fire season. Approximately 150 days per year aircraft flares are not authorized below 5000' AGL. The normal minimum altitude is 700' AGL. Approximately 5 days per year ordnance dropping is not authorized at all on range due to extreme fire danger.	Manage IAW INRMP. Reduce fire risk through herbicide treatments on 3,200 acres annually and seeding treatments on 1,000 acres annually to convert annual nonnative grasslands to perennial, fire resistant vegetation. Firefighters on duty during fire season so ordnance dropping is authorized. Fire breaks on range to reduce chance wildfire will spread.
ACC	Juniper Butte Range	ID	12,000	2,021 acres, comprised of 60,000+ slickspots, widely dispersed over the 12,000 acre range. Approximately 2,000 acres are in sagebrush	Slickspot peppergrass is a threatened plant species found on range. Training activities are not allowed in slickspots or in the associated sagebrush. Ground personnel are not permitted to traverse through certain areas of the range. Vehicle travel is limited to designated roads only. Fire restrictions similar to Saylor Creek during fire season..	None
ACC	Dare County	NC	46,621	0	Visual and physical obstructions, poor target definition/identification, and loss of training days possible if a wild fire occurred in the 41,000 acre forest underbrush overgrowth.	Prescribed burns according to the Wildlands Fire Management Plan.

5.0 Marine Corps

Combat readiness is of the utmost importance to the Marine Corps. Similar to the Army, the Marine Corps recognizes the importance of maintaining and sustaining its lands, to include vegetative condition, to fully enable current and future training operations across the entire suite of its installations, operational ranges, and training areas. Restrictions on training, to include vegetative encroachment, can increase the extent to which military readiness is compromised due to reduced flexibility to use military lands for current and future military training and general mission activities.

Land area, airspace, and sea space comprise the three operational elements of the Marine Corps' training range infrastructure. The Marine Corps range infrastructure also includes a system of systems composed of six major components. These major component systems are: *Scheduling, Communications, Meteorological, Target, Instrumentation, and Opposition Force*. On Land Maneuver and Land Firing Ranges, vegetative encroachment primarily affects the Target System, i.e., targets hidden by scrub brush growth. The Target System includes fixed and mobile land and air targets, target body, active and passive emitters and augmentation mounted on the target to provide performance feedback to shooters, and target control systems. On Land Impact Areas, vegetative encroachment primarily affects Operational Range Clearance (ORC) activities, i.e., compromises the safe detection and removal of Unexploded Ordnance (UXO), range munitions and debris. Natural resources conservation requirements, particularly pertaining to compliance with the Endangered Species Act and Migratory Bird Treaty Act, are also a significant consideration for the availability of land area that precludes range use on many operational ranges and training areas.

Vegetative encroachment and overgrowth on Marine Corps installations, operational ranges, and training areas, for example, Marine Corps Base (MCB) Camp Pendleton, California, directly affects the day-to-day planning, scheduling, and conduct of range and training area operations and the safety of personnel. Vegetative encroachment requires a substantial amount of maintenance time, manpower, and resources in order to maintain an acceptable level of training conditions. Maintaining proper conditions is necessary for the safe conduct and execution of training in live fire and maneuver areas, drop zones, landing zones, confined area landing sites, artillery firing areas, mortar firing areas, and all the other related training facilities and systems.

5.1 Vegetative Encroachment: Assessment and Identification

Marine Corps installations with significant natural resources use the Integrated Natural Resources Management Plan (INRMP) as the framework for the conservation and rehabilitation of natural resources in accordance with requirements of the Sikes Act Improvement Act (SAIA). The SAIA requires that the INRMP be “consistent with the use of military installations to ensure the preparedness of the Armed Forces,” and that there is “no net loss in the capability of military installation lands to support the military mission of the installation.” Based on the SAIA requirement to provide for the conservation and rehabilitation of natural resources on military installations, each INRMP must support and be consistent with the mission of the installation. To sustain realistic training conditions on Marine Corps Land Maneuver, Land Impact Area, and Land Firing Ranges, the Marine Corps is exploring opportunities to control vegetative

encroachment. Example activities include but are not limited to the following: Evaluate existing conditions for vegetation constraints (endangered flora and fauna, wetland ecosystem requiring protection, wildlife habitats); Identify (vegetation heights, density); Control (standard mechanical, chemical, or prescribed fire practices); and, Sustain (approved funding source for applying practices to suppress the vegetative growth after clearing).

For typical installation-level real property facilities management, range-maintenance requirements are incorporated into a single Operations and Maintenance Marine Corps (O&MMC) budget identified as Base Operating Support (BOS) that supports all installation-level maintenance. Despite limited funds available for range-maintenance requirements, the Marine Corps is exploring opportunities to identify appropriate resources to control vegetative encroachment.

The Table 4 provides a representative sample of the problem of vegetative encroachment associated with Land Maneuver, Land Impact Area, and Land Firing Ranges within the fourteen Marine Corps Range Complexes.

Table 4: Marine Corps -- Installations and Training Ranges Reporting Impacts to Training by Uncontrolled Vegetation (representative examples)

Service / Command	Installation /Range Name	State	Total Training Acreage	Unusable Training Acreage	Description of negative training impacts from vegetation and overgrowth	Description of plan/approach to address training constraints caused by vegetation and overgrowth
US Marine Corps	Marine Corps Base Quantico	VA	Land Area for Ranges = 64,000 acres	<p>Affected Areas:</p> <p>Ranges 3A, 7, 8, 8A, and 15 (169 Targets) target acreage affected is less than 1 acre total.</p>	<ul style="list-style-type: none"> • Precludes intended range use as designed. Training is degraded as realistic live fire training must always provide for visual/aural feedback to the shooter. • Obscures line of sight from the firing points to the target areas specifically target visibility (both man and vehicle sized targets) obscured due to height of grass throughout the growing season. • Precludes Mounted Maneuver training activities as intended • Precludes Dismounted Maneuver training activities as intended • Personnel safety hazard for safe detection and removal of UXO, range munitions and debris 	<p>A Categorical Exclusion has been prepared for treating small areas around the perimeter of targets periodically (1-2 years) with herbicide, to ensure line of sight.</p> <p>Continued use of controlled burning to help clear ground vegetation prior to herbicide application, and prevent trees and shrubs from invading on other parts of the ranges where visibility might be blocked.</p> <p>Prescribed burning is conducted annually on most ranges during the late winter and early spring to prevent wildfire occurrence, but also to prevent trees and shrubs from becoming established. Prescribed burning has been effective where burning is regularly conducted. Some ranges, such as Range 14, can be quite difficult to access for maintaining firebreaks and conducting controlled burns, due to training.</p> <p>Prescribed burning has also been effective in support of operational range clearance in the OP-13 area.</p>
US Marine Corps	Marine Corps Base Camp Pendleton	CA	Land Area for Ranges = 125,704 acres	<p>Affected Areas:</p> <p>Ranges KD-103 from the 1,000 yard line, 108, 117A, 206, 206A, 207 and 216 live fire training ranges acreage affected is over 300 acres.</p> <p>Live Fire and Maneuver (LFAM) areas 702, 705, 706 and 711 acreage affected is over 150 acres</p> <p>R-408 acreage affected is 95 acres</p> <p>R-208C acreage affected is 102 acres</p>	<ul style="list-style-type: none"> • Precludes intended range use as designed • Obscures line of sight from the firing points to the target areas • Precludes Mounted Maneuver training activities as intended • Precludes Dismounted Maneuver training activities as intended • Personnel safety hazard for safe detection and removal of UXO, range munitions and debris 	<p>Prescribed burning has been authorized and is used to some effect, however, these must be coordinated with local fire departments and must take into account air quality standards which can direct the timing of these burns to times NOT optimal to support training ranges.</p> <p>Development of a Programmatic Categorical Exclusion (CATEX) is to be pursued in order to standardize range maintenance (to include vegetative encroachment) on a wider swath of range land (up to approx 6000 acres including LZs, DZ's and AFA's).</p>

Vegetative encroachment is handled by the Marine Corps as part of an integrated approach to land management that encompasses many diverse programs and efforts. These programs and efforts include: Range Complex Management Plans (RCMP), Encroachment Control Plans (ECP), INRMP, and the execution and maintenance of these plans by effective range, installation and environmental programs. Integrated planning considerations include, but are not limited to, operational training requirements, ORC, range maintenance, natural and cultural resources management, water and air quality compliance, and threatened and endangered species management.

Prescribed burning can be an extremely beneficial tool to reduce fuel loads and control vegetation in areas with fire dependent or fire resistant vegetation communities. However, wild fires outside the normal fire regime of an area, or inappropriate use of prescribed burning, have the potential to result in conversion from desirable vegetative communities to something less desirable. For example, repeated fires at the Ulupau Crater Range in Hawaii have resulted in a conversion of native grasses to non-native grasses. The non-native grasses are fire dependant thus have greater flammability resulting in more frequent and severe fire occurrences. Results are being monitored following the installation of water cannons on the range to control fires and aid in the reintroduction of native vegetation. At Marine Corps Base Camp Pendleton, California, repeated fires resulted in a vegetation conversion from native grasses to non-native and highly flammable fennel and other species. Physical removal of vegetation through mechanical means has been employed but is cost, time, and manpower intensive. In some locations, however, this may provide the only management option since prescribed burning is dependent on suitable atmospheric conditions and soil moisture. The use of prescribed fire can also require closing ranges or training areas while burning, and is problematic near populated areas or major highways. Such restrictions can eliminate the use of fire as a management tool. Marine Corps Base Hawaii has led a research effort on the use of cattle to control non-native species with positive preliminary results. Marine Corps Base Camp Lejeune, North Carolina, cut trees and removed stumps to reclaim access to Land Maneuver, Land Impact Area, and Land Firing Ranges.

5.2 Vegetative Encroachment: Plan

Effective encroachment control requires an outward-directed, forward-looking, coordinated effort by the entire Marine Corps chain of command. With appropriate DoD-level policy support and oversight, the Marine Corps' approach to dealing with vegetative encroachment is through Service implementation of existing range and natural resources management processes at each level of the Marine Corps hierarchy. Levels of the Marine Corps hierarchy include: Service Headquarters, Region, and Installation. Each level has responsibilities for assessing current and projected encroachment threats, and for engaging other stakeholders in developing effective encroachment control plans and strategies.

At the Service Headquarters level, Deputy Commandant, Installations and Logistics (DC I&L) is the proponent for all matters pertaining to the oversight and coordination of encroachment control, including issuing policy and guidance, education, tasking of

responsibilities, monitoring accomplishment, and resolution of conflicts that may exist with the administration of encroachment control policy and programs. The Assistant Deputy Commandant, Installations and Logistics (Facilities) is the executive agent for encroachment and natural resource issues within the Marine Corps. Facilities coordinates uniform implementation of encroachment control policies and programs, and provides courses of action and recommendations to the Deputy Commandant, I&L when regional-level resolution of an encroachment control issue cannot be attained. Commanding General, Training and Education Command (CG TECOM) is the proponent for all matters pertaining to the oversight and coordination of operational ranges and training areas, including issuing policy and guidance as the executive agent for ranges and training area issues within the Marine Corps. Collectively, these organizations co-chair the Headquarters Marine Corps Mission Capable Ranges Working Group. The mission of the HQMC Mission Capable Ranges Working Group (HQMC MCRWG) is to act as the HQMC coordinating body responsible for oversight, development, and coordination of a comprehensive Marine Corps response to encroachment pressures that adversely affect or have the potential to adversely affect Marine Corps installations, operational ranges, training areas, associated special use airspace, sea space, radio frequency spectrum and other locations where the Marine Corps conducts current and plans future military testing, training and general mission activities.

As a Region level example, Marine Corps Installations East (MCIEAST) Encroachment Management Action Team (EMAT) provides an interdisciplinary forum for fulfilling responsibilities, including maintaining cognizance and coordination on all encroachment issues within the MCIEAST Region geographic area of responsibility. The MCIEAST EMAT provides an integrated regional staff approach pertaining to planning, prevention, and control of encroachment and assists the Commanding General in the discharge of encroachment control responsibilities.

As an Installation level example, Marine Corps Base Camp Lejeune, North Carolina has established an Encroachment Committee to provide an integrated staff approach pertaining to planning, prevention, and control of encroachment and assists the Commanding Officer in the discharge of encroachment control responsibilities.

5.3 Marine Corps Summary

Vegetative encroachment exists in varying forms at all USMC training ranges. If left unabated, vegetative encroachment will continue to create restrictions and prevent the operating forces from benefitting from the full capabilities of USMC ranges. Obscuration of line of sight from firing points to targets, restrictions to both mounted and dismounted maneuver, and safety hazards created by unsafe detection and removal of UXO and debris all contribute to a degradation of combat readiness and require ongoing action by installation commanders and their range staffs. Vegetative encroachment can be and has been a hindrance to training, and requires continued attention.

6.0 DoD Plan to Address Vegetative Encroachment

The Services have the Title 10 responsibility to manage the training range and installation lands under their care for readiness purposes. The control and management of vegetative cover on these lands is a part of Service integrated planning processes, as previously described in this report. Key elements in this integrated process include the development of Range Complex Master Plans (Army)/Range Complex Management Plans (Navy/USMC), Integrated Natural Resources Management Plans, and the execution and maintenance of these and related plans by effective range, installation, and environmental programs. The Department's approach to dealing with vegetative encroachment is through Service implementation of existing range and natural resources management processes, with appropriate DoD-level policy support and oversight.

At the DoD level, the Sustainable Ranges Integrated Product Team (IPT) is responsible for tracking significant encroachment issues, and coordinates a DoD-level response when appropriate. This body includes both OSD and Service training, testing, and installation and environment representation. To date, vegetative encroachment impacts on military readiness have not risen to a level requiring IPT action. However, the Sustainable Ranges IPT will continue to monitor this issue in the future, and is prepared to act if and when a coordinated DoD response becomes necessary to address readiness concerns.

The Deputy Under Secretary of Defense for Installations and Environment, within Acquisition, Technology and Logistics (AT&L), provides broad oversight of Service INRMPs and develops policy associated with DoD natural resources programs and activities. ODUSD (I&E) will continue to oversee the INRMP process to ensure vegetative management remains an integral consideration.

7.0 Summary

The landscapes and biological systems on DoD training ranges and installations are complex, and their management must be approached on a case-by-case basis. While the overgrowth of vegetation on training ranges can pose a management challenge in given situations, it cannot be easily generalized, nor can it be addressed in a simplistic manner. Given the multiple and varied missions assigned and oversight responsibilities vested in training range management, each situation calls for a tailored solution.

Vegetative encroachment is handled by the military Services as part of an integrated approach to land management that encompasses many diverse programs and efforts. Integrated planning considerations include, but are not limited to, operational training requirements, land repair and maintenance, natural and cultural resource management, water and air quality compliance, and threatened and endangered species management. This integrated approach helps to ensure the continued availability and accessibility of training lands and ranges, while at the same time supporting sound conservation and stewardship of both land and natural resources. In order to meet overall mission objectives, these many and varied considerations must be assessed holistically, and care

must be exercised in choosing appropriate courses of action. Furthermore, any resulting decisions must be compatible with and not draw resources away from a strategic approach to ensuring sustainability and accessibility of DoD training lands.

Appendix 1. FY2010 NDAA Congressional Reporting Requirement (HR111-288)

SEC. 342. PLAN FOR MANAGING VEGETATIVE ENCROACHMENT AT TRAINING RANGES.

Not later than one year after the date of the enactment of this Act, the Secretary of Defense shall submit to the congressional defense committees a report that includes the following:

- (1) An assessment of the extent to which vegetation and overgrowth limits the use of military lands available for training of the Armed Forces in the United States and overseas.*
- (2) An identification of the particular installations and training areas at which vegetation and overgrowth negatively impact the use of training space.*
- (3) A plan to address training constraints caused by vegetation and overgrowth.*