



Commonwealth of the Northern Mariana Islands

Department of Lands and Natural Resources

Lower Base, P.O. Box 10007

Saipan, MP 96950

Tel: 670-322-9834 Fax: 670-322-2633

September 25, 2015

Naval Facilities Engineering Command, Pacific
Attn: 09PA, Public Affairs Office
258 Makalapa Drive, Suite 100
JBPHH, HI 96860-3134

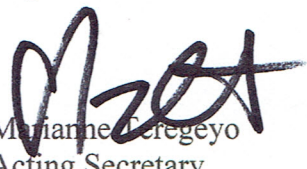
Dear Naval Facilities Engineering Command, Pacific:

The Department of Lands and Natural Resources is pleased to submit its comments regarding the Commonwealth of the Northern Mariana Islands Joint Military Training Draft Environmental Impact Statement (DEIS).

The proposed activities detailed in the DEIS will result in the greatest impact to the natural resources of the Commonwealth of the Northern Mariana Islands in recent history. As such, the Department of Lands and Natural Resources has carefully reviewed and prepared detailed comments on the DEIS.

We anticipate that our comments will aid in the preparation of a final Environmental Impact Statement. We look forward to a final document that is accurate, comprehensive, and that satisfactorily addresses the impacts on the Commonwealth's natural resources, including effective minimization, mitigation, and avoidance of environmental impacts to the maximum extent possible.

Regards,


Marianne Peregeyo
Acting Secretary
Department of Lands and Natural Resources
Commonwealth of the Northern Mariana Islands

CC: Governor, Commonwealth of the Northern Mariana Islands
Lieutenant Governor, Commonwealth of the Northern Mariana Islands
Director, Division of Fish and Wildlife
file



COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS

DEPARTMENT OF LANDS AND NATURAL RESOURCES

and

DIVISION OF FISH AND WILDLIFE

**Comments on the Draft Commonwealth of the
Northern Mariana Islands Joint Military
Training Environmental Impact Statement/
Overseas Environmental Impact Statement**

September 2015

CONTENTS

INTRODUCTION	3
ABBREVIATIONS	4
GENERAL COMMENTS	5
SECTION-SPECIFIC COMMENTS.....	32
Comments on Executive Summary	32
Comments on Chapter 1: Purpose and Need	33
1.4 The Mariana Islands	33
Comments on Chapter 2: Proposed Action and Alternatives	34
2.2 Unit and Combined Level Training Requirements, Representative Training, Weapons, Equipment, Participants, and Training Scenarios	34
2.4 Tinian Alternatives	35
2.5 Pagan Alternatives	38
Comments on Chapter 3: Affected Environment	40
3.3 Water Resources.....	40
3.5 Noise	41
3.7 Land and Submerged Land Use	42
3.8 Recreation	45
3.8.4 Tinian	46
3.8.5 Pagan	49
3.9 Terrestrial Biology	50
3.9.4 Tinian	50
3.9.5 Pagan	55
3.10 Marine Biology	56
Comments on Chapter 4: Environmental Consequences.....	58
4.3 Water Resources.....	58
4.3.2 Resource Management Measures.....	58
4.3.3 Tinian	59
4.3.4 Pagan	59
4.5 Noise	60
4.7 Land and submerged land use	62
4.7.3 Tinian	62

4.7.4 Pagan	66
4.8 Recreation	69
4.8.3 Tinian	71
4.8.4 Pagan	73
4.9 Terrestrial Biology	75
4.9.1 Terrestrial Biology Approach to Analysis	75
4.9.2 Resource Management Measures.....	79
4.9.3 Tinian	81
4.9.4 Pagan	102
4.10 Marine Biology	119
4.10.2 Resource Management Measures.....	119
4.10.3 Tinian	120
Comments on Chapter 5: Cumulative Impacts	125
Comments on Chapter 6: Additional Considerations	126
REFERENCES	128

INTRODUCTION

The Commonwealth of the Northern Mariana Islands Department of Lands and Natural Resources (DLNR) was established by Public Law 1-8, Chapter 13, on August 10, 1978. 1 CMC § 2651). DLNR is responsible for the protection and enhancement of the natural resources of the islands, including wildlife and marine resources, forests and agriculture. 1 CMC § 2653. DLNR is responsible for the protection and enhancement of natural resources including the marine environment, wildlife resources, forests and agriculture. DLNR is also responsible for the management, use and disposition of three miles of the submerged lands off the coast of the Commonwealth, pursuant to the Submerged Lands Act and U.S. Public Law 113-34. 2 CMC §§ 1201, et seq.; 1 CMC §2653(k). DLNR's mandate is carried out by the Division of Fish and Wildlife; Division of Agriculture; Division of Lands Registration and Survey; Division of Parks and Recreation; and the Soil and Water Conservation Districts. DLNR is headed by the Secretary of the Department of Lands and Natural Resources.

The Division of Fish and Wildlife (DFW) was created by Public Law 2-51 "Fish, Game, and Endangered Species Act" on October 19, 1981, to protect the fish, game, and endangered species of the CNMI. 2 CMC §§ 5101, et seq. The Director of DFW is responsible for the day-to-day administration and enforcement of the CNMI Fish, Game, and Endangered Species Act.

The Department of Lands and Natural Resources and its Division of Fish and Wildlife reviewed the Commonwealth of the Northern Mariana Islands Joint Military Training Draft Environmental Impact Statement (DEIS) to assess its accuracy, adequacy, and the stated impacts on terrestrial and marine resources of the Commonwealth.

This review is divided into two sections: a summary of general comments outlining our major concerns; and a detailed breakdown of our concerns with excerpts from the DEIS and DLNR's responses. Text in *italics* are direct quotes from the DEIS or elsewhere as indicated; non-emphasized text is used in our response to the DEIS. Numbers refer to sections, tables or figures from the DEIS.

Tinian Action Alternatives 1, 2, and 3 as well as Pagan Action Alternatives 1 and 2 for the most part do not substantively differ from one another. As such, the environmental impacts of the various alternatives on each of the two islands are almost identical. Therefore, the comments refer to each and every combination of the action alternatives, unless otherwise noted.

ABBREVIATIONS

AAV	Amphibious assault vehicle
APC	Area of Particular Concern
BECQ	Bureau of Environmental and Coastal Quality
BMP	Best Management Practices
CJMT	Commonwealth Joint Military Training
CNMI	Commonwealth of the Northern Mariana Islands
CWA	Clean Water Act
CWCS	Comprehensive Wildlife Conservation Strategy
CZMA	Coastal Zone Management Act
DCRM	Division of Coastal Resources Management
DEIS	Draft Environmental Impact Statement
DEQ	Division of Environmental Quality
DFW	Division of Fish and Wildlife
DLNR	Department of Lands and Natural Resources
DoD	Department of Defense
DoN	Department of the Navy
EIS	Environmental Impact Statement
ESA	Endangered Species Act
IBB	International Broadcasting Bureau
LCAC	Landing Craft Air Cushion Vehicles
MBTA	Migratory Bird Treaty Act
MIRC	Mariana Islands Range Complex
MITT	Mariana Islands Training and Testing
MLA	Military Lease Area
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
OEIS	Overseas Environmental Impact Statement
RTA	Range and Training Area
USFWS	U.S. Fish and Wildlife Service
USACE	U.S. Army Corps of Engineers
UXO	Unexploded ordnance
WQS	Water Quality Standards

GENERAL COMMENTS

The layout of the DEIS precludes comments on the two preferred alternatives.

Due to the immense similarities among action alternatives 1, 2 and 3 on Tinian, and 1 and 2 on Pagan, the DEIS routinely presents impacts on Alternative 1 only, and then states later in the document that the impacts will be the same for the other alternatives. Thus the public will most often submit comment on the impacts to Alternative 1 for both Tinian and Pagan, and not on the two Alternatives 2, the stated preferred alternative by the DoD. The DoD must acknowledge in their response to comments that for our comments, and all other comments submitted by the public, all comments submitted and the DoD's response apply to all three Tinian alternatives and both Pagan alternatives, and not just to Alternative 1 for each island.

The DEIS includes activities that are in violation of the Tinian Lease Agreement.

Chapter 6 provides a description of numerous unavoidable significant impacts of the proposed action that are deemed as irreversible or irretrievable (Table 6.3.1). Irreversible and/or irretrievable impacts are counter to the Tinian Lease Agreement which states that "with respect to the islands of Saipan and Tinian, the United States will correct the damage" Tinian Lease Agreement [pg 5] (January 6, 1983). By definition, any irreversible and/or irretrievable impacts on Tinian would be a violation of the Tinian Lease Agreement.

The claimed Pagan "no-action alternative" is false.

There are currently no military activities on Pagan that have been through the NEPA process. Therefore a true no-action alternative for Pagan would be no military action. The DoD needs to amend no-action alternative for Pagan to the true no-action alternative – i.e. no military activities on Pagan.

There are major contradictions in claims of environmental impacts throughout the DEIS

Section 6.3 states "*In addition, unavoidable adverse impacts related to the Tinian alternatives would occur due to: removal of native vegetation including limestone forest wildlife habitat; permanent loss of marine habitat including coral during construction and operations; and degradation of marine habitats through runoff and munitions. These would be irreversible/irretrievable impacts*". However in Chapter 4 these impacts are all dismissed as "less than significant". This is a major contradiction and the significance of these impacts must be correctly presented in Chapter 4.

Section 6.3 also states "*In addition, unavoidable adverse impacts related to the Pagan alternatives would occur due to: removal of native vegetation including forest wildlife habitat; permanent loss of marine habitat including coral during construction and operations; and degradation of marine habitats through runoff, munitions and noise. These would be irreversible/irretrievable impacts.*" However in Chapter 4 these are dismissed as "less than significant impacts". This is a major contradiction and the significance of these impacts must be correctly presented in Chapter 4.

The DEIS applies a mainland approach to impact assessment and demonstrates a lack of understanding of island systems.

Conservation and natural resource management in island systems deviate considerably from a mainland terrestrial system. The total land base in island systems such as the Marianas is extremely small. As a result, there are limited suitable habitat areas available for species that are displaced by adverse impacts. Dispersal between islands is uncommon, particularly for species with limited mobility. Extirpation events are relatively common due to stochastic events including typhoons and volcanic activity, such as the 2003 eruption on Anatahan which extirpated several native species on that island. Species that do successfully colonize an island often evolve in isolation. Speciation events occur, resulting in a very high proportion of endemic species in island systems compared to a mainland system. As a result of these processes, like many other island systems, the Marianas has low overall biodiversity, but a high degree of endemism compared with mainland areas equivalent in size. The risk of extirpation due to human activities is much higher in island ecosystems where alternative habitats and dispersal opportunities are not typically available. The DEIS has not taken these significant differences into account when assessing displacement of individuals, availability of alternative habitat, risk of local extirpation, and the resultant impacts of the proposed actions on fish and wildlife populations of the CNMI.

Habitat loss is especially important to consider in the CNMI due to the small total land area and its separation over 14 different islands, instead of a contiguous land mass. Even small losses of habitat quickly pose critical problems for species that are already experiencing decline. There are unlikely to be any nearby unoccupied habitats available to occupy, and dispersal between islands to other suitable habitats is unlikely. Because the CNMI hosts a wide variety of endemic, rare, threatened and endangered species, both habitat destruction and degradation of habitat quality will result in measurable losses to species, subspecies and population viability.

The following is an example of how the DEIS demonstrates a mainland approach and must be changed. Impacts are ruled “insignificant” because the total acreage of habitat loss is deemed as small, but this does not take into account the proportion of total habitat that these losses represent. On small isolated islands, where population sizes are inherently small and habitat is already restricted with no nearby areas of contiguous habitat, every acre of habitat matters, of any habitat type. All vegetation communities provide important habitat for wildlife, and all permanent habitat losses are “significant”. Alternatives 1, 2 and 3 on Tinian all propose 1798 acres of vegetation to be destroyed (4.9.3.1.1.1, 4.9.3.2.1.1, 4.9.3.3.1.1). Based on NOAA CCAP data, the island of Tinian has only 16,756 acres of forest and 1755 acres of scrub/shrub habitat (Liske and Burdick in prep.). On Pagan, Alternative 1 includes 622 acres of vegetation destruction for Alternative 1 (4.9.4.1.1.1) and 445 acres of vegetation destruction under Alternative 2 (4.9.4.2.1.1). Pagan features only 2053 acres of forest and 603 acres of scrub/shrub habitat (Liske and Burdick in prep.). Such losses of habitat represent significant portions of the remaining forest and scrub/shrub on each of these islands. Labelling these losses as “insignificant” is grossly underestimating the impacts of losing such large proportions of habitat.

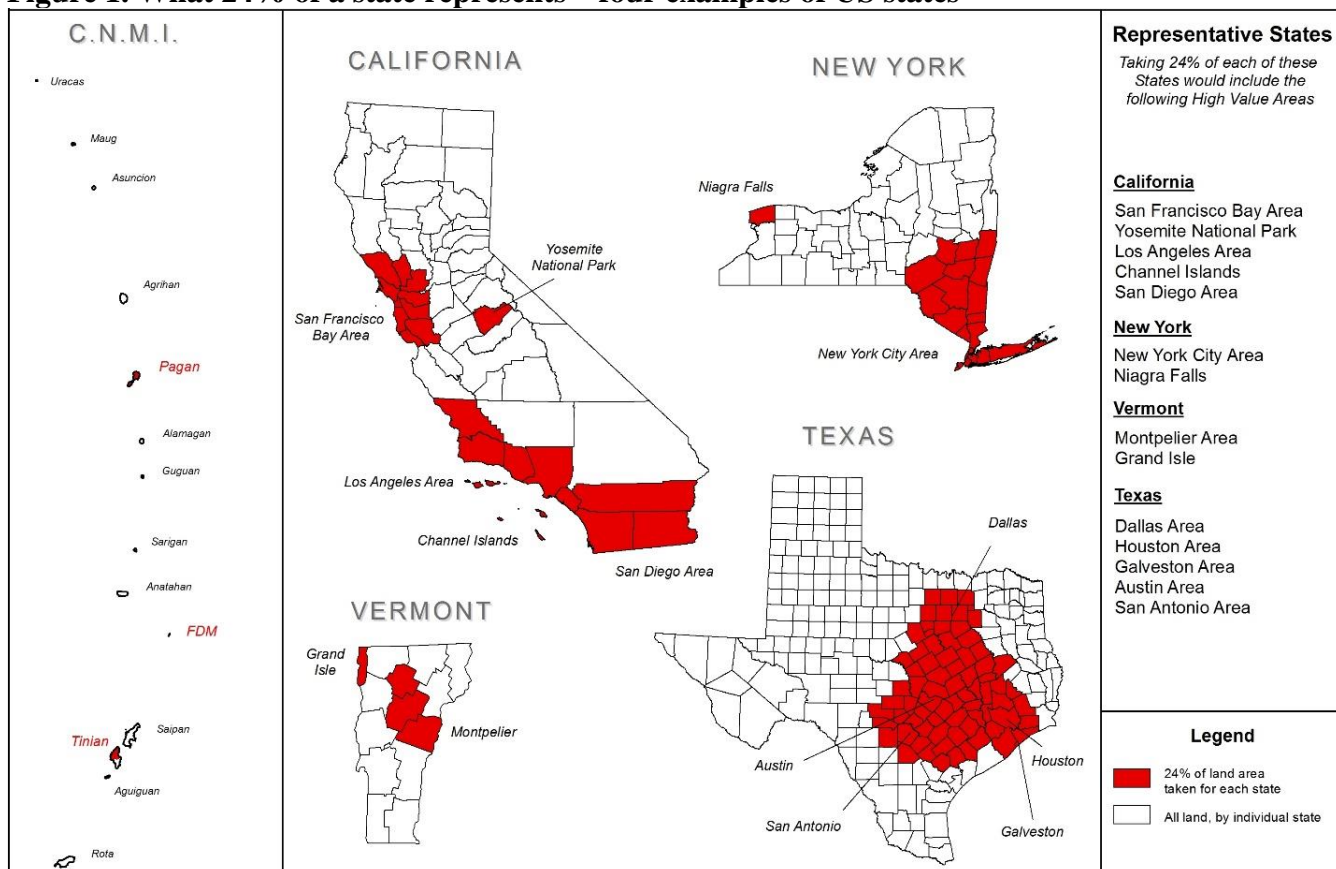
The military proposes to hold nearly one quarter of the CNMI land base under lease.

The natural resources of the CNMI belong to the people of the CNMI and are managed for their benefit. The people of the CNMI agreed in the past to grant military leases and restrict public

access to our resources on lands comprising 14% of the total CNMI land base over three islands (Saipan, Tinian and Farallon de Medinilla). Access to these areas is already restricted and value to wildlife and natural resources has been damaged. Increasing access restrictions to the proposed amount of 24% of CNMI lands (not including submerged lands and restrictions to fishing grounds and airspace) is excessive and unreasonable. The total land base of the CNMI, and total acreage of each type of native habitat within, is miniscule compared to most U.S. states. Figure 1 of the current document shows what 24% of Texas, California, New York and Vermont would look like. It would be inconceivable for the DoD to take over jurisdiction of these states to this extent, yet it is perceived as acceptable here in the CNMI.

CNMI's lands and waters provide a ready source of food in a place where food access and security is extremely limited. The local economy depends on these resources to supply food to grocery stores and restaurants, and as the essential foundation of the tourism industry. Any further restrictions on the people's access to their own natural resources are unacceptable. The ability of the CNMI Department of Lands and Natural Resources (including the Divisions of Fish and Wildlife, Agriculture, and Forestry) to fulfill its mandate of managing natural resources for the benefit of the people of the CNMI would be seriously restricted. DLNR cannot meet our agency mission without full management authority over these lands if nearly ¼ of the islands' area is controlled by the military.

Figure 1. What 24% of a state represents – four examples of US states



The DEIS does not address the impacts of UXO removal.

The Tinian Lease Agreement (pg 5) states that “*with respect to the islands of Saipan and Tinian, the United States will correct the damage, including removal of unexploded ordnance and exploded ordnance fragments introduced or uncovered by the United States during the term of this Lease Agreement*”. Thus the United States will need to clear all UXO and exploded ordnance fragments introduced or uncovered from the lease area at the end of the current lease period, which is January 1, 2033. It would be expected that a similar term would apply to any future Pagan lease.

The military will need to completely clear all UXO and ordnance fragments from Tinian and Pagan once the respective lease agreement is over. UXO removal on Saipan and Guam has typically required complete removal of vegetation in the course of the ordnance clearance. It would be expected that this would entail complete clearance of at least the High Hazard Impact Area at Range Complex A on Tinian (935 acres) plus significant portions of Range Complexes B, C and D. On Pagan, we expect that both the High Hazard Impact Area (4192 acres) and the Live Fire Maneuver Area (3922 acres) would need to be cleared. The DoD must include the impacts of the expected vegetation clearance acreages for UXO removal in the DEIS. The resulting impacts of habitat loss, soil removal, increased runoff and sedimentation, and cumulative impacts on terrestrial and marine wildlife from UXO removal efforts must be included in the DEIS.

Real alternatives have not been considered

The three alternatives on Tinian and the two alternatives on Pagan feature only minute differences from each other. This demonstrates that the DoD has failed to offer and consider real alternatives in order to actually avoid or minimize environmental impacts. For example, the construction of a massive 635-foot concrete landing ramp for amphibious vehicles at Unai Chulu will have massive, permanent environmental impacts. No alternative has been considered for this training activity on other islands that may have existing structures that could be utilized. The DoD must consider and present alternatives that will actually avoid or minimize environmental impacts.

Dates and seasons of proposed activities are critical to analysis of environmental impacts, but have not been provided.

By not providing dates and locations of activities in the DEIS, the DoD have made it impossible to properly evaluate the ecological, cultural and socioeconomic impacts. Activities occurring consecutively versus concurrently would account for a significant take in terms of exclusions within the Restricted Areas and Danger Zones proposed in the DEIS, especially if spatially-temporally overlapped with recreational opportunities for Pagan during the calmer summer months, strong seasonal commercial and sport fishing activity, coral and fish spawning events, and wildlife breeding seasons.

The timing of proposed activities is not stated.

The DEIS does not indicate for how many years these activities are expected to occur on Tinian and Pagan. Section 6.4 states “*training would continue well into future generations*”, making these actions more or less permanent, but this is not explicitly stated anywhere in Chapter 2. This

is extremely important to understand for analysis of long-term impacts on recreational, cultural and natural resources.

Section 2.1 states that *"The potential increase in training described in the Unconstrained Training Concept (Appendix C) reflects the maximum training capacity for each island. Potential future live-fire training could be accommodated up to a total of 45 weeks of training on Tinian and a total of 40 weeks of training on Pagan."* If 20 weeks of live-fire training on Tinian and 16 weeks of live-fire training on Pagan per year would meet the unfilled training requirements, why would additional weeks be needed? Would the additional training be assumed to have the same impacts as presented here, or would a new EIS be prepared? If so, then the DoD must be forthcoming and present the impacts of the maximum number of weeks proposed on Tinian and Pagan here in the EIS. There will be a massive difference in the impacts of 20/16 weeks per year of live-fire training versus 45/40 weeks per year. The analysis throughout this DEIS presents only the expected impacts of 20/16 weeks of training activities per year.

Impacts of pre- and post-training have not been presented throughout the DEIS.

Section 2.1 states *"In addition, other activities including pre-training and post-training activities (arrival and departure of trainees and equipment), non-live-fire training (e.g., logistics training), and RTA maintenance and management functions would occur outside of the live-fire training durations throughout the year."* Pre- and post-training activities will have many environmental impacts but these have not been included here. The timing of operations activities stated throughout the DEIS (20 weeks per year on Tinian and 16 weeks per year on Pagan) only includes the live-fire training periods. The DoD must present the environmental impacts of the pre- and post-training activities, non-live-fire and RTA maintenance and management functions.

There is a need for regular inspection of the areas under consideration.

An on-the-ground inspection of the sites to be utilized by CNMI regulatory agencies should be organized by the DoD to allow each agency to verify the assessments provided in the DEIS at least twice a year before, during and after the actions take place. Costs for this assessment should be borne by the DoD. Without seeing the areas to be impacted it is impossible for the agencies to properly evaluate the potential and actual environmental and cultural impacts of the proposed activities included in this DEIS.

The DoD incorrectly asserts that Pagan is uninhabited, that access is restricted, and that permits are required to visit

There are current, regular inhabitants of Pagan. There are no current restrictions due to volcanic activities, and there are no permits required to visit. The last time a volcanic eruption emergency declaration was issued for Pagan was on May 15, 1981, via Executive Order 1-81. The residents of Pagan have been rotating between Pagan and Saipan since the eruption but have always maintained that Pagan is their home and that they intend and plan to return permanently. During the year, Pagan's resident population varies but there are residents on the island during most of the year. The residents of Pagan are registered CNMI voters identified as being residents of the Northern Islands and are part of the Northern Island Mayor's Office. The CNMI government recognizes and supports the Pagan residents and their intention to return to their home island permanently and is attempting to assist resettlement through legislation aimed at creating economic opportunities such as designating Pagan as a "free trade zone", funding trips for

resettlement planning purposes and implementing homesteading. At no time has the CNMI government or the Pagan residents abandoned the island. The military's assertion that Pagan is uninhabited is false.

The DEIS repeatedly states that an analysis of impacts on humans was not completed for Pagan because Pagan is uninhabited. Because humans do currently live on Pagan, the DEIS must present analyses of all potential impacts on humans on Pagan. In addition, Appendix Q, Socioeconomic Study, states: *"homesteaders may have limited access that may infringe upon their ability to improve lots on Pagan. As such, population would be lower than established in the expected future baseline, which indicates that there would be people working homestead lots without the proposed action"* (Appendix Q, pg ES-2). The baseline stated in Appendix Q recognizes the plans of the CNMI government and citizens to conduct homesteading on Pagan, but the text of the DEIS continuously contradicts this reality.

Little to no consultation with the state natural resource agency regarding terrestrial and marine resource issues has occurred or is planned.

The DEIS consistently refers to past or future consultations with the U.S. Fish and Wildlife Service regarding impacts to natural resources. While Section 7 consultations with U.S. Fish and Wildlife Service are required for ESA-listed species, all fish and wildlife resources of the CNMI are managed for the benefit of the people of the CNMI by DLNR. Both the expert knowledge and jurisdictional authority held by DLNR has been disregarded. DLNR must be consulted throughout this process to provide needed information on natural resources, including fish and wildlife populations, and provide input on potential impacts of proposed activities. Failure to appropriately consult with our staff and agency, who conduct the vast majority of wildlife and fisheries study and monitoring in the CNMI, has likely resulted in many of the significant gaps in analysis apparent in the DEIS.

The DEIS relies on non-existent or inadequate measures and plans to support claims of mitigation, minimization and avoidance of environmental impacts of the proposed actions.

Throughout the DEIS, mitigation, minimization and avoidance are often mentioned, and are often used as reasoning for a finding of Less than Significant Impact on fish and wildlife resources in the CNMI. Yet, the DEIS lacks any real commitment to mitigation, minimization or avoidance measures. As we point out in our section-specific comments below, the DEIS repeatedly states that these measures or plans *may* (not *will*) be created and implemented. The DEIS repeatedly states, especially in regard to biosecurity and resource management (e.g. Section 2.4.1.4.1.3 Biosecurity, Section 2.4.1.4.2 proposed vegetation maintenance areas and management, Sections 4.9.2 and throughout 4.9.3 and 4.9.4) and Best Management Practices (Appendix D), that the mitigation, minimization or avoidance measures are not actual measures but are intentions to develop a plan. These include an intention to develop a Bird/Animal Aircraft Strike Hazard Plan (4.9.4.1), Range Fire Management Plan (4.9.4.1), Integrated Pest Management Plan (4.9.2.2), Hazard Analysis and Control Point Plan (4.9.2.2), and Forest Enhancement/Restoration and Monitoring Plan (4.9.3.1.1.1 and elsewhere). This oversight is a major flaw repeated throughout the DEIS. Plans that would mitigate, minimize or avoid impacts, and that lead to the ultimate findings of level of impact on resources and species, must not only be prepared, but described and available for review and comment. It is impossible for the public and CNMI resource agencies to evaluate the DoD's findings of Less than Significant Impacts if

we cannot review the measures and plans that the DoD asserts will achieve these results. We cannot accept findings of Less than Significant Impacts when the plans, protocols, measures and practices are not available for review and comment. In many cases, we do not agree that effective minimization, avoidance or mitigation is possible. The DEIS cannot assert the results of implementation of plans that don't yet exist and may not even happen in its findings of no significant impact.

The DEIS is unreasonably misleading in its use of appendices and reference material for the justification of findings of Less than Significant Impacts on fish and wildlife. As we explicate in our section-specific comments below, Chapter 4 continually references and cross-references Resource Management Measures (e.g. 4.9.2) and Best Management Practices (Appendix D) as containing *specific* plans, protocols, measures and practices that will alleviate impacts of actions on species and environmental resources. Yet, when one reads the cited materials, they do not contain specific plans, protocols, measures or practices, but only state the intention to eventually develop plans.

The impacts of disturbance on populations of fish and wildlife species are repeatedly underestimated.

The DEIS repeatedly claims “Less than Significant Impacts” on fish and wildlife populations despite massive disturbances proposed, with no scientific justification on why these impacts are deemed less than significant. The proposed action alternatives include high levels of disturbance on Tinian and Pagan in the form of habitat destruction, noise, physical impacts, and activity levels that will disrupt normal behaviors and habitat use of fish and wildlife populations. The analysis throughout the DEIS repeatedly underestimates and fails to account for the full impacts of disturbance on fish and wildlife populations due to habitat destruction and disturbance from construction activities, and further disturbance from operation activities. For example, the DEIS analysis of coral surveys (from military contractor and NOAA surveys) fails to present the specific impacts of activities on multiple unique and ecologically important habitats associated with the action areas on Tinian (e.g. at Unai Chulu, Babui, Lamlam, Dankulo and Masalok) and Pagan (Green, Red, Blue, North, Gold and South Beach).

The DEIS assesses impacts to terrestrial island species and populations with a mainland mindset and fails to account for the absence of alternate habitats for disturbed individuals to occupy. Disturbances will alter foraging and feeding, breeding, nesting, resting, rearing of young (for applicable species), movements (timing, duration, distances traveled), habitat use, prey availability and range use. These disturbances will cause animals to conserve less and expend more energy than would otherwise be the case. Survival, successful reproduction and the recruitment of young into the breeding population typically relies upon marginal differences in energy balance, and repeated, small energy losses lead to reproductive and recruitment failures and overall population decline. Disturbance events and habitat modifications generated by the action alternatives will result in “take” of federally and locally protected species, and contribute to the decline of species of conservation concern. Small or moderate repeated disturbances scale up to large population-level declines.

Displacement of individuals is a significant negative impact that has been underestimated in the DEIS.

The DEIS language expresses a simplistic view of wildlife behavior, i.e. stating that individuals will temporarily or permanently “move” or be “displaced” following habitat destruction or major disturbances, as if these movements have insignificant impacts on the individuals or populations (e.g. Mariana fruit bat and Mariana common moorhen in 4.9.3.1.1.1, 4.9.3.2.1.3 and 4.9.3.3.1.3). A displaced individual has to find food and shelter and avoid predators in an unfamiliar environment. Suitable, unoccupied habitats into which an animal can simply move are generally rare to non-existent, and even if they do exist, will be much lower in quality than occupied habitats. To refer to these individuals as “displaced” uses sanitizing language. These “displaced” individuals have little chance of long-term survival and reproduction, and must be considered “takes”, i.e. no longer contributing to the population.

For corals on Tinian (Unai Chulu, Babui, Lamlam, Dankulo and Masalok) and Pagan (Green, Red, Blue, North, Gold and South Beach), the surveys at the sites only covered impact sites and there were no comparisons to control sites using the broader NOAA surveys. The unique low-relief habitats of these areas tend to be relied upon by species (some possibly listed) as refugia against catastrophic events, such as El Nino and/or climate change or other disasters. Thus, the overlapping preference for these sites by both the military and certain coral species harms the resiliency of the local population(s). In the case of Tinian’s sites and the ESA-listed coral *Acropora globiceps*, which occurs in moderate to high densities (Appendix M2), the activities will impose a significant loss of resiliency to the population.

The expected increase in ungulates on Tinian has not been addressed

Populations of ungulates on military lands on Guam are extremely high, as hunters are not usually permitted to enter military lands. This has caused considerable damage to the vegetation on these lands. The populations of ungulates on Tinian are very low, as there are currently no restrictions on accessing the MLA. We expect that once the fence is built and access is restricted, numbers of ungulates within the MLA will increase. The impacts on vegetation and wildlife need to be addressed.

Noise levels are understated and estimates are not reliably given.

Many tables (e.g. 3.5-1, 4.5-9, 4.5-10) display expected noise levels, often just slightly below the threshold for compatibility with residential use. Slight deviation from these estimates would push the noise levels to unacceptable levels, causing long-term disturbance and physical harm to people and wildlife in the area. This document must include the confidence levels surrounding the displayed estimates of decibel levels. This assessment is invalid without displaying the percent chance that noise levels will be above the threshold level. This document must provide a scientifically valid estimate of variation and quantitative confidence level of the point estimates provided in all tables in section 4.5. Our initial assessment indicates that noise levels in residential areas may well exceed threshold levels for compatibility with residential uses which is unacceptable.

Given inherent uncertainty in military plans for precisely what weapons, explosives, or ordnance will be fired, when, for what duration, and how often, the designation of Peak 15 levels predicted for residential areas is unacceptably high. Noise may well exceed the predictions, and Peak 15 is

not maximum noise. Tables must provide precise estimates with scientifically valid confidence levels. Many of the table entries in this section state only “less than” (<) a threshold number, but provide no actual number, precluding us from accurately reviewing the potential effects of these actions.

The DoD have restricted their definition of a “wetland” to what is defined under USACE criteria for jurisdictional purposes under Section 404 of the Clean Water Act, but have applied this definition of a wetland outside the purposes of the Clean Water Act.

The Definitions section of the CJMT DEIS/OEIS includes the following definition for “wetlands”: “Wetlands are defined by Section 404 of the Clean Water Act as: ‘*areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*’”

Appendix L4 of the DEIS states: “*The purpose of the wetland surveys is to determine whether potential wetland sites within the Military Lease Area (MLA) on Tinian meet the definition of U.S. Army Corps of Engineers (USACE) jurisdictional waters under the Clean Water Act (CWA) (33 U.S. Code 1344 Section 328). While this report describes the wetland attributes of the surveyed sites relative to the CWA, it should be noted that the USACE must make the official determination of whether those sites fall under their regulatory program. Only after the USACE determines their jurisdictional authority over these sites would a wetland delineation become necessary. If applicable, results of the wetland surveys will be used in CWA Section 404 permitting processes.*”

The DoD has chosen to only define “wetlands” according to the USACE criteria, for then purposes of determining whether a site is jurisdictional, and thus would require a permit from USACE for draining and filling. The DoD needs to explain why it has chosen to only assess the presence of wetlands for the purposes of determining USACE jurisdiction, and not for other purposes, such as the provision of wetland habitat for endangered species, or compliance with the CNMI DCRM Coastal Management Program which would necessitate the use of a broader definition of “wetland”. While sites may not meet the strict definition of “wetland” under the CWA for the purposes of determining whether they are jurisdictional waters for USACE purposes, they still meet the classification of wetlands under USFWS definitions, CNMI local regulatory agency definitions, and in terms of providing essential habitat for endangered wetland-dependent species such as the Mariana common moorhen.

USFWS uses the following definition: “*Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.*” (Cowardin, 1979). Under the USACE definition, a site must meet all three of the above criteria under normal conditions. Under the USFWS definition a site need only meet one

of the three above criteria. Therefore sites that may not meet the USACE definition may still meet the USFWS definition.

The CNMI DEQ Water Quality Standards define wetlands as *“those areas that are inundated or saturated by surface or groundwater with a frequency sufficient to support a prevalence of plant or aquatic life that requires seasonally saturated soil conditions for growth and/or reproduction. Wetlands include swamps, marshes, mangroves, lakes, natural ponds, surface springs, streams, estuaries and similar areas in the Northern Mariana Islands archipelago. Wetlands include both wetlands connected to other waters and isolated wetlands. Wetlands do not include those artificial wetlands intentionally created to provide treatment of wastewater or stormwater runoff.”* NMIAC § 65-130-015(aa). The CNMI WQS definition is much broader than the USACE definition. Wetlands that do not meet the USACE definition of jurisdictional (streams, lakes) would still meet the CNMI WQS definition.

The DCRM definition of “wetland and mangrove Area of Particular Concern” is as follows: *“The geographic area of particular concern which includes areas inundated by surface or ground water with a frequency sufficient to support a prevalence of plant or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands include swamps, marshes, mangroves, lakes, natural ponds, surface springs, streams, estuaries, and similar areas in the Northern Mariana Islands chain”*. NMIAC § 15-10-330. Again, the DCRM definition is far broader than the USACE definition. Wetlands that do not meet the USACE definition would still meet the WQS definition.

Since all three of the above agencies (USFWS, DEQ and DCRM) have regulatory authority within the CNMI, the DoD must assess the presence of wetlands within the proposed action area based on all three of these agencies’ criteria, and not just the very narrow criteria of the USACE.

The wetlands survey in Mahalang area of Tinian is not complete.

In Appendix L4, the “Tinian wetland survey report”, the consultants only surveyed 6 of the 24 ephemeral sites that have been identified as potential wetlands within the Mahalang region in previous reports. The DEIS then repeatedly references the findings of Appendix L4 to determine the extent of wetlands that are impacted (e.g. 4.9.3.1.1). The DoD needs to survey all 24 of the Mahalang ephemeral sites in order to fully evaluate how much wetland habitat will be destroyed by the proposed actions.

The DEIS does not address impacts of proposed actions on submerged lands adequately.

The DoD avoids presenting actions and impacts on submerged lands. Instead the DoD has argued that a future Coastal Zone Management Act federal consistency determination will automatically render these impacts as less than significant, as they will be consistent to the maximum extent practicable with the CNMI’s coastal management program enforceable policies (4.7.3.1.4.1). This lack of analysis is completely unacceptable and is not in compliance with NEPA. In recent times, the DoD has repeatedly asserted Federal Consistency negative determinations for actions contained in environmental impact statements (e.g. Guam and CNMI Relocation EIS/OEIS, MIRC EIS/OEIS, MITT EIS/OEIS, Divert Activities and Exercises EIS), despite the fact that these documents contained multiple significant impacts to environmental resources. We cannot accept the DoD’s argument that any action that is in compliance with the

CZMA will automatically mean it has less than significant impacts. The DoD must present the impacts of the use of submerged lands in Chapter 4.

For Tinian, in-water and nearshore activities would spread to adjacent submerged land waters of the island. This would also affect the use of submerged lands of Saipan, as the area of overlap of the 3-geographical mile limit of submerged lands of Tinian and Saipan exceeds 20 square miles (Figure 2 of the current document). The beach sites on which actions will occur on Tinian and Pagan are geomorphologically unique, and are important to the resiliency of marine invertebrate and vertebrate species from these areas.

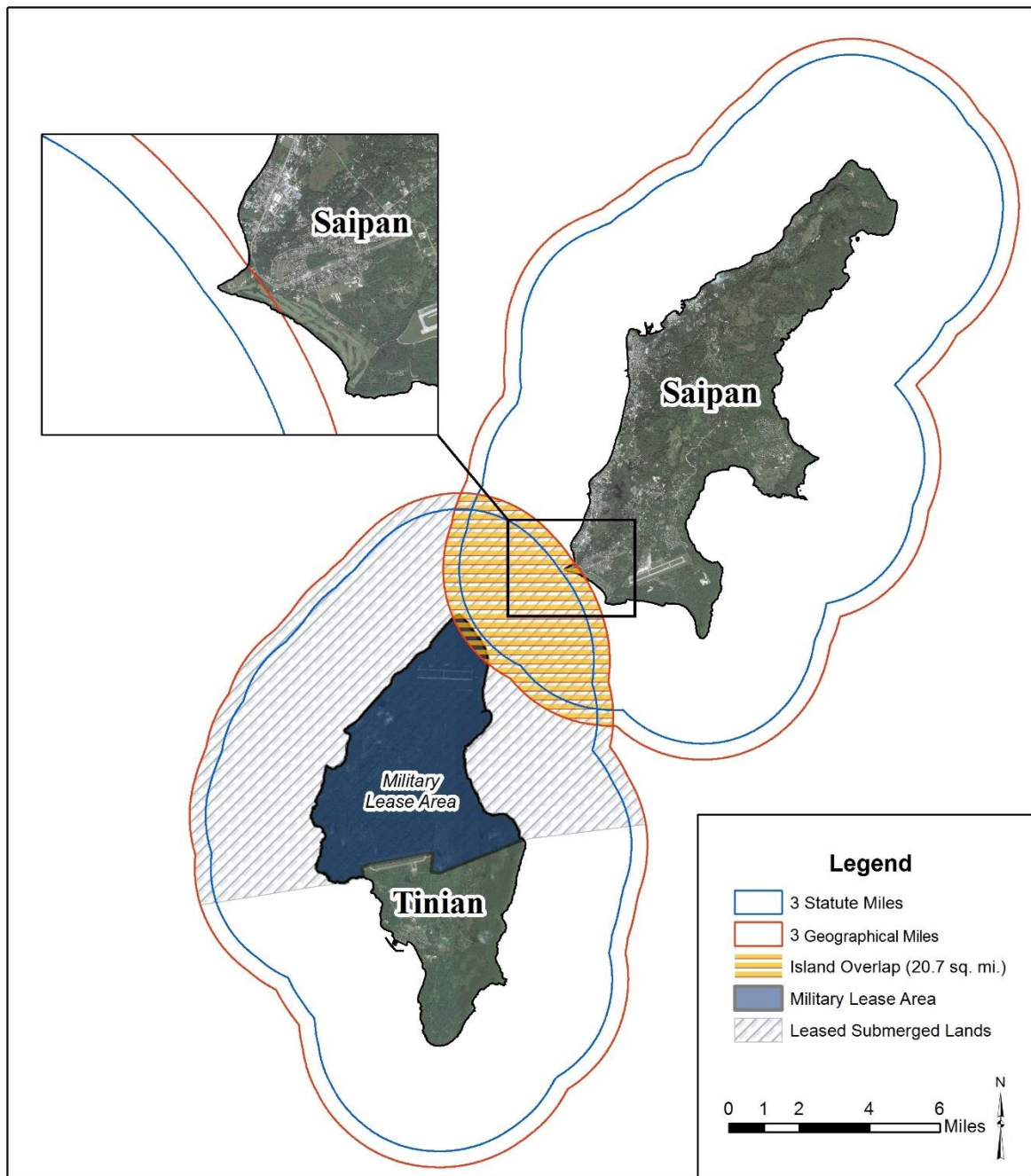
The DoD has claimed ownership of all the submerged lands off the coast of the Tinian MLA and ignored the overlap with the submerged land of Saipan.

The submerged lands surrounding the CNMI were conveyed to the CNMI Government via Public Law 113-34 on January 16, 2014, by amending Public Law 93-435. 48 U.S. Code § 1705(a). The submerged lands adjacent to the islands of the Tinian and Farallon de Medinilla military leased lands, plus the submerged lands adjacent to Farallon de Pajaros, Maug, and Asuncion were exempted from this conveyance through Presidential Proclamation 9077 on January 15, 2014.

Three geographical miles of submerged lands off the coast of Tinian overlap with three geographical miles of submerged lands off the coast of Saipan. There are 20.7 square miles within the Tinian–Saipan 3-geographical mile submerged lands overlap. The 20.7 square mile area of Tinian and Saipan’s 3-geographical mile submerged lands is shown in orange in Figure 2 of the current document. Presidential Proclamation 9077 did not address the issue of overlap when the Tinian MLA submerged lands were excluded from the conveyance. The ownership of the Saipan and Tinian overlapping submerged lands has not been resolved.

The 3-geographical mile limit is shown in blue on Figure 2 of the current document. The 3-statute mile limit is shown for comparative purposes. It appears that the DoD has depicted statute miles, not geographical miles, in Figure 3.7-1, even though the DEIS references 3 nautical miles for the definition of submerged lands throughout the document. In addition, both the Presidential Proclamation 9077 and 48 U.S. Code § 1705(a) refer to geographical miles (1,855 meters) in their definitions of CNMI submerged lands, not nautical miles (1,852 meters). This would make significant difference to the area of the Tinian and Saipan submerged lands overlap and in the boundary of the submerged lands of both islands.

Figure 2. Map of Saipan and Tinian 3 geographical mile submerged lands limits, showing difference between geographical and statute miles, and overlap of Saipan and Tinian submerged lands



The introduction of new invasive species will occur and the impact and costs have been underestimated in the DEIS. Necessary analyses have not been presented.

Even with rigorous biosecurity measures in place, the greatly increased volume of travel between Guam and other locations to Tinian and Pagan will result in new non-native species arrivals into the CNMI as well as the transfer of species between Tinian and Pagan, some of which will establish and become invasive. Invasions of non-native species constitute a grave and imminent threat to native CNMI fish and wildlife populations, particularly to endemic species. In neighboring Guam, military operations have exacerbated non-native species introductions, including invasive vines, rats, lizards, snakes, aquatic plants, invertebrates, noxious weeds, aggressive ants, and disease-carrying mosquitoes, that have led to a novel, simplified ecosystem with diminished function. The introduced brown tree snake has functionally extirpated all native forest birds and the only native mammal and, in doing so, eliminated forest seed dispersal and created island-wide ecological disruption. Costs of this ecological crisis have reached billions of dollars with harm permeating multiple sectors of environment and society. The successful invasion of any of a myriad of vertebrates and invertebrates would threaten collapse of ecological services and function similar to Guam. Preventing new species invasions both into the CNMI and between islands of the CNMI requires an extraordinarily high level of funding, time and effort from the CNMI government.

A major flaw in the DEIS, sections discussing invasive species limit discussion and impacts analyses almost entirely to the brown tree snake. Dozens of other species have been introduced to Guam, many due to military operations, and these pose grave threats to the CNMI. Other invasive reptiles and amphibians which threaten invasion and significant ecological and economic damage include the following frog species: greenhouse, eastern dwarf tree, Indian rice, Hong Kong whipping, coqui, and Gunther's amoy frogs from Guam. Operations will facilitate the spread of invasive terrestrial vertebrate species among islands that are already established in the CNMI, such as green anoles, green tree skink, rats (particularly the Malaysian black rat on Tinian), mice, and shrews. These species are significant threats to ground- and tree-nesting birds, and to endemic snails and skinks.

Of particular concern are invasive insects (mostly hymenopterans, hemipterans, coleopterans, and dipterans) and pathogens that have not been detected in the CNMI, but that are easily transported and overlooked in superficial inspections that would presumably be performed at ports of entry and by line personnel during maneuvers. Invasive terrestrial insects, once established, are nearly impossible to eradicate; they can cause significant damage to crops and wildlife habitats; and they can prey directly on species of conservation concern. They can also contribute to pestilence and be vectors for human, animal, and zoonotic disease.

Movement of vessels and cargo greatly increases the risk of new introductions, or facilitation of species that have already invaded but are currently restricted to only one or a few islands of the CNMI. From Guam, major threats include: little fire ants, Argentine ant, red fire ant, and bigheaded ant. These species will upset ecosystem function, damage agricultural crops and, at high densities, threaten a variety of native invertebrates including land crabs and snails, as well as ground-, cup-, and cavity-nesting birds. Of great concern is the potential importation of *Culex* spp. mosquitoes from Hawaii that are carriers of West Nile virus, filariasis, Japanese encephalitis, Saint Louis encephalitis, and avian malaria. Endemic birds have low resistance to

introduced pathogens such as avian malaria. This disease has decimated the lowland avifauna of Hawaii, causing multiple extinctions. Other mosquito species that will likely be introduced from Guam include: *Anopheles lesteri*, which readily attacks humans and is considered a primary vector of human malaria; and *Aedes* spp., which are vectors for Yellow fever, dengue fever, and filariasis. New construction and operations will also likely exacerbate the spread of introduced red-brown paper wasps (*Polistes olivaceus*) and Indonesian paper wasps (*Ropalidia marginata sundaica*). Structure building (including temporary structures) can facilitate wasp reproduction. The DEIS must present analyses of impacts and plans for prevention regarding the vast array of species likely to be introduced or spread within the CNMI.

There is a high probability that increased shipping activity and associated fouling and ballast-water organisms will introduce marine organisms to nearshore habitats. The DEIS does not address the imminent risk of marine invasive species. The DEIS claims the likelihood of introducing invasive species is negligible-low, however the occurrence of invasive ship-related organisms in Hawaii and Guam (Eldridge & Smith 2001) suggests a moderate chance for introduction of marine invertebrates to the CNMI. Guam has a number of invasive marine species of marine flora and fauna that are not known to be in the CNMI. For example, a new invasive algae has been detected in southern Guam (KUAM 2014). Once introduced, marine species are nearly impossible to eradicate, and the consequences of introductions are impossible to predict but often extremely costly both ecologically and economically. The DEIS's findings are based on speculation and ignore the well-established threats of befouling and ballast water as vectors of marine invasive species.

The DEIS discusses invasive species inspections on the departure side of transport but does not discuss any measures on the receiving side. The potential consequences of invasive plants, animals and disease in terms of loss of natural resources; cost of containment, eradication and control; economic damage to tourism and other nature-based businesses; to cultural resources such as wild foods and medicine; and to quality of life (enjoyment of the natural world) have not been considered. This issue requires risk assessment and an assessment of the potential ecological, economic and societal consequences. The potential economic consequences must be quantified, bearing in mind the multi-billion dollar cost to date to Guam of the invasive brown tree snake that the US Military accidentally introduced to the island.

The alternatives proposed in the DEIS significantly increase the risk of new invasive species to the CNMI, as well as the spread of existing species between islands. Invasive species have tremendous environmental and economic costs, and the increased risk and consequences that will result from the actions proposed in the DEIS must be borne by the military, not the government and people of the CNMI.

The DEIS needs to include the endemic status of all species and include endemic species as “special status species”.

In the Marianas, we host numerous single-island, Mariana Islands, and Micronesian endemic species and subspecies. The DEIS does not clearly identify or address endemic status, or subspecies status, both of which are indicators of the global rarity and uniqueness of the taxon. For example, the military's contracted terrestrial arthropod survey documented eight endemic species on Pagan (Evenhuis et al 2010). None of these eight endemic species were mentioned in

the DEIS. Because all endemic Mariana Island species and subspecies are by definition extremely limited in population size and distribution, all of the endemic Mariana Islands species and subspecies must all be identified and treated as special-status species, with individual assessments of impacts, and detailed descriptions of how impacts will be avoided, minimized and mitigated.

The DEIS needs to address the endemic and sub-species taxonomic status of fish and wildlife in the Mariana Islands.

Consideration of impacts must occur at the subspecies level where available, as these island subspecies harbor unique genetic diversity adapted to particular island conditions, and are important for conservation. Subspecies status of wildlife in the DEIS is often overlooked, or even misstated in the document. For example, the DEIS refers to *Rhipidura rufifrons* ssp *uraniae*, an extinct rufous fantail subspecies formerly occurring on Guam, as occurring on Tinian (3.9.4.2.1). The correct subspecies for Tinian is *R. rufifrons* ssp. *saipanensis*, and it is found only on the islands of Tinian and Saipan. The DoD must use the latest scientific classifications of species and subspecies in the CNMI and include appropriate analyses of impacts on these subspecies.

The DEIS ignores many species and makes overreaching assumptions when assessing impacts.

The Terrestrial and Marine Species List (Appendix L1, Table 1.1) only lists species mentioned in the text. It does not contain a full checklist of all plants and animals known to occur on Tinian and Pagan, so we cannot adequately assess the potential impacts of construction and operations on all species.

The DEIS only presents analysis for impacts on three bird species on Tinian protected under the MBTA, while a total of 39 these MBTA-protected species are present on Tinian. For Pagan, the list of MBTA species is incomplete – 12 species are mentioned in Chapter 3, though there are at least 8 other MBTA-listed species known to occur on Pagan that do not appear on this list (see comments on Table 3.9-7 below). Given that there were no seabird or shorebird species surveys conducted on Pagan in preparation for the DEIS, there are undoubtedly more species missing from this list. No individual analysis of impacts on MBTA-listed species on Pagan is presented in the DEIS. The Terrestrial Biology section presents no evaluation of impacts on seabirds on Tinian or Pagan, which will experience significant population-level impacts due to the proposed activities. We expect seabird populations will experience severe negative impacts due to chronic disturbance and displacement from noise, activity, shrapnel and light. The DoD must assess the impacts on each MBTA-listed species separately, and describe the mitigation, minimization or avoidance of impacts for each species.

The DEIS often does not analyze and present the impacts on special-status species individually. Instead the DoD will claim they are identical to other groups of species. For example in 4.9.3.1.2.2, 4.9.3.2.2.2 and 4.9.3.3.2.2 it is asserted that “*Potential impacts to special-status species from munitions, non-native species, and potential wildfires from training activities associated with Tinian Alternative 1 (also 2 and 3) would be similar to those discussed above under Native Wildlife.*” These types of assumptions are unacceptable. Every species is different in terms of their population size, status and range, life history and habitat needs, and will respond differently to impacts from proposed alternatives. All special-status species must be presented

and analyzed on an individual basis for review and comment. The DoD must describe how it will mitigate for, minimize or avoid impacts for each species

The DEIS identifies the CNMI Comprehensive Wildlife Conservation Strategy (CWCS) species of special conservation need as “special-status species”. However, the document fails to include these species in the analyses of impacts, and does not demonstrate how mitigation, minimization or avoidance of impacts will take place for each of these species on Tinian and Pagan.

Moreover, for the special-status species reviewed in the DEIS, impacts are inappropriately assessed for entire groups and not for individual species. Each species will each be impacted in vastly different ways, for the reasons explained in the previous paragraph. The DoD must assess impacts on special-status species on an individual basis, and not assume that all species will be affected in the same way.

The DEIS repeatedly claims “Less than Significant Impacts” based on little to no scientific data, and assumptions based on other species in other regions, with no acceptable justification on why those findings should apply here.

Documentation of the plant and animal species present on Tinian and Pagan is incomplete.

Very few surveys of the plants and animals of Tinian have been conducted (as cited in the DEIS). Pagan species have never been adequately inventoried, let alone surveyed for distribution and population estimates. The temporally and spatially limited 2010 USFWS surveys referenced in the DEIS recorded many new island records in surveys conducted over a very short period. There are undoubtedly more species on these islands than are currently documented, some of which will be identified as endemic, globally rare, and genetically distinct. In order to fully assess the potential impacts of the alternatives, more comprehensive surveys must be completed, during different seasons and years, and addressing additional taxa, to complete our knowledge of the species present on both Pagan and Tinian. With such tremendous gaps in information, we cannot adequately assess, quantify or hope to mitigate impacts to native plants and animals of the proposed actions. Site visits must be conducted by ecologists and taxonomists to inventory species and habitats; collect and later analyze genetic material; and perform observations of ranging patterns, movements, foraging, behavior and habitat use for potentially affected species, before the impacts of these proposed actions can be adequately assessed.

The nesting sea turtle surveys on Pagan are not adequate.

There are no sea turtle nesting surveys mentioned apart from surveys done in June 2010 (3.9.5.4.1.3), however this is grossly inadequate for an ESA-listed species. We cannot accept the DoD’s claims of impacts of beach use on nesting sea turtles on Pagan until spatially, temporally and methodologically adequate surveys are completed.

The DEIS must consider the wider impacts to Mariana endemic species persistence and conservation efforts, especially those have the potential to be listed as Threatened or Endangered under the Endangered Species Act.

By only considering the impacts of construction, operations, and cumulative effects on Tinian and Pagan, the DEIS does not provide the context needed to understand the overall implications for species persistence and management throughout their entire range. Ignoring species-specific

cumulative impacts on other islands that they occupy is a substantial omission from the Cumulative Impacts Analysis in Chapter 5.

The action alternatives outlined in the DEIS will result in endemic species being listed under the ESA, which will impact all islands in the CNMI where these species occur. ESA listings are not desirable for anyone, public or private, and generate economic costs to the local community that will not be compensated by DoD. The DEIS fails to address how the federal status of endemic species could be affected, and how impacts will be avoided, mitigated for and minimized.

We illustrate here how the negative impacts to species on Pagan and Tinian, when viewed in a broader, range-wide context, create significant hurdles to species persistence and recovery. The following is one example; the same issue applies to all Mariana endemic species.

Tinian Monarch: The direct, significant non-mitigatable impacts to this single-island endemic species are unacceptable. There is an existing petition for federal listing of this species under the ESA. If Tinian Alternatives 1, 2, or 3 take place, the Tinian monarch will likely qualify for ESA listing based on biological reasons, i.e. a declining, vulnerable population, and increasing threats, i.e. the increase in military activities. Relisting of the Tinian monarch will affect the people of Tinian by the increasing time and costs of development. The DEIS finds that direct, permanent impacts of the construction phase of activities alone will result in global population decline of this species by 7% to 8%. Magnitude of declines due to operations and cumulative impacts are not specifically addressed in the document. Avoidance, minimization and mitigation of impacts for this species have not been adequately addressed.

The proposed actions in the DEIS will substantially impede the recovery of the following species currently listed as threatened or endangered under the ESA: Mariana fruit bat, Micronesian megapode, Nightingale reed-warbler and Mariana common moorhen.

The proposed actions in the DEIS will cause the recovery of currently ESA-listed species in the Northern Mariana Islands will become much more difficult and costly, and will prevent the downlisting or delisting of some species.

Mariana Fruit Bat (currently listed as Threatened):

The Mariana Fruit Bat Draft Recovery Plan delisting criteria include an increased overall population; a stable or increasing subpopulation on 3 of 5 southern Mariana Islands; and stable or increasing subpopulations on 6 of 8 northern islands, two of which must include Pagan, Anatahan, or Agrihan (USFWS 2009a).

Rota is the only southern Mariana Island currently hosting a significant bat population. Aguiguan hosts a small but persistent population of around 40-60 bats (Brooke 2009). Guam and Saipan, hosting the largest human populations in the Marianas and highest degree of threats to the Mariana Fruit Bat, will face challenges meeting these delisting criteria. The significant forest removal combined with the vastly increased level of military activities proposed on Tinian in the DEIS greatly reduces the likelihood that the Tinian population could be ever recovered, and therefore significantly reduces our overall ability to meet recovery plan criteria required for delisting the Mariana Fruit Bat in the southern islands.

Our ability to meet recovery plan criteria in the northern islands, in particular achieving a stable or increasing subpopulation on two of the islands of Pagan, Anatahan and Agrihan, will also be prevented by the proposed actions in the DEIS. The recovery of the Anatahan subpopulation will require decades as forest habitat on that island recovers following the 2003 volcanic eruption. The proposed actions on Pagan, with the largest Mariana Fruit Bat subpopulation in the northern island, will prevent the subpopulation from stabilizing or increasing, and therefore we will be unable to meet the delisting criteria. Further, the action alternatives in the DEIS may result in the Mariana Fruit Bat being reclassified from threatened to endangered, which will have negative implications for the people of Rota and the rest of the CNMI.

Micronesian Megapode (currently listed as Endangered)

The Micronesian Megapode Recovery Plan (USFWS 1988) includes the following downlisting criteria for the Micronesian megapode: the comparatively large populations on Anatahan, Sarigan, Guguan, Pagan and Maug must remain at their current population levels or be increasing for a period of 5 years (USFWS 1998). The estimated population size at the time of publication of the recovery plan on Pagan was 50-150 individuals. In 2000 the number on Pagan was 134 (128-141, 95% CI) (DFW 2000d), compared with 147 birds (131-162, 95% CI) in 2010 (Amidon et al. 2011), a slight but not significant increase. Therefore the Pagan population itself currently partially meets the downlisting criteria. The proposed activities in the DEIS would impact the Micronesian megapode on Pagan to the point that the population there no longer meets the downlisting criteria, and therefore would prevent downlisting of the species even if criteria are met on other islands.

The Micronesian Megapode Recovery Plan (USFWS 1988) outlines the population size and distribution requirements for delisting of the species: at least 2650 birds distributed over 10 islands, including at least 2 populations of 600 birds or more, 3 of 300 or more, 2 of 200 or more, and 3 of 50 or more, all of which must be stable or increasing for 5 consecutive years after achieving these levels.

The current population estimates for the Micronesian megapode in the Mariana Islands are as follows, in order of highest to lowest (from Amidon et al. 2011): Sarigan: 2135, Guguan: 1507, Asuncion: 571, Maug: 544, Alamagan: 529, Saipan 151, Pagan: 147, Aguiguan: 112, FDM: 28, Anatahan: >20, Tinian: <10, Agrihan: <10, and Uracas: 0. This means that 7 islands would need populations of a minimum 200 birds stable over 5 consecutive years (2 with 600, 3 with 300 and 2 with 200). Unless the Aguiguan population can be increased to over 200 individuals, Pagan would need a population of at least 200 Micronesian megapodes in order to meet the delisting criteria. The proposed actions in the DEIS, including clearing of prime forest habitat, as well as substantial disturbance from operations, will prevent the species from increasing on Pagan, and will most likely cause declines, and would therefore prevent the delisting of this species.

Nightingale Reed-warbler (currently listed as endangered)

The Nightingale Reed-warbler Recovery Plan (USFWS 1998) includes the delisting criteria for this species. The delisting criteria calls for at least 8000 individuals in secure populations across at least 5 islands: 4000 on Saipan, 2000 on Alamagan, and 2000 on 3 of the following islands: Rota, Aguiguan, Tinian, Anatahan, Pagan and Agrihan. With the forests of Anatahan destroyed in the volcanic eruptions of 2003 and 2008, this island is not a candidate for introduction.

Aguiguan is likely too small to support a population of 2000 nightingale reed-warblers. This leaves only Rota and Agrihan as options for establishment of new populations. Since the recovery plan requires a third island, one needs to be either Pagan or Tinian. The historic habitation of the nightingale reed-warbler on Pagan makes Pagan particularly favorable as a future translocation site. The 1981 and subsequent volcanic eruptions killed all the herbaceous and most of the woody vegetation around the upper lake and was a factor in altering the vegetation around the lower lake (Reichel *et al.* 1992). However, 2010 vegetation surveys indicate that the vegetation around the lakes is recovering to some degree and both native trees and herbaceous species were observed (Pratt 2010). With additional focused habitat restoration, including ungulate removal, the nightingale reed-warbler could be reestablished on Pagan in the future. The proposed actions outlined in the DEIS would prevent a population of at least 2000 nightingale reed-warblers from becoming established on Pagan or Tinian, and would therefore prevent the delisting of this species.

The DEIS explicitly fails to address the nightingale reed-warbler: “*Two other federally listed species, the nightingale reed-warbler (Acrocephalus luscini) and Mariana common moorhen, are presumed to no longer exist on Pagan (Marshall and Amidon 2010) and are not discussed further*”(3.9.5.4.1). The DEIS wrongfully limited the analysis to current species range without regard for the broader impact of proposed actions on species recovery.

Mariana Common Moorhen (currently listed as endangered):

Island of Tinian

The Recovery Plan downlisting objectives are to manage a total of 30 ha of suitable moorhen habitat on Tinian, with 75 birds for at least 5 consecutive years (USFWS 1992). The Recovery Plan for the Mariana common moorhen (USFWS 1992) identifies Lake Hagoi on Tinian as high quality primary habitat and Magpo Wetland (known also as Makpo) as low quality secondary habitat with some potential. Makpo Wetland no longer has surface water due to pumping for municipal water (Moore et al. 1977, Chee 2008). In addition, the DEIS includes a significant increase in water usage to be drawn from a second Makpo Wetland well. Therefore we expect that Makpo Wetland will not be available for management as suitable moorhen habitat on Tinian in the foreseeable future.

Appendix L3 surveys detected 20 – 23 individual moorhens at 3 survey points on Lake Hagoi. This is within USFWS’s range of 21 – 29 moorhens detected per survey during wet season surveys between July 1994 and August 1995 (DoN 2013c). It gives the total area of Lake Hagoi at 13.75 ha. The Bateha wetlands on Tinian have a combined area of 1.2 ha moorhen habitat (Table 3.3-1) and provide habitat for up to 14 individual moorhens seasonally (Appendix L3). The DEIS does not state the total area of moorhen habitat in the Mahalang region. Up to 4 individual moorhens use the Mahalang as seasonal feeding areas (Appendix L3).

Any loss of moorhen habitat on Tinian will reduce the possibility of reaching the target figure of 30 ha of suitable moorhen habitat on Tinian for 75 birds. The DEIS includes clearing for three range complexes across 3 of these sites (MC2, MC3 and MD3) and a high hazard impact area that covers the entire Mahalang complex for all three action alternatives (Figure 4.3-1, 4.3-3 and 4.3-4). The loss of these sites to range clearance and disturbance from operations to the Mahalang, Bateha and Hagoi wetlands must be mitigated for through creation of new, high

quality wetland habitat for moorhens of equal or greater size. We recommend mitigation be conducted on Saipan through the acquisition, protection and management of existing wetlands and/or the creation of new wetlands, as we do not believe that wetland sites on Tinian will be adequately protected from disturbance by the military's proposed activities.

Island of Pagan

The Mariana common moorhen formerly occupied the lakes on Pagan, but the species was extirpated from that island, most likely due to habitat destruction from volcanic activity and feral ungulates (USFWS 1992). The lakes of Pagan offer an important recovery option for the Mariana common moorhen. Marshall and Amidon (2010) state: "*Although translocating Mariana common moorhen birds to Pagan is not a goal in the recovery plan, it may be prudent to consider this as an option given the continued degradation, loss, and fragmentation of habitat, continued predation, and decline in birds on Guam, Tinian, and Saipan.*"

Marshall and Amidon (2010) recommend the following management steps be undertaken on Pagan:

- Restore the wetland vegetation at the upper and lower lakes to provide cover, nesting, and foraging habitat for native waterbird species.
- Explore the feasibility of reintroduction of Mariana common moorhens to Pagan and, if feasible, develop and implement reintroduction plan.

The proposed Pagan action activities included in the DEIS will prevent these management steps from taking place. The DEIS does not address how the proposed actions on Pagan will affect the recovery of this species.

Acropora globiceps

The areas from the military surveys on Tinian showed a high occurrence of *A. globiceps* at all proposed landing beach sites (Unai Chulu, Babui, Lamlam, Dankulo and Masalok). By the nature of relatively low relief of these areas and a fringing reef, the habitat is very favorable for *A. globiceps* and other coral species colonies that are not found elsewhere in abundance on the island. The beach areas constitute unique habitats that provide optimal conditions for listed and non-listed corals. The take of these sites and damage from military activities therefore constitutes a threat to the total local population of various coral species. The DEIS failed to provide a comparison of the densities between the unique beach habitat sites by the military contractor's surveys and from more broad surveys in the recent past that covered a greater range of habitats. As a result we cannot assess the true impact of these activities to the total population of this species.

Pagan is a midway point to the northern islands, vital for DLNR's fish and wildlife management and recovery work. The proposed actions will impede this work.

The DEIS does not consider the conservation "opportunity costs" of the Pagan and Tinian alternatives from the perspective of range-wide species persistence and recovery. For example, the CNMI Division of Fish and Wildlife with zoological and federal partners is conducting conservation translocations of endemic birds to various northern islands (Marianas Avifauna Conservation Working Group 2013). The overall goal is to establish redundant populations, so if an island subpopulation were extirpated due to brown tree snake invasion and predation, or any

other cause, the species' is not extirpated outright. The destination island and species have been carefully planned so that species that have never co-occurred or that might compete for a similar resource will not be translocated to the same island. The Mariana Avian Conservation Plan calls for Pagan to receive translocated Tinian monarch, Nightingale reed-warbler, and bridled white-eye (Conservation Working Group 2013). Without full management authority over Pagan and severely limited access, DFW will not be able to proceed with the plan. DFW plans to develop and implement translocation plans for other vulnerable taxa of interest such as endemic snails, bats, and reptiles. We have a small number of islands to work with. As the largest of our northern islands, we need Pagan available for persistence of the native species that currently occur there, to accept reintroductions and conservation translocations, and as a base of operations for projects in the northern islands.

Marshall and Amidon (2010) state: *“Pagan has several key features which are important to bird conservation in the Mariana Islands. First, it has the only naturally occurring wetlands north of Saipan which makes them important to waterbirds, especially Mariana common moorhen, conservation in the region. Second, Pagan is the largest island north of Saipan and the fourth largest island in the CNMI. It therefore has the potential to support larger populations of many native species which is important for long-term viability. Lastly, it's located approximately two thirds the way up the archipelago which means it's effectively buffered from potential catastrophic events in the southern part of the chain and it serves as important link in bird movements up and down the chain. Therefore, improving the quality and quantity of the forests and quality of the wetlands on the island is extremely important to long-term avian conservation”*.

The use of Pagan as a military site will preclude its utility for conservation for the foreseeable future, which is vital for the persistence and conservation of multiple special-status and endemic species. Section 6.3 states *“U.S. military use (of Pagan) would be incompatible with conservation land use designation of Pagan”*.

Section 2.5.1.8 describes the Warning Area and Restricted Areas that will include *“unusual hazards to aircraft, often invisible, such as artillery firing, aerial gunnery, or guided missiles. Flying within this type of Special Use Airspace, without prior authorization from the using or controlling agency...may be extremely hazardous to the aircraft and its occupants. A proposed restricted area above and surrounding Pagan, designated R-7204 A, B, C and D, would extend horizontally 12 nautical miles (22 kilometers) from Pagan's shoreline. This Restricted Area would have a floor starting at the sea surface”*. Section 2.5.1.9 states *“Certain portions of the proposed Pagan restricted airspace (i.e., the water area under R-7204 A, B, and C) in general define the lateral boundaries of water areas to be designated as danger zones”*.

The Restricted Area designations will preclude DFW from conducting our ongoing and planned work managing wildlife resources and recovering species at risk within the vicinity of Pagan. However, the Warning Area extends much further and the expected temporal restrictions on travel and work in this zone will halt many of DFW's long-term conservation programs and plans, preventing our agency from fulfilling our mission to conserve our native species. The Warning Area (see Figure 2.5-5) includes the entirety of the islands of Guguan, Alamagan, Pagan, and Agrihan. Further, the DEIS specifies the location of the Warning Area but does not

address how sea-based activities will be managed or curtailed in this area. The DEIS needs to clarify the meanings of Danger Zone vs. Restricted Area vs. Warning Area, and how these pertain to both air traffic and marine traffic, and must specify exactly what restrictions will be placed in each case.

The Restricted Area and extensive Warning Area designations will unacceptably further curtail the activities of CNMI fishermen.

Any restrictions within these zones will negatively impact freedom of movement and the public's access to resources within and beyond these areas. These restrictions will particularly affect fishermen by denying them access to some of the CNMI's most productive fishing grounds. The designation of the Marianas Trench Marine National Monument has already limited fishing in the productive waters surrounding our northernmost islands. Access to fishing grounds surrounding FDM has been lost to current military actions. The cumulative impact of these geographical access restrictions places an unfair and unreasonable burden on the livelihoods and economic opportunities of the people of the CNMI.

Wildfire, especially on Pagan, is a serious threat to terrestrial and marine resources, and its risk and impact have been understated in the DEIS.

Wildfire on the southern islands of Guam, Rota, Tinian and Saipan has serious negative impacts through direct mortalities to wildlife, destruction of habitat, and erosion and sedimentation which degrades marine habitats. Fighting a wildfire, particularly on Pagan, involves serious logistical challenges, due to difficult access and limitations on available tools and resources. The DEIS only addresses the potential for wildfire to start in the High Hazard Impact Areas on both Tinian and Pagan. Fires could also start from errant ordnance falling outside the High Hazard Impact Area, from vehicular sparks, or even improperly disposed cigarettes, which could occur anywhere on the island where military activities are occurring. Wildfire is a likely occurrence, and fire suppression will be difficult or impossible, resulting in direct impacts to terrestrial resources. One wildfire will temporarily convert forest to herbaceous scrub or grassland habitat; repeated fires will result in permanent habitat conversion from forest to scrub, grassland or badlands. In addition, increased soil erosion and ash will result in increased runoff, reducing near-shore water quality and impacting marine resources.

Impacts to terrestrial resources are underestimated.

There are many instances throughout the DEIS where impacts to terrestrial resources have been underestimated, and these have been detailed in the "Specific Comments" section below. Here we present examples of some of the more significant impacts that we assert to be underestimated.

Tinian Construction:

Mariana common moorhen will be significantly impacted by construction activities. While the wetland acreage loss may be small, the total current habitat available to the moorhen is also very small. So few wetlands occur on Tinian and Saipan that any loss of wetland habitat in the DEIS is significant. This wetland habitat loss compromises recovery efforts for the moorhen and undermines the future of the population.

Tinian Operations:

The operations impacts to forest nesting birds (regardless of special-status) will be significant and detrimental. The nonconsecutive nature of training operations will not permit habituation. Periods of no training will not be long enough to permit a full, undisturbed nesting cycle and the viability of forest nesting bird populations will be reduced.

Pagan Construction:

The vegetation clearance impacts from construction to all forest bird populations on Pagan (regardless of special species-status) will be significant and detrimental. Proposed mitigation will not reduce the impact to “less than significant”. Population viability will be reduced.

Pagan Operations:

The impacts to vegetation communities and all wildlife species (regardless of special-status) are significant due to the likelihood of wildfire, chronic long-term disturbance, and the introduction of invasive organisms.

The cumulative impacts have not been adequately considered.

The DEIS does not address cumulative impacts of the construction versus operations activities within the proposed action alternatives, nor the cumulative impacts of activities on Tinian versus Pagan.

Impacts on marine fauna of amphibious assault vehicles and landing craft air cushion vehicle are not adequately assessed.

The DEIS fails to effectively list the potential level of damage that proposed activities utilizing amphibious assault vehicles, and landing craft air cushion vehicles would impose on surrounding fauna. Examples include the impact of amphibious landings on turtles, turtle nesting habitat, corals, and macro-invertebrates. The DEIS fails to effectively mention the potential loss of resource use created by the LCAC activities on the proposed beaches on Tinian and Pagan. The military must conduct an assessment on the impacts of LCACs and AAVs on marine resources in these areas. Part of this assessment should be a comparison of the fish and invertebrate surveys from both inside and outside (control sites) proposed action areas to be able to assess the overall impact to the total populations, both on Tinian and Pagan.

Amphibious assaults with heavy equipment along the shores of Unai Chulu will increase sediment loads to the nearshore reefs and deeper waters, seriously impacting corals and degrading the quality of fish habitat. The DEIS claims impacts would be ‘Less than Significant Impact’, however this assessment was only based on short-term observations, and ignored the likely chronic and significant impact from latent effects.

With increased sediment loading into near-shore waters, water and substrate quality will decrease. Without proper flushing, sediments will accumulate and be re-suspended with every storm or increased wave and wind activity. Suspended sediments affect light attenuation, effectively decreasing the amount of sunlight needed by photosynthesizing organisms such as corals and algae.

The DEIS failed to compare the results of coral and fish surveys both within and outside proposed military sites. The document also failed to present analyses specific to the military sites that are also limited, unique low-relief habitats that favor certain species of fish and invertebrates. Thus, we are unable to adequately assess impacts of marine species and find impacts to have been underestimated.

The acoustic impacts on marine invertebrates have not been evaluated.

Acoustic impacts to marine invertebrates were not considered in this document. Further information is needed. Mitigation measures for acoustic disturbances should be included.

The effects on marine mammals have not been adequately considered.

Inadequate information is provided on impact and mitigation measures for marine mammals for the islands of Tinian and Pagan. There are documented populations of marine mammals specifically within the operational areas of Tinian and Pagan. The cited surveys performed for marine mammals and sea turtles lacked a fundamental systematic sampling design in order to quantify populations and their distributions.

The DEIS fails to include adequate mitigation for impacts on marine resources.

Impacts on marine resources such as marine mammals, sea turtles, fish and invertebrates from the proposed activities are likely significant. The DEIS fails to address marine resource concerns within Summary of Potential Mitigation Measures. The document fails to include potential impacts on marine resources such as noise, direct physical impact, and vibrations in analyses.

There is a lack of proper assessment of marine resources and marine biology in the DEIS.

Marine in-water surveys of invertebrates, fish, marine mammals and sea turtles presented in the DEIS were based on poor/inadequate study design and sampling effort. The cited surveys include numerous basic errors in identification of species, and failed to document numerous reef species that are commonly found within the action areas and have been documented in CNMI surveys. The errors and deficiencies of these surveys precludes any meaningful assessment of impact by the proposed activities. Inadequacies in surveys include the fundamental error of not surveying the sites, some unique, where military activities are actually proposed, thus providing no insight into the true take from local populations.

Impacts on fish are understated.

The appendices list ‘Less than Significant Impact’ to fish on both Pagan and Tinian based on threshold levels that are speculative and likely inaccurate. Live-fire and bombing on Pagan will have an impact on local reef and bottom fish species that inhabit the surrounding shallow and deep water reefs. Direct impact of reef sites by aberrant ordnance will mortally wound fish in proximity to detonation and be a significant stressor outward for 100’s of meters.

The proposed increase in bombing activity will impact reef fishes and the genetic continuity among fish populations in the Mariana Archipelago. Bombs and large ordnance reaching the nearshore will kill reef fish and homogenize coral reef structure. Resultant decreased grazing by herbivorous fish would likely increase algal production and out-competing of corals.

The use of tracked landing craft on Tinian will crush delicate coral habitat and introduce sedimentation by tracking land debris into the water during water re-entry, and will, as a result, decrease essential, limited fish habitat. Nearshore waters and their complex habitats are used by nearly all reef fish as nurseries.

There are significant shortfalls in recreational and socioeconomic impact assessments.

The assessment of least significant impact of both recreational and overall socioeconomic impacts to marine and terrestrial-based activities on Tinian and Pagan are not substantiated by empirical data and frequency of human use. Such assessment requires human-use surveys that can provide measurable impacts to the local economy. Moreover, there were numerous errors in naming locations and local activities that indicated a lack of effort in obtaining a realistic assessment of impact.

The effects of operations on topography and soils are understated.

The DEIS states that proposed actions would result in less than significant direct and indirect impacts to topography and soils. However, operational activities in the High Hazard Impact Area on Tinian and two High Hazard Impact Areas on Pagan will “*create munitions impact craters within the upper 6 feet (2 meters) of the underlying geologic units*” (4.2.3.1.2.2, 4.2.4.1.2). The impact craters combined with the leveling, grading, other earth moving activities, and impervious surface creation, will significantly modify the topography and effect the existing hydrography (i.e., drainage patterns) and soil profile within the affected environment. Potential clean-up will cause even greater impacts on topography and soils, which the DEIS fails to discuss.

The impacts of sediments and contamination on water quality are not adequately described.

Sedimentation in proximity to land-based activities on Tinian and Pagan will significantly affect nearshore habitats. The DEIS’s claims of ‘least significant impact’ (Table ES-4) of short and long term in terms of Marine Habitat/Essential Fish Habitat, Marine Flora, Marine Invertebrates-corals, Marine Invertebrates-non-coral, Fish, and Special Status Corals (2 listed) are based on threshold levels that are inadequate and unjustified given the failure of cited surveys to cover species’ full range of habitats.

The increased level of bombing and disturbance of soil on Pagan imposes a significant risk of impact to surrounding corals and other sessile invertebrates. The DEIS failed to provide information on the probability of projectiles being aberrant and landing outside of Pagan Crater. Specifically, the Effective Danger Zone is designated outside the caldera rim which would otherwise contain impacts to sediment within its circumference. Aberrant ordnance can be expected outside the crater and will contribute to sedimentation, contamination, dislodging of aggregate, and eventual direct contact with or smothering of corals, invertebrates, and algae, all of which comprise essential fish habitat.

The DEIS provides no quantitative information on the total tonnage of live ordnance versus non-explosive projectiles. This information is essential to tie in with probabilities of aberrant projectiles, to estimate the measurable impact to adjacent marine flora and fauna. Aberrant targeting of such ordnance into the water can be expected and will destroy surrounding corals,

cause mortality of sea turtles, marine mammals, and fish, and damage essential fish habitat. We can expect these impacts to be chronic, preventing recovery of these areas.

Erosion control measures are not adequately described.

The DEIS provides a list of management practices (e.g., retention ponds, swales, silt fences, fiber rolls, gravel bag berms, mulch, and erosion control blankets) as erosion and sediment control, but fails to delineate where each of the specific methods will be used, how many of each will be needed, and the overall effectiveness of each method. The proposed control methods will not fully capture the sediment and erosion resulting from the proposed actions. Further, there is no discussion of the removal of pollutants captured through the use of these control methods.

Water quality and stormwater runoff BMPs are not adequately described.

The DEIS/OEIS provides only general statements regarding possible Best Management Practices to address stormwater quality and runoff. The document fails to state which chemicals will be monitored through water quality testing, how frequently specific chemicals will be monitored, and the potential impact of these specific chemicals produced by the proposed actions. To adequately assess impacts we must know, and the document fails to explain where the chemicals will be produced (e.g., not delineated on the maps); which flow direction is anticipated; if the methods employed (e.g., retention basins) will be sufficient for capturing the pollutants; and if the methods are properly located to be most effective. Thus, it remains unclear how the stated, generalized Best Management Practices will ensure the protection of surface and groundwater resources from polluted stormwater runoff.

The DEIS fails to assess or mitigate the ecosystem-wide impacts of contaminants, poisons and pollutants arising from firing/detonation of ordnance at a massive scale.

The document fails to adequately identify or describe the large variety of chemical and heavy metal constituents that will be released into the environment on Tinian and Pagan and surrounding ocean as part of training and operations. The DEIS does not assess or address the widespread and long-term impacts of pervasive ecosystem contamination and pollution caused by firing and detonation of ordnance. The many types of munitions and ordnance described in the document range from bullets, grenades and mortars to rockets and bombs, and the document states these will number in multiple millions (approx. 6-7 million) every year. These millions of ordnance and explosives and their residues, contacting the surrounding land and sea, will contain an array of known contaminants, poisons, pollutants and carcinogens. These contaminants will be released upon firing and impact, and will also be released slowly and persistently over periods of many decades. The islands of the CNMI currently suffer from impacts of ordnance left during World War II, but the proposed actions will dwarf these impacts by orders of magnitude.

Munitions and fired or exploded ordnance, numbering in multiple millions per year, will be introduced to the ecosystems of the CNMI, continuing for decades and potentially, centuries. Quickly as well as slowly, contaminants and pollutants will be chronically released and will permeate the vegetation, soils, underlying geology, reef and ocean environments. These released contaminants will pervade freshwater and saltwater hydrologic systems; alter the fundamental C:N balance regulating ecosystem energy flows; permeate terrestrial and aquatic food webs, and become part of the structure of the ecosystems of Pagan and Tinian, uptaken in the tissues of plants, fish and wildlife. Some contaminants will bioaccumulate, especially in low-trophic level

species including microorganisms, plants and soil-dwelling animals. Effects will be severe and long-term.

The DEIS fails to address or assess the impacts of contaminants on wildlife, natural environments or ecosystems. These contaminants will have significant harmful impacts on physiological systems of organisms with which they come in contact through inhalation, ingestion or contact and can be expected to decrease survival of large numbers of organisms. Contaminants are also well known to cause decreases in reproductive success of a wide range of taxa. These impacts will be among the most pervasive, long-term and potentially severe of any caused by the proposed activities, and must be analyzed in detail.

The health risks of volcanic dust are not disclosed, nor are the impacts analyzed.

The DEIS/OEIS provides no information on the health risks to humans and wildlife posed by volcanic dust entering the air, lakes and surrounding ocean as a result of ordnance impacts. There are an estimated 32.4 million metric tons of on-land tephra on Pagan (USGS Open-File Report 2006-1386), much of which has been classified as pozzolanic and all of which contains crystalline silica which has the potential to cause silicosis, a scarring of the lungs.

Crystalline silica is classified by the International Agency for Research of Cancer (IARC) as a probable human carcinogen (Group 2A) with animal evidence sufficient. Respirable crystalline silica has been classified by the National Toxicology Program (NTP) as a substance which may reasonably be anticipated to be a carcinogen. Acute Silicosis may occur with exposures to very high concentrations of respirable silica over a short period of time. Acute Silicosis is fatal. The chronic effects and carcinogenicity of air born pozzolan dust particles are rated “hazardous” by OSHA criteria.

Pozzolanic dust may cause long-term adverse effects in the aquatic environment (Material Safety Data Sheet, Class N Pozzolan, Nevada Cement Co.).

SECTION-SPECIFIC COMMENTS

In this section we have stated the relevant section, table or figure from the DEIS in bold, the quote from the DEIS in italics (when relevant) and DLNR/DFW's comments in normal font.

Comments on Executive Summary

ES.5.3.4 Pagan No-Action Alternative

“As a result of the CNMI government’s mandate prohibiting residents from Pagan because of the 1981 volcano eruption, the island has not been officially occupied and there is limited visitation.”

This is incorrect. There is no existing statute, executive order or legal prohibition on traveling to or residing on Pagan.

Comments on Chapter 1: Purpose and Need

1.4 The Mariana Islands

1.4.2 Commonwealth of the Northern Mariana Islands Military Lease Areas

The DoD needs to include mention of Tinian Military Retention Land for Wildlife Conservation in the description of the Military Lease Area. Other pertinent land uses have been included (the Lease Back Area, International Broadcasting Bureau, and North Field National Historic Landmark) but this conservation area has been omitted.

1.4.3 Commonwealth of the Northern Mariana Islands Military Training

Angyuta is named Angyuta “Islet” in Figure 1.1-2, but “island” in the text, please amend to be consistent. “Island” is preferred as it is consistent with the USGS 1999 Topographic Map of the Island of Rota.

Comments on Chapter 2: Proposed Action and Alternatives

2.2 Unit and Combined Level Training Requirements, Representative Training, Weapons, Equipment, Participants, and Training Scenarios

2.2.3 Representative Weapons and Equipment

"Specific weapons systems used by the U.S. and partner foreign nation forces that differ from those evaluated in this EIS/OEIS would be evaluated before they are employed in the RTAs to ensure their characteristics are equivalent to the weapon systems analyzed in this NEPA document."

We cannot evaluate the impacts to terrestrial or marine resources of weapons used by the U.S. or foreign nations not listed in this DEIS. We have no assurance that the evaluation will ensure that the characteristics are equivalent. The DoD must present details of all weapons systems to be used in the CNMI, otherwise, the DEIS is incomplete.

Table 2.2-3. Unit Level Training and Exercises, Duration, and Personnel

This table displays a summary of Tinian unit level representative training and exercise time spans. Although the total time span of live-fire, pre-training and post-training activities are shown, the table does not state the total number of personnel involved, and instead give “not applicable” for this figure. The DoD must include the total number of personnel so that we can properly evaluate the environmental impacts of these numbers. Of particular importance is the maximum number of personnel the DoD expects at any one time.

Table 2.2-4. Combined Level Training and Exercises, Duration, and Personnel

This table presumably covers a timing and personnel summaries for Pagan, but unlike for Table 2.2-3 where this is outlined in the text above, the text does not clarify if the activities summarized in Table 2.2-4 relate to Pagan. The DoD must clarify this in the text.

This table displays a summary of Pagan combined level representative training and exercise time spans. Although the total time span of live-fire, pre-training and post-training activities are shown in the bottom row, the table does not state the total number of personnel involved, and instead give “not applicable” for this figure. The DoD must include the total number of personnel so that we can properly evaluate the environmental impacts of these numbers. Of particular importance is the maximum number of personnel the DoD expects at any one time.

2.4 Tinian Alternatives

2.4.1 Elements Common to All Action Alternatives

"...there is no commitment to the mitigation measure until it is documented through the Record of Decision, a permit/approval, programmatic agreement or other formal agreement."

While this process may comply with legal requirements, the lack of commitment to mitigation offers us no assurance that the potential mitigation activities proposed will ever occur, or implemented in such a way that the benefits to ecological values will be realized. We cannot accept the claimed environmental impacts on natural resources in the DEIS if there is no commitment to the proposed mitigation measures that will supposedly bring about these environmental impacts. Our concerns are heightened by the lack of communication with our agency up to this point in the process.

2.4.1.1 Land Use Agreements

"Under Tinian Alternatives 2 and 3, the International Broadcasting Bureau facility would no longer exist in its current location."

Relocation of the facility would generate additional impacts that are not described in this DEIS. Since this relocation is a direct result of the activities in the DEIS, the environmental impacts must be presented and evaluated here.

2.4.1.2 Construction and Improvements

New roads, utility corridors, and fencelines create pathways for invasive species. Existing invasive species on Tinian will increase in abundance and distribution through construction activities, with associated negative ecological and economic impacts. This impact must be addressed.

2.4.1.2.6 Fence Lines and Gates

Barbed wire fences represent a direct hazard to native birds that become entangled. The DEIS does not quantify the length of chain link–barbed wire and barbed wire-only fencing that will be installed, but from the provided maps it appears to be many kilometers. This direct impact to native birds was not assessed in the DEIS and cannot be evaluated until specific fence lengths are stated. The DoD must describe how they will minimize the impact of fences to wildlife.

2.4.1.2.7.3 Stormwater

"Management of stormwater quality and quantity would be provided to maintain existing condition hydrology to the maximum extent feasible"

This statement provides no assurance that existing hydrology conditions would be maintained. Any changes to hydrology of wetland resources in particular would be significant to the wetland

vegetation community and wetland-dependent wildlife species such as the Mariana common moorhen.

2.4.1.2.7.5 Solid Waste

"...options could include a new landfill or an incineration facility."

Without knowing what option for addressing the issue of solid waste will be selected, we cannot assess the impacts to terrestrial resources. If a new facility is constructed, significant direct impacts from likely habitat conversion will harm native vegetation communities and wildlife.

2.4.1.4.1.2 Public Access

"It is envisioned that public access to some or all areas of the RTA would occur during a couple daylight hours on a nearly daily basis."

Public access to leased areas on Tinian must remain open with sufficient predictability and length of time to meet public desires to use and enjoy their natural resources and historic features. The DEIS does not provide sufficient assurance that this will be the case. We need more details on how much public access will be permitted, and for which areas, in order to accept this argument. Construction activities occurring for 8-10 years, and training for 20 weeks per year, plus pre- and post-training activities, and a fence to be built across the entire boundary of the Tinian MLA with two controlled gates providing the only access. We are unable to accept that the DoD would allow public access to some or all of the RTA on a daily basis throughout the year. The DoD must provide information on how often public access would be allowed, during construction and training, and to which areas. The DoD must also describe the process of how the residents and visitors of Tinian and Pagan will actually be granted permission to access the RTA. We need details on whether passes will be required similar to the military bases on Guam, and how difficult it will be for non-US citizens (which the majority of visitors will be) to gain permission to access.

2.4.1.4.1.7 and 2.5.1.4.1.7 Range Environmental Vulnerability Assessment (Tinian and Pagan)

"This policy requires the military services to assess the potential environmental impacts of military munitions use on existing operational ranges and determine whether there has been a release or a substantial threat of a release of munitions constituents (i.e., chemical components of munitions) to an off-range area."

While this assessment targets human health, there may be wildlife health impacts. Assessments of military munitions use must be conducted for the wildlife species that are at greatest risk or are most vulnerable to exposure to the munitions constituents. Without knowledge of the chemical components of the munitions, we cannot assess the potential impacts to wildlife and communities.

2.4.1.4.2 Vegetation Management at Tinian Range and Training Area and 2.5.1.4.1.8 Vegetation Management at Pagan Range and Training Area

“A description of proposed vegetation maintenance areas and management is provided in Appendix F, Geology and Soils Technical Memo”

Appendix F Section 1.2.2.1.1 states that “Vegetation would be maintained through controlled fires or chemical means” throughout the High Hazard Impact Area 527 acres of cleared area within Range A on Tinian. The impacts of fires (erosion and sedimentation impacts on nearby wetlands and marine environments, impacts of broad-scale herbicide use on nearby wetlands and marine environments and adjacent native forest) have not been addressed in the DEIS.

Appendix F Section 1.3.1.1.2 states that 623.3 acres of vegetation would be maintained at 100% clearance through “mowing, cutting, herbicides”. The impacts of such broad-scale herbicide use on nearby lakes and marine environments have not been addressed in the DEIS.

2.4.1.7and 2.5.1.7 Danger Zones (Tinian and Pagan)

"There would be a small chance that an expended projectile would fall outside of the immediate range footprint, within the surface danger zone. There would be an even smaller chance for an expended projectile to fall within the nearshore waters portion or the fringes of the surface danger zone."

Given the military's decades of experience in similar training activities and facilities around the world, we expect that the probability that an expended projectile would fall outside of the range footprint or near the fringe of the surface danger zone should be calculable. Without a quantitative estimate of the probability of these errant projectiles, we cannot evaluate the significance of impacts to terrestrial or marine resources outside the range footprint.

2.4.1.8.1.1 Restricted Areas

"...when live-fire is occurring, some or all of the Restricted Areas would be "turned on" or activated and non-participating aircraft would be prohibited from entering or traversing the airspace without positive clearance from the controlling agency."

Very few DLNR staff are based on Tinian. Saipan-based staff frequently travel to work on Tinian, and occasionally Aguiguan via Tinian. Restriction on air access to Tinian from Saipan could reduce work productivity and efficiency if schedules are inconvenient, and could increase cost if airlines pass on additional fuel costs from avoiding Restricted Areas to customers. Restricted Areas will make it harder for us to accomplish our agency mandate on Tinian and Aguiguan.

Table 2.4-8. Summary Comparison of Action Tinian Alternatives

Alternatives 2 and 3 both include the relocation of the IBB. This table needs to include the area of ground clearance and creation of newly impervious surfaces for this action. It is an omission as nowhere else are environmental impacts ignored because they result from actions that are only

relevant to one or two of the alternatives. For example, the total area of ground disturbance and area of newly created impervious surfaces for each of the three alternatives is routinely stated (Table 2.4-8).

2.5 Pagan Alternatives

2.5.1.2.5 North Range Complex Construction

Amphibious Training Beaches Construction

“Up to six beaches would be used to conduct amphibious training (Green, Red, Blue, South, Gold, and North). No construction activities would occur at proposed amphibious training beaches.”

Later in the DEIS it is stated that these beaches would be used for landing construction materials (See 2.5.1.5 *“The primary mode of transportation for personnel, equipment, and cargo would be amphibious craft landing at designated amphibious training beaches as no docking facilities currently exist or are contemplated at Pagan under the proposed action”*). The types of equipment and supplies for the proposed construction activities are immense. These include *“road graders, vibratory compactors, dozers, tractors rubber-tired articulated multi-purpose with buckets, dump trucks, and backhoe loaders”* (2.5.1.2.4 Military training trails), equipment to clear hundreds of acres of vegetation, equipment to improve the airfield, including equipment need to move 615,000 cubic yards of lava rock, build a concrete fuel bladder containment berm (2.5.1.2.2 Expeditionary airfield), equipment and supplies for the creation of a 4000-personnel camp, including diesel generators, desalination equipment, chemical toilets and other wastewater devices (2.5.1.2.1 Expeditionary Base Camp/Bivouac Area), fencing and other materials and equipment needed for the construction of the Munitions storage area (2.5.1.2.3 Munitions Storage Area). Transport of these equipment and supplies via LCAC or AAV to shore will constitute a major undertaking. The magnitude, frequency, duration and associated environmental impacts of transporting construction equipment and supplies using amphibious landing craft at the abovementioned beaches needs to be included in the DEIS.

High Hazard Impact Area Construction.

“A High Hazard Impact Area would be developed and would be centered on Mount Pagan. Due to the nature of its use, this High Hazard Impact Area would require only minimal ground disturbance to create target placements.”

Later information contradicts this claim. It is stated in section 2.5.1.4.1.2 Public Access that *“A fence would be constructed where physically possible and signs would be posted to delineate the boundary of the High Hazard Impact Area”*. The DEIS needs to include details of this fence, including design type, length, footprint, and environmental impacts.

2.5.1.4.1.2 Public Access

"It is envisioned that public access to some or all areas of the RTA would occur during a couple daylight hours on a nearly daily basis."

Public access to leased areas on Pagan must remain open with sufficient predictability and length of time to meet public desires to use and enjoy their natural resources, and for government agencies such as DLNR to carry out their natural resource management mandates. The DEIS does not provide sufficient assurance that this will be the case. It is unreasonable to expect that a couple of daylight hours of access during the day is of any benefit to Pagan visitors and government agencies. It takes 18-36 hours to reach Pagan by boat. A couple of hours of access is not going to be of any benefit for a journey of that length.

The claim that the public access to the RTA would occur “during a couple daylight hours on a nearly daily basis” is contrary to statements elsewhere in the document. Construction operations will occur over 8-10 years, and training for 16 weeks a year, plus an unstated period of pre- and post-training activities.

In addition, the DEIS does not state what kind of permission will be required to access the island, whether it will be similar to gaining passes on military lands of Guam, which are extremely difficult and time-consuming to obtain.

Comments on Chapter 3: Affected Environment

3.3 Water Resources

3.3.1 Definition

“Wetlands are defined by Section 404 of the Clean Water Act as: “areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” The CNMI Water Quality Standards define wetlands as “waters of the Commonwealth,” and state that all wetlands are subject to the provisions of the standards. Areas described and mapped as wetland communities may also contain small streams, shallow ponds, and lake edges.”

As noted in general comments above, the DoD must also include the USFWS and DCRM definitions of wetlands here.

3.3.3 Methodology

“an aquifer study is underway to evaluate potential well capacity and existing water quality in notional well fields; well setbacks and potential for saltwater intrusion (the movement of saline water into freshwater aquifers); and man-made contaminant migration into notional well fields on Tinian. This study will provide information needed to design and space wells in the notional well field. Information from this study will be added to the Final Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS).”

It is unacceptable to include information in the Final EIS without presenting it first in the DEIS. This information must be made available in the DEIS in order to allow the public and agencies to review the information and provide their comments in order to fulfill NEPA requirements. For example, the aquifer study referenced above could contain important information on the impacts of increased groundwater use on water availability for existing wetlands and therefore endangered species on Tinian. The statement above appears to indicate that there will be wells installed within the RTA. The public and agencies must be given the opportunity to review and comment on the environmental impacts of these activities.

Table 3.3-1. Tinian Surface Water Features

Mahalang Complex:

“Located within the north central portion of the Military Lease Area, Mahalang comprises a cluster of craters and depressions, a subset of which pond water during the wet season.”

This is misleading. Twenty-two, not “a subset”, of these craters and depressions pond water for significant periods during the wet season (Zarones and Derrington, in prep).

3.3.4.1.1.1 Wetlands Communities

“In support of the EIS/OEIS, all three surface water features were surveyed for wetland characteristics”

These “surface water features” were only evaluated in terms of wetland as defined by the Clean Water Act for the purposes of determining whether they are jurisdictional. There are many different definitions of “wetland” and the DoD has deliberately chosen the most restrictive in order to downplay the amount of wetland habitat in this area.

“Other sites surveyed at the Mahalang Complex (MC1, M7, MC2, M10, and M11) in 2014 did not contain wetland vegetation and are ephemeral surface waters.”

The DoD needs to clarify that this designation applies only to the designation of a site under the CWA and not to other possible definitions. According to the information presented in Table 3.3.2, all of the surveyed sites meet the criteria of “wetland” under the USFWS definition (important for determining impacts on wetland-dependent endangered species).

In addition, Appendix L only presented information on 6 of the 24 sites in the Mahalang Complex. This survey needs to be completed in order to include information on the remaining 18 known sites within the Mahalang Complex.

Table 3.3-2. Summary of Potential Wetlands of the Bateha and Mahalang Complexes

This table only provides information for 6 of the 24 known sites within the Mahalang Complex. Figure 3.3-1 shows 24 sites within the Mahalang complex. The table needs to be completed.

3.5 Noise

3.5.4.1 Ground-based Military Training Activities

“...closest population in the village of Marpo Heights, is approximately 4 miles (6 kilometers). At this distance, the noise level reduces to a Peak sound level of 65 decibels (or Noise Zone I), well within the compatibility limits presented in Table 3.5-1.”

65 decibels occurs in Noise Zone II, not I. Some people may well live closer to the firing zone than 4 miles. But even at 4 miles, this noise level is too high to be compatible with human residences. Section 3.5.2 states that “Zone II (65 to 75 A-weighted / 62 to 70 C-weighted / 87 to 104 Peak). Exposure to noise within this zone is normally considered incompatible with noise-sensitive land uses such as residences, hospitals, schools, and places of worship.”

“On the southern portion of the Military Lease Area, limited military training primarily consists of reconnaissance exercises. With the maximum noise levels at about 65 decibels, none of these

activities generate noise levels exceeding Noise Zone I outside of military boundaries, therefore adjacent land uses are considered compatible.”

This should read “Peak (15)” noise levels, not "maximum noise levels". On-going weapons fire at Peak 15 65 decibels reaching residential areas constitutes a frequent noise source at a level loud enough to continuously disturb residents and their daily activities such as school and worship. Section 3.5.2 states that “*Zone I (<65A-weighted/<62 C-weighted/<87 decibels Peak).* *This noise zone includes all areas in which day-night average sound levels are less than 65 decibels A-weighted, or 62 decibels C-weighted, or the Peak sound level is below 87 decibels.*”

3.5.4.5 Pagan

"Acoustically, this area would be typical of a rural or wilderness setting with ambient noise levels between 35 and 45 decibels A-weighted (U.S. Environmental Protection Agency 1978). Noise levels of this level cannot be modeled; therefore, no noise contour bands are presented."

Pagan hosts residents and frequent long-term visitors. Why were the noise impacts of military operations on Pagan not included in this document? Pagan also hosts great ecotourism potential for the CNMI. Noise impacts on residents and visitors must be presented. Note, tourists visit Pagan in large part for its wilderness value and the extremely low and natural ambient noise noted in the document. Noise from firing ranges would most likely seriously damage Pagan's ecotourism value, and this must be analyzed, presented and impacts noted.

3.7 Land and Submerged Land Use

The region of influence includes the land of Tinian and Pagan, and their associated submerged lands, which are defined as areas within 3 nautical miles (5 kilometers) of the mean high tide line.”

Three nautical miles equals 5.559 kilometers, not 5 kilometers. If rounded up to the nearest whole number, this would equal 6 kilometers. In addition, the DoD should reference geographical miles, not nautical miles, when referring to submerged lands limits. Three geographical miles equals 5.565 kilometers, which would still round up to 6 whole kilometers.

3.7.1 Land and Submerged Lands Use Definition

“Land use includes natural and man-made activities occurring or planned on land and submerged land (within 3 nautical miles [5 kilometers] from shore”

Again, 3 nautical miles would be 6 kilometers to the nearest whole number, not 5. Also submerged lands are defined using geographical miles, not nautical miles. This error is repeated throughout the DEIS.

“Jurisdictional authority of submerged lands for CNMI falls under the purview of the CNMI Bureau of Environmental and Coastal Quality”

“The submerged lands around Pagan are within the jurisdictional control of the CNMI government (i.e., the CNMI Bureau of Environmental and Coastal Quality).”

“Submerged lands in the CNMI are regulated by the CNMI Bureau of Environmental and Coastal Quality.”

Submerged lands around Pagan are within the jurisdictional control of the Department of Lands and Natural Resources, and are regulated by DLNR, not the Bureau of Environmental and Coastal Quality Submerged Lands Act. 2 CMC §§ 1201, et seq.; 1 CMC §2653(k). Management of Submerged Lands. *“The director (now Secretary of DLNR) shall be responsible for the management, use and disposition of submerged lands of the Commonwealth”*. The DoD must correct this error.

“However, this is not applicable to those submerged lands adjacent to the Military Lease Area on Tinian as they are under the jurisdictional control of the U.S. government.”

The 3 geographical miles of submerged lands off the coast of Saipan overlap with the 3 geographical miles of submerged lands off the coast of Tinian (see Figure 2 of the current document). The submerged lands surrounding Saipan were conveyed to the CNMI Government. 48 U.S. Code § 1705(a). The ownership of the Saipan and Tinian overlapped submerged lands was not addressed in Presidential Proclamation 9077 which withheld the submerged lands off the Tinian MLA from the conveyance and this has not been resolved.

Figure 3.7-1 Region of Influence for Land and Submerged Land Use

This map depicts the 3 mile limit of submerged lands surrounding Tinian and Pagan. It does not depict the 3 mile limit of submerged lands surrounding Saipan, which was conferred to the CNMI via the Territorial Submerged Lands Act as amended. 48 U.S. Code § 1705(a). It does not indicate the area of overlap between Saipan and Tinian 3-mile submerged lands.

In addition, this map appears to depict three statute miles of submerged lands from the shorelines of Tinian, not three geographical miles. One geographical mile equals 1.1526 statute miles, or 1.855 kilometers. The map appears to correctly depict 3 geographical miles of submerged lands off the shoreline of Pagan.

3.7.3.1 The CNMI Coastal Resources Management Plan

“Any project wholly or partially within a CNMI Area of Particular Concern requires a Coastal Resources Management permit.”

This statement is misleading as it ignores the distinction of a “minor development” and “major siting” project, and massively underplays the extent of regulation by the DCRM within the CNMI. While “minor development” projects occurring within one or more of an Area of

Particular Concern require a DCRM permit, any project within the CNMI coastal zone that meets the definition of a “major siting” requires a Major Siting permit. The CNMI coastal zone encompasses the entirety of the CNMI. Thus any project that meets the definition of a Major Siting will require a CNMI permit, regardless of whether it occurs within an Area of Particular Concern.

“There are five CNMI Areas of Particular Concern delineated”

This is incorrect. There are seven CNMI Areas of Particular Concern identified in the DCRM Regulations, not five. These are: Lagoon and Reef; Managaha and Anjota Islands; Coral Reefs; Wetlands and Mangroves; Shorelines; Ports and Industrial Areas; and Coastal Hazards. NMIAC § 15-10-315 to § 15-10-345.

3.7.4.1.4 Submerged Land Control around Tinian

“To ensure the protection of military training in the area, a January 2014 Presidential Proclamation did not include the transfer of submerged lands adjacent to the leased lands of Tinian to the government of the CNMI (Obama 2014). Therefore, the U.S. retains control over submerged lands extending to 3 nautical miles (5 kilometers) from the coast of Tinian where the U.S. government has land leases.”

The statement does not address the area of overlap between the Tinian and Saipan 3 geographical mile submerged lands limits. It repeats the error of using nautical miles instead of geographical miles, and miscalculates the conversion to kilometers.

Figure 3.7-4 Tinian CNMI Areas of Particular Concern

This figure depicts only 7 sites within the Mahalang complex as “Wetlands and Mangrove APC” with no explanation as to why these 7 sites are displayed, and other sites within the Mahalang complex are not shown. The DoD must explain how it has come to define these 7 sites as “wetland and mangrove” under the DCRM Regulations definition of “wetlands and mangrove”.

Figure 3.7-5 Tinian and Saipan Existing Land Use

This map depicts an area in light blue striping as “Native Limestone Forest Conservation Area” on the east coast of Tinian, extending from within the Military Lease Area south to Marpo Point. There is no explanation in the text as to what this conservation area is, who designated it, under what authority, and who manages it. There is a second area starting from Marpo Point extending to the west, also depicted as “conservation area”, which is also not explained in the text. This second area is not shown as public land or privately owned land. The map should indicate what land use category this area falls under (for example, in Figure 3.7-3 this area is depicted as “undesignated public land”), and the DoD needs to explain in the text why it has been depicted as a “conservation area”.

3.7.5.1.1 Land Area

“The CNMI Department of Public Lands is mandated to manage the land for economic development and the benefit of the indigenous population (Coastal Resources Management Office 2008)”

This referenced document is a planning document by the Coastal Resources Management Office, hardly an appropriate reference to use to describe the mandate of the Department of Public Lands in reference to public land use on Pagan.

“Access to Pagan is controlled by the CNMI government and permits are needed in order to visit”

The DoD has not indicated what type of permits are needed to visit Pagan, and from which agencies.

3.7.5.1.2 CNMI Areas of Particular Concern Designations on and around Pagan

“Pagan includes two of CNMI’s five Areas of Particular Concern (Figure 3.7-7): (1) Shoreline and (2) Lagoon and Reef.”

The two lakes on Pagan would meet DCRM’s definition of “wetland and mangrove”, and should thus be included as an Area of Particular Concern on Pagan. See § 15-10-330 (a) *“Area Defined. The geographic area of particular concern which includes areas inundated by surface or ground water with a frequency sufficient to support a prevalence of plant or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands include swamps, marshes, mangroves, lakes, natural ponds, surface springs, streams, estuaries, and similar areas in the Northern Mariana Islands chain.”*

3.8 Recreation

Figure 3.8-1 Tinian Recreation Resources and Places of Interest

The DEIS failed to list numerous fishing sites on Tinian. The map only notes 4 fishing locations that appear to be accessed by land only. There are numerous popular fishing locations located throughout Tinian, including the northern half and the east side of Tinian. For example, Ushi "Cross" Point and Unai Dankulo are noted as areas used by fisherman in their respective sections but are not listed on the recreation map. Some of these locations are accessible by land and some are accessible by sea. Every beach is an accessible fishing site. Every reef is a water-accessible fishing site.

The Tinian Marine Reserve (TMR) area is not demarcated on this map, indicating a critical lapse in the designation of protected areas. The TMR is one of 7 marine protected areas in the CNMI. It was established in 2007 by CNMI Public Law 15-90 and amended by CNMI Public Law 17-14. The DoD must consult with DLNR-DFW about area boundaries and restrictions within the TMR.

This figure does not include the location of the Japanese Defensive Caves at the base of Mt Lasso. This is a WWII historic site with signposting and trails for visitors.

3.8.4 Tinian

"The most popular activities for visitors include historical island tours, snorkeling, and water sports at the beaches outside the Military Lease Area, as described below (Mariana Visitors Authority 2012)."

The Mariana Visitors Authority only takes Tinian visitor data from visitors from outside of the CNMI. Saipan residents frequently visit Tinian for recreational purposes. Saipan residents often venture further from off-island tourists to areas in the Military Lease Area. The DoD needs to include the use of Tinian recreational use by other residents of the CNMI.

3.8.4.1.1 Historic and Cultural Sites within the Military Lease Area

This section does not include a description of the Japanese Defensive Caves and Trail at the base of Mt Lasso. This is a WWII historic site with signposting and trails for visitors. Section 3.11.4.1.1 refers to the 86th St Shrine within the MLA but it is not described here.

3.8.4.1.1.7 Hinode American Memorial

"The grass-covered center median of the traffic circle contains the American Memorial consisting of various Japanese-style small concrete monuments (Photo 3.8-9) that were built by Americans after World War II to honor those who were killed in the battle for Tinian."

This memorial was not built by Americans, but by Japanese prior to WWII (Farrell 2012).

3.8.4.1.1.8 Japanese Village Internment Camp

"The Tinian Mayor's Office is responsible for maintaining vegetation at the Japanese Radio Communications Building."

This is incorrect. The statement refers to a different recreational site and is repeated from that section. This statement needs to be amended to refer to the Japanese Village Internment Camp.

3.8.4.2 Beaches and Parks

"Tourists also visit the beaches, but their visits are often short as they are part of a tour group."

Not all tourists visit beaches as part of a tour group. The DoD needs to clarify this statement.

"Although beaches and parks are frequented by both visitors and Tinian residents, social activities of Tinian residents center on the beaches outside the Military Lease Area."

This subjective statement is unsubstantiated and seriously devalues the socioeconomic and cultural importance of these sites. The EIS must provide quantifiable empirically-derived data and information to come to this conclusion.

3.8.4.2.1 Beaches and Parks within the Military Lease Area

"The remote locations of these beaches, lack of facilities (e.g., restrooms, showers, picnic tables), and difficult access to some of these beaches, as discussed in the description for each beach, make these beaches less frequented than the beaches located outside the Military Lease Area."

The assessment of 'less frequented' beaches fails to indicate the true impact of the actions on Tinian. The assessment fails to show how they obtained this information. Moreover, the points addressed also make these beaches prime spots for recreational fisherman and beach goers that are looking to be in a more solitary environment.

"Beaches within the Military Lease Area are not managed or maintained."

Figure 3.8-14 Japanese Bunker at Unai Chulu and Figure 3.8-15 Unai Dankulo from the Terminus of the Access Road clearly show that someone is maintaining these beaches – the grass is mowed and there are planted trees.

3.8.4.2.2 Beaches and Parks Outside the Military Lease Area

"Beaches outside the Military Lease Area are managed by the Bureau of Environmental and Coastal Quality. The Division of Parks and Recreation is responsible for the administration and maintenance of these beach parks".

Apart from issuance of permits for minor developments and marine sports operators within the shoreline APC, the BECQ does not manage beaches in Tinian. The DLNR Division of Parks and Recreation and the Tinian Mayor's Office manages beach parks, not BECQ.

3.8.4.3.1 Snorkeling and Driving

The DEIS assessment of impacts to activities related to snorkeling and diving failed to capture many sites that are used on Tinian. There are numerous other dive sites that are used by people from the CNMI and visitors that will also be affected by these proposed activities.

There is inconsistent and incomplete information of all the specific marine life that can be found at these and other dive sites around Tinian including hundreds of fish species, as well as sea turtles, marine mammals, invertebrates, and corals.

"Fleming Point contains coral formations, small marine animals and fishes."

There are also large marine animals including sea turtles, marine mammals, large pelagic fish, sharks, and many other types and sizes of fish present at this site. "Small marine animals" should

be more specific. There are many types of marine vertebrates and invertebrate that can be found at this site. These site descriptions should include a more all-encompassing list of marine animals that are present or seen at these sites.

"Two Corals – Two Corals consists of two adjacent coral formations. The fish life here includes varieties of parrot fish, grouper, damsel fish, and more."

There are other marine species that are not listed here which occur at Two Corals, including sea turtles, marine mammals, corals, marine invertebrates, hundreds of species of fish, etc. These site descriptions should include a more encompassing list of marine animals that are present at these sites.

3.8.4.3.2 Recreational Fishing

"Most fishing activities on Tinian are of a subsistence or artisan (i.e., sell fish to cover cost of fishing excursion) variety (DoN 2014)."

The DEIS assessment is completely subjective (i.e. absent of data) that fails to indicate the importance of reef, pelagic and bottom fishing toward commercial ventures such as local resorts and restaurants on Saipan and Tinian that are a baseline of the economy. It is not possible to categorize fishing in the CNMI into categories as subsistence, artisanal, cultural, commercial, and recreational. Most fisherman fish within all of these categories during a single fishing trip. Some fish may be sold, making the trip commercial in part. Some fish may be eaten as the primary meal for the day, making it subsistence. Fish may be caught using cultural practices and honed skills, making it cultural and artisanal. Fisherman may go fishing for fun, to get away from the everyday life they lead, making it recreational. These factors make stating "Most fishing activities on Tinian are of a subsistence and artisan variety" inaccurate. The statement does not represent the entire spectrum of fishing motivations and types.

"However, recreational fishing is popular with tourists."

The DEIS provides a subjective assessment that is impossible to transfer to quantifiable impacts to the local fishers, tourism and economy. The assessment provides no empirical data and assessment that measures the true impact of the proposed actions on the local fishers and economy. The traditional stateside perception of recreational fishing being a definitive category with clear boundaries is popular with tourists. Local people participate in forms of recreational fishing that are not appropriately captured in this document.

"Subsistence, artisan, and recreational fishing activities include bottom fishing and trolling for barracuda, mahi-mahi, marlin, skipjack, red sea bass, and tuna."

Spearfishing and cultural Division of Fish and Wildlife-permitted surround net fishing are both types of fishing that have users that experience recreation from their fishing experiences. The DEIS needs to include all fishing methods that are utilized for recreation on Tinian.

Additionally, this list of species includes only common names and is not descriptive enough. Several of the fish listed are ambiguous names and could mean several different species and even families of fish. It also included fish that are infrequently fished for in the CNMI, i.e. barracuda.

The DEIS needs to include a relevant list of important fish that are frequently targeted by fishermen. The list should include local names and scientific names to avoid confusion of what fish is intended.

"There are also shoreline fishing areas used for recreational fishing, which are primarily located south of Dump Coke South and north of the Two Coral (Turtle Cove) diving sites on the west side of Tinian (see Figure 3.8-1)."

The DEIS provides a subjective assessment that is impossible to transfer to quantifiable impacts to the local fishers, tourism and economy. The assessment provides no empirical data and assessment that measures the true impact of the proposed actions on the local fishers and economy.

There are many other places throughout the island including the Military Lease Area that are utilized by recreational fisherman.

"The most recent fishing events on Tinian include the Tinian Cliff Fishing Derby and the Tinian Bottom Fishing Derby."

The DEIS failed to include the shoreline kid's fishing derby and a spearfishing derby during the 2014 on Tinian. These events are planned to be yearly events and underlies the restriction in fishing opportunities.

3.8.4.5 Annual Events

The fishing derbies mentioned above are excluded here.

3.8.5 Pagan

"Pagan is officially uninhabited because after the last major volcanic eruption in 1981, residents were evacuated from the island."

Pagan has a history of significant settlement going back thousands of years with a current and well-known establishment on the island. People currently live on Pagan. Numbers vary as people rotate on and off as they have families, businesses and interests in other islands. Pagan was evacuated over thirty years ago but the residents have continuously visited ever since, often staying for many months at a time. It is inaccurate and uniformed to state that Pagan is uninhabited because it was only temporarily evacuated. The evacuation was never meant to be permanent.

"Those who wish to visit Pagan must obtain a permit from the CNMI Homeland Security and Emergency Management Office."

There is no statutory authority for the CNMI Homeland Security and Emergency Management Office to issue permits for visits to Pagan.

3.9 Terrestrial Biology

Table 3.9-1 Terrestrial Biology Field Studies on Tinian and Pagan

The omission of invertebrates outside of the few ESA candidate species is unacceptable, particularly since certain invertebrates are socially and culturally important (e.g. ayuyu or coconut crab). The DEIS claims to include species “of special public importance” (3.9 Terrestrial biology) but has failed to do so comprehensively.

Table 3.9-1 indicates that the DoD or other studies have not conducted surveys for plant species that have been proposed for listing under the federal Endangered Species Act that have been recorded on Tinian and/or Pagan.

There was a recent vegetation survey of Pagan (Pratt 2010) which was conducted to USFWS by U.S. Marine Corps and Naval Facilities Engineering Command, Pacific. However there is no equivalent survey for Tinian. The DoD needs to conduct similar surveys on Tinian.

3.9.4 Tinian

Table 3.9-2 Tinian Vegetation Communities (acres)

This table claims there are 33.7 acres of wetland habitat in the MLA and 31.2 acres of wetland habitat in the non-MLA on Tinian, and gives Amidon (2009b) as a reference. However this conflicts with Figure 3.9-1 Vegetation Communities - Tinian Military Lease Area which does not include wetland habitat as a community. The DoD must indicate on Figure 3.9-1 where the 33.7 acres of wetland habitat in the MLA and 31.2 acres of wetland habitat in the non-MLA on Tinian as indicated in Table 3.9-2 reputedly occurs.

It appears that the 33.7 acre wetland included in Table 3.9-2 within the MLA is referring only to Lake Hagoi, while the 31.2 acres outside the MPA in Table 3.9-2 refers to Makpo Swamp. Thus these figures does not include the Bateha and Mahalang wetland habitat areas in their calculation of the area of wetland habitat on Tinian, which, while they may or may not meet the definition of “jurisdictional wetland” for the purposes of the CWA, would still meet the definition of “wetland habitat type”, as well as the definitions under USFWS and others, and thus must be included here. The Bateha and Mahalang sites are acknowledged elsewhere in the DEIS as featuring wetland habitat. For example in section 3.7.4.1.3 and Figure 3.7-4 they are acknowledged as a wetland and mangrove APC under DCRM regulations. The DoD must include the total area of wetland habitat, using USFWS definition, within the Bateha and Mahalang complexes.

Table 3.9-3 Occurrence of Federally Endangered Species Act-Listed and Proposed Species and CNMI-Listed Species on Tinian

Micronesian Megapode:

“Eight reports of individual birds seen within last 28 years, but none were detected during taped-playback surveys in 2008, 2013, and 2014.”

This contradicts Section 3.9.4.4.1.2 Micronesian megapode where it is stated that *“one to three megapodes were detected, always individually, in 1985, 1995, 2000, 2001, 2004, 2005, 2009, and 2013”*.

Figure 3.9-3 Occurrence of Special-Status Species - Tinian Military Lease Area

This figure does not include the approximate locations of the *Heritiera longipetiolata* or *Dendrobium guamense* that are mentioned in Table 3.9-3, and described in Sections 3.9.4.4.1.9 and 3.9.4.4.1.10, respectively. The DoD must include approximate locations for these two species.

Section 3.9.1.3 defines “special-status species” as ESA-listed, proposed or candidate, CNMI listed as threatened or endangered, MBTA-listed or species identified as Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. However this figure only includes ESA-listed or proposed “special-status species”, and species listed by the CNMI as threatened or endangered. It does not include those listed under the MBTA, nor species identified as Species of Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. This figure must be revised to include the occurrences of all special-status species.

This map does not accurately depict the locations of the wetlands within the Mahalang complex that have been used by Mariana common moorhens. In 2013 moorhens were observed in M07, M10 (not M11) and M21 (L. Zarones, pers. obs.). In 2014 moorhens were observed in M22 (L. Zarones, pers. obs.). The DoD must revise the map to accurately depict the sites within the Mahalang complex where moorhens have been observed.

The same information on “special-status species occurrence” is depicted in Figures 4.9-3a and b (and 4.9-5a and b and 4.9-7a and b). However Figures 4.9-5a and b, as well as features the disclaimer *“Species observations are historical sightings over multiple years and multiple surveys and do not represent the current population status or distribution of species within the depicted area”*. This disclaimer should also appear on Figure 3.9-3, and the text referencing this figure should acknowledge this shortcoming of the data presented.

3.9.4.1.8 Wetland

“Wetland habitats on Tinian are important because of their limited occurrence...”

Wetlands are limited in occurrence throughout the CNMI, present only on the four largest islands, Saipan, Tinian, Rota, and Pagan. Little studied, we expect that there are native endemic

species associated with CNMI wetlands that have not yet been described. These species are likely to be globally rare and harbor unique genetic diversity. The DoD needs to acknowledge this.

"Results of wetland surveys conducted at a sample of the Mahalang sites in December 2014 indicate that only a single Mahalang site supports wetland vegetation (e.g., Ipomoea aquatica) and exhibits the characteristics of an isolated wetland. All other surveyed Mahalang sites do not contain wetland soils, suitable hydrology, or wetland vegetation. See Appendix L4, Tinian Wetland Survey Report, for more details regarding the Mahalang sites."

Appendix L4 gave results of assessments of only 6 of the 24 Mahalang sites to determine whether these six sites met the definition of a wetland according to USACE criteria for the purposes of determining whether the site is jurisdictional under Section 404 of the Clean Water Act. One had all three characteristics (wetlands soils, hydrology and wetland vegetation). Four met two of the three criteria. The sixth met only one of the three criteria. It is false to claim that the five of the six surveyed sites had none of the three characteristics of a wetland under to USACE criteria – all six of them featured at least one of the three characteristics. This is important to consider because under the USFWS definition of a wetland, a site only needs to meet one of the three criteria in order to be considered a wetland. This means that all 6 surveyed sites in Mahalang can be considered a wetland according to USFWS criteria. This is especially important as the DoD later applies the term “wetland” beyond determining whether it is USACE-jurisdictional, and The DoD must correct this error.

“only a single Mahalang site supports wetland vegetation.”

This is misleading – it should be made clear that “only a single Mahalang site out of the 6 sites that were surveyed supports wetland vegetation”. There are 18 other sites that were not surveyed in the report in Appendix L4 that may or may not support wetland vegetation.

“A subset of these individual sites contains water during the wet season, and all sites are dry during the dry season.”

A “subset” tells us nothing. The DoD needs to state how many of the 24 individual sites equals a “subset”, and indicate how many were actually checked during the wet season.

“Although no specific sizes for these sites were given in previous reports, AECOS and Wil Chee Planning (2009) estimated the two largest features as approximately 1.2 acres (0.5 hectare) each.”

It is imperative that the DoD includes the acreage of these wetland sites, as it has been shown that these are wetlands under the USFWS definition and other definitions (DCRM regulations, DEQ Water Quality Standards). In addition, it appears that one of the 6 surveyed sites may be jurisdictional under the CWA. It is unknown how many of the 18 unsurveyed sites may also be jurisdictional as these were not included in the wetland survey in Appendix L. The DoD must properly complete the wetland survey in Mahalang, and provide information on all three wetland criteria as well as an accurate size estimate, and include these in the tally in Table 3.9-2.

“The Bateha sites are located within the Military Lease Area (see Figure 3.9-1) and consist of two shallow depressions that contain water during the wet season. These areas are approximately 1-2 acres (0.4-0.8 hectare) each.”

The size of these wetlands needs to be more accurately ascertained. These wetland acreages need to be included in the tally in Table 3.9-2.

The DoN (2013b) noted that as of 2012, Lake Hagoi vegetation appears to have changed relative to that mapped in 1995, with the occurrence of additional species such as the indigenous pigo (*Hibiscus tiliaceus*), a type of tree. Lake Hagoi was noted to be filling in with reeds as far back as 1977 (Moore et al. 1977). *Hibiscus tiliaceus* was noted as common (Moore et al. 1977). The DEIS claim that *Hibiscus tiliaceus* is invading the Lake Hagoi site is therefore false.

3.9.4.2.1 Birds

“The yellow bittern (Ixobrychus sinensis) is a native bird species that is commonly present in open areas.”

The yellow bittern is most appropriately described as a habitat generalist, occupying forests, wetlands, herbaceous scrub, and urbanized areas.

3.9.4.2.5 Invertebrates

“There are four native invertebrate species reported on Tinian—three crab species and one snail species.”

Clearly this statement is an error, as there are hundreds if not thousands of native invertebrate species on Tinian. The lack of attention given to impacts on invertebrates in this DEIS is a serious omission. The DoD should refer to its own commissioned reports such as Hawaiian Agronomics (International) Inc. (1985) under United States Navy (Contract N62742-84-C-0141), and Richardson et al. (2009) under contract to Marine Force Pacific (MARFORPAC) and DoD for information on invertebrate species present on Tinian.

3.9.4.4 Special-status species

While Section 3.9.1.3 states that species that are recognized as “Species of Special Conservation Need in the CNMI” in the DFW Comprehensive Wildlife Conservation Strategy (Berger et al. 2005) as “special-status species”, this section has failed to include such species in this section. Terrestrial “species of special conservation need” in the CNMI that are present on Tinian but have not been included in this section include: Rufous Fantail, Saipan Bridled White-eye, *Emoia atrocostata* (Tide-pool skink) and *Birgus latro* (Coconut crab or ayuyu).

3.9.4.4.1.4 Pacific Sheath-tailed Bat

"The Pacific sheath-tailed bat is presumed to no longer exist on Tinian and is not discussed further in this EIS/OEIS."

We concur that this bat species no longer occurs on Tinian, but the DEIS is too narrow in scope in how species are addressed. This species should be discussed further in the DEIS. While there will be no direct impacts to the sheath-tailed bat, the loss of forest habitat where the species was formerly found represents an indirect impact, as reintroduction and recovery of the species becomes more challenging.

3.9.4.4.1.10 *Dendrobium guamense*

"Currently, a single population of D. guamense is known within the Military Lease Area on Tinian, near Unai Dankulo on the east coast (U.S. Fish and Wildlife Service 2014; U.S. Fish and Wildlife Service, R. Rounds, personal communication, 2014)."

When evaluating the status of this species, CNMI DLNR/DFW staff found the source cited (U.S. Fish and Wildlife Service 2014) to grossly underestimate the amount of *Dendrobium guamense* on Rota (Zarones et al. 2015a) and wrongfully claimed that this species is extirpated on Saipan (Zarones, in prep). DLNR/DFW staff found this species on Aguiguan, an island not cited by the source as hosting this species (Zarones et al. 2015b). Based on our direct experience with this species in the Marianas, we expect that it is much more common on Tinian than is stated here. Without targeted survey effort for this species, unquantified direct impacts to this species are likely to occur.

3.9.4.4.1.11 *Solanum guamense* and *Tuberolabium guamense*

"Tuberolabium guamense is known historically from Guam, Rota, Tinian, and Aguiguan, but it is now known only from a single individual on Guam and two occurrences on Rota (U.S. Fish and Wildlife Service 2014)."

When evaluating the status of this species on Rota, CNMI DFW staff found the source cited (U.S. Fish and Wildlife Service 2014) to grossly underestimate the amount of *Tuberolabium guamense* on Rota (Zarones et al 2015a). Based on our direct experience with this species in the Marianas, we expect that it is much more common on Tinian than is stated here. Without targeted survey effort for this species, unquantified direct impacts to this species are likely to occur.

3.9.5 Pagan

3.9.5.1.10 Rare Plants

"Several species were noted as rare in the 2010 survey."

The DoD does not define what is meant by "rare" for the purpose of the DEIS, or in relation to the Pratt (2010) survey. The DoD must consider the impacts to native plant species that are globally rare, i.e. limited in distribution in numbers. Although the DEIS proceeds to list several "rare" plants, we do not know whether that means they are uncommon in the vegetation community in which they are found, uncommon on Pagan, or uncommon globally. Narrow range endemic species warrant special attention. Based on the information given we cannot fully assess the impacts to "rare plants". Chapter 4 makes no mention of the impacts on these rare plant species.

3.9.5.4 Special-status Species

While Section 3.9.1.3 states that species that are recognized as "Species of Special Conservation Need in the CNMI" in the DFW Comprehensive Wildlife Conservation Strategy (Berger et al. 2005) as "special-status species", this section has failed to include these species in this section. Terrestrial "species of special conservation need" in the CNMI that are present on Pagan but have not been included in this section include: *Nactus pelagicus* (Rock Gecko), *Emoia atrocostata* (Tide-pool skink) and *Birgus latro* (Coconut crab).

3.9.5.4.1 Federal Endangered Species Act-listed and Proposed Species

"Two other federally listed species, the nightingale reed-warbler (Acrocephalus luscini) and Mariana common moorhen, are presumed to no longer exist on Pagan (Marshall and Amidon 2010) and are not discussed further."

We concur that these species no longer occur on Pagan, but the DEIS is too narrow in scope in how species are addressed. These species should be discussed further in the DEIS. While there will be no direct impacts to these two birds, the loss of habitat represents an indirect impact, as future reintroduction and recovery of the species are precluded.

3.9.5.4.1.7 *Bulbophyllum guamense*

"Historically this species occurred on Pagan, but has not been observed since 1984 (U.S. Fish and Wildlife Service 2014)."

When evaluating the status of this species on Rota, CNMI DFW staff found the source cited (U.S. Fish and Wildlife Service 2014) to grossly underestimate the amount of *Bulbophyllum guamense* on Rota (Zarones et al 2015a). Based on our direct experience with this species in the Marianas, we expect that it persists on Pagan. Without targeted survey effort for this species, unquantified direct impacts to this species are likely to occur.

Figure 3.9-6 Occurrence of Special-Status Species - Pagan

This figure omits the locations of several special-status species: *Cycas micronesica* and Mariana Fruit Bat. DFW (2000) detected a megapode in the central part of the island along the cliffline near the runway, which should be included as a location for this species on the map.

The title of the figure is misleading. Section 3.9.1.3 defines “special-status species” as ESA-listed, proposed or candidate, CNMI listed as threatened or endangered, MBTA-listed or species identified as Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. However this figure only includes ESA-listed or proposed “special-status species”, and species listed by the CNMI as threatened or endangered. It does not include those listed under the MBTA, nor species identified as Species of Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy.

The same information on “special-status species occurrence” is depicted in Figure 4.9-9. However Figure 4.9-9 features the disclaimer “*Species observations are historical sightings over multiple years and multiple surveys and do not represent the current population status or distribution of species within the depicted area*”. This disclaimer should also appear on Figure 3.9-6, and the text referencing this figure should acknowledge this shortcoming of the data presented.

Table 3.9-7. Bird Species Occurring on Pagan and Protected under the Migratory Bird Treaty Act

This table is missing numerous MBTA-listed species that have been noted to occur on Pagan, including the Grey-backed Tern, Great Frigatebird, Grey Heron, Intermediate Egret, Cattle Egret, Pacific Golden Plover, Wandering Tattler, and Ruddy Turnstone (Marshall et al. 2010). We expect that more MBTA-listed species yet to be recorded occur on Pagan, and we require comprehensive surveys be undertaken, particularly on seabirds.

3.10 Marine Biology

Table 3.10-3 CNMI Marine Invertebrate Species of Special Conservation Need of Tinian

"Seventeen marine invertebrates have been designated by the CNMI Division of Fish and Wildlife as Species of Special Conservation Need. Five of the 17 have been reported in Tinian waters (Berger et al. 2005), see Table 3.10-3."

This table indicates certain species of invertebrates as not reported within Tinian waters, which is misleading. There are other, more recent available resources that document the presence of these species on Tinian. The DoD must consult with the DFW Fisheries section for complete information on which species are currently known to occur in Tinian waters.

3.10.4.4 Fish

"Tinian, along with Saipan and Rota, supports much of the CNMI's bottomfish fishery, which includes snapper (particularly the long-tail snapper [Etelis coruscans]), grouper (particularly the eight-banded grouper [Epinephelus striatus]), and the redgill emperor (Lethrinus rubrioperculatus) and other emperortype fish. Managed species targeted by the bottomfish fishing industry are described in more detail in Section 3.10.4.1.6, Essential Fish Habitat."

This section indicates an eight-banded grouper with species name as *Epinephelus striatus*. The species name listed does not occur in the Marianas or the Pacific Ocean.

Figure 3.10-6 Unai Masalok Coral Cover

Survey results are insufficient to accurately document coral cover and diversity of the proposed activity site. Surveys need to be conducted within the depths of -1 to -5 meters between the depicted survey sites.

3.15.6.8 Aquaculture

The DEIS fails to accurately describe the aquaculture activities on the CNMI and indicate potential economic loss on site which have been proposed for marine aquaculture activities

Comments on Chapter 4: Environmental Consequences

As noted above in comments on Section 2.5.1.2.5, the DoD has failed to include the use of beaches for landing construction materials in assessing construction impacts on Pagan. Section 2.5.1.5 states *“The primary mode of transportation for personnel, equipment, and cargo would be amphibious craft landing at designated amphibious training beaches as no docking facilities currently exist or are contemplated at Pagan under the proposed action”*. The types of equipment and supplies for the proposed construction activities are immense. These include “road graders, vibratory compactors, dozers, tractors rubber-tired articulated multi-purpose with buckets, dump trucks, and backhoe loaders” (2.5.1.2.4 Military training trails), equipment to clear hundreds of acres of vegetation, equipment to improve the airfield, including equipment need to move 615,000 cubic yards of lava rock, build a concrete fuel bladder containment berm (2.5.1.2.2 Expeditionary airfield), equipment and supplies for the creation of a 4000-personnel camp, including diesel generators, desalination equipment, chemical toilets and other wastewater devices (2.5.1.2.1 Expeditionary Base Camp/Bivouac Area), fencing and other materials and equipment needed for the construction of the Munitions storage area (2.5.1.2.3 Munitions Storage Area). Transport of these equipment and supplies via LCAC or AAV to shore will constitute a major undertaking. The magnitude, frequency, duration and associated environmental impacts of transporting construction equipment and supplies using amphibious landing craft at the abovementioned beaches needs to be included in the DEIS.

4.3 Water Resources

4.3.2 Resource Management Measures

4.3.2.1 Avoidance and Minimization Measures

No Training Areas.

“The U.S. military would implement training restrictions for surface water features on Tinian. Lake Hagoi and the two Bateha sites remain designated by the U.S. military as “No Training Areas.” Within these “No Training Areas,” ground disturbance and vegetation removal of any kind will be prohibited during construction. “No Training Area” restrictions will be implemented upon initiation of CJMT training activities on Tinian.”

Disturbance does not have to occur within a site to impact a site. Run-off can occur in surrounding areas into wetlands. Given that the Bateha sites are fed by surface runoff, a buffer zone that includes their entire catchment area would be required in order to avoid impacts. The DEIS does not indicate what kind of buffer zone will be implemented in order to ensure no ground disturbance or vegetation removal impacts the wetland sites during construction or training.

The Mahalang wetland sites need to be included in these “no training area” restrictions. There is no logical reason given why the DoD has chosen to include the Hagoi and Bateha wetland sites but not the Mahalang sites, as all three provide habitat for moorhens.

4.3.3 Tinian

4.3.3.1.1.1 Surface Water Resources Alternative 1 (also 4.3.3.2.1 Alternative 2 and 4.3.3.3.1 Alternative 3)

“As described in Section 3.3, Water Resources, MC2 is not considered a wetland and MD3 is considered an isolated wetland (see the Wetland Survey Report in Appendix L).”

The DoD has not acknowledged here that MC2, although it may not be considered a wetland for jurisdictional purposes by USACE under the CWA, other regulatory agencies (USFWS, DEQ, DCRM) may consider this a wetland. In addition, the Wetland Survey Report in Appendix L only surveyed 6 of the 24 potential wetland sites within the Mahalang complex. It is therefore misleading to claim that there is only one “wetland” in the Mahalang region.

4.3.3.1.1.3 Nearshore Water Resources, In-Water Work at Tactical Amphibious Landing Beach Alternative 1 (also 4.3.3.2.1 Alternative 2 and 4.3.3.3.1 Alternative 3)

“In-water construction at Unai Chulu would result in direct impacts to nearshore waters. Construction activities would disturb sediment and increase turbidity and thus impact water quality, clarity, and dissolved oxygen levels. Best management practices, including isolating the in-water construction area with floating turbidity barriers, would be utilized to capture sediment and debris caused by in-water construction activities. Based upon the above analysis and the implementation of resource management measures in Section 4.3.2, in-water construction activities under Tinian Alternative 1 would result in less than significant direct and indirect impacts to nearshore water resources.”

Floating turbidity barriers would capture sediment within the barriers, holding the sediment directly within the nearshore areas which would affect nearshore water resources, specifically in the ways stated in the text: “increase turbidity and thus impact water quality, clarity, and dissolved oxygen levels.” It is thus not clear how this results in the “less than significant direct and indirect impacts to nearshore water resources” assessment.

4.3.4 Pagan

4.3.4.1.2.2 Groundwater Resources Alternative 1 (also 4.3.4.2.2 Alternative 2)

“Risk of contamination to groundwater from munitions constituent in the northern High Hazard Impact Area on Mount Pagan is possible, however, would be somewhat reduced by: (1) the possibly limited existence of a basal groundwater lens in the area and (2) dilution from rapidly percolating waters migrating radially toward the coast. The High Hazard Impact Area on the isthmus was mapped as containing “generally meager to small quantities of fair to poor quality water” (Corwin et al. 1957). There is not likely to be a substantial groundwater resource in this area. Based upon the above analysis and the implementation of resource management measures

in Section 4.3.2, Pagan Alternative 1 (and 2) operations would result in less than significant impacts to groundwater resources."

It is not clear how proposed actions would result in "less than significant impacts to groundwater resources" when contaminated surface water from the High Hazard Impact Area is considered likely to enter the groundwater aquifer. Although the groundwater in the area may be of lesser volume and quality, contamination would be difficult to remove once it entered the aquifer.

4.5 Noise

Section 4.5.1 Approach to Analysis

"To determine the population counts, this analysis used aerial photography to count actual houses and the U.S. Census population multiplier for Tinian (Marpo Heights) of 3.77 people per household."

Many houses are missed by counting houses on aerial photographs. Areas of Tinian have dense tree canopy cover.

"Airborne noise impacts would be limited based on (1) the transitory nature of airborne noise sources; (2) the limited exposure of animals that spend most or all of their time underwater to noise above water; and (3) the physics of sound transmission from air into the water column, in which much of the sound is reflected off the surface of the water unless the source is at a near-vertical angle (Young 1973). In addition, quantitative data or thresholds relating airborne sound levels to important physiological or behavioral responses by marine animals other than pinnipeds (which are not present in the CNMI) are generally lacking (National Oceanic and Atmospheric Administration West Coast Region 2015). As a result, airborne noise is considered to have only temporary, if any, impacts to individuals (e.g., brief startle responses), which would be unlikely to result in reduced fitness to the individual or to have population level effects. Accordingly, airborne noise impacts to marine resources are considered less than significant and not discussed further in this analysis."

In-water activity such as the use of amphibious assault vehicles and firing of weapons over water will have an effect on marine life i.e. fish, sea turtles, marine mammals, and/or invertebrates directly under the source of the sound. Reduced fitness to individuals or populations from 20 weeks of training per year may result and is a significant impact. The DoD must present information such as timeline and duration of AAV, Small Boat, and Landing Craft Air Cushion Training.

If data on airborne noise impacts to marine animals are unavailable, how can it be concluded that there are less than significant impacts to marine resources? In-water training should be limited to prevent prolonged stress to marine animals. We need more information on airborne noise impacts to marine animals to determine true significant impacts.

Figure 4.5-1. All Tinian Alternatives Small-Caliber Weapons Noise Levels (A-weighted)

The extent of the Mahalang wetland complex is much greater than what is depicted here (as well as in Figure 4.5-2). The DoD has chosen to represent the area with only a single point. The complex actually extends far to the east and south of this point, into the Zone II 70-74 dB range for all three alternatives. The DoD needs to accurately depict the location of the Mahalang wetland complex as an area not a single point, for example as shown in Figure 3.3-1.

Figure 4.5-1 and 4.5-2 do not show the location of the Tinian Military Retention Land for Wildlife Conservation.

Table 4.5-9. Representative Points of Interest on Tinian Affected by Large-caliber Weapons Noise for All Tinian Alternatives (Peak)

Table 4.5-9 displays unacceptably high noise levels affecting people and residences on Tinian. Hearing damage from short-term exposure occurs at 120 dB. Hearing damage from long-term exposure occurs at 85 dB. The DoD must amend its plans so that peak noise exposure in unfavorable conditions remain below 85 decibels for residents and visitors of Tinian. The DEIS shows no attempt to minimize or avoid noise impacts on people of Tinian.

Table 4.5-10. Representative Points of Interest on Saipan Affected by Large-caliber Weapons Noise for All Tinian Alternatives (Peak)

Table 4.5-10 displays unacceptably high noise levels affecting people and residences on Saipan. Hearing damage from short-term exposure occurs at 120 dB. Hearing damage from long-term exposure occurs at 85 dB. The DoD must amend its plans so that peak noise exposure in unfavorable conditions remain below 85 decibels for residents and visitors of Saipan. The DEIS shows no attempt to minimize or avoid noise impacts on people of Saipan.

4.5.4.1.1 Construction Impacts Alternative 1 (also 4.5.4.2.1 Alternative 2)

“Construction activities and airfield improvements would not affect any residential properties or noise-sensitive receptors such as schools, and hospitals because none currently exist on Pagan.”

Noise analysis must be conducted for Pagan. People live on, visit and travel to Pagan. Pagan holds enormous ecotourism potential for the CNMI, based largely on values of tranquility, solitude, peace and natural wilderness value. Noise would greatly impact these values and the economic and social value of Pagan. As demonstrated in public comment meetings held in April 2015, many CNMI residents were born on Pagan, had family from Pagan, take extended trips to Pagan, and/or intend to reside on Pagan. Impacts on these people would likely be significant.

4.5.4.1.2.3 Waterborne Operations Alternative 1 (also 4.5.4.2.2.3 Alternative 2)

“Underwater operational noise generated by sea-going vessels' engines would not create noise levels affecting people or noise-sensitive land uses. Pagan Alternative 2 waterborne operations would not generate any direct or indirect noise impacts because there are no permanent residences, schools, or hospitals to affect, and no people permanently reside on Pagan at the time of this study that are present.”

This is too general and excludes noise impacts to marine life. It also ignores the people living and visiting Pagan currently and in the future.

Table 4.5-18. Summary of Impacts for Tinian Alternatives

This table massively understates the impacts of noise on residents and visitors of both Tinian and Saipan. For example, ground-based operations will expose residents and visitors of Tinian and Saipan to noise levels of 120 dB and greater under certain conditions (Tables 4.5-9 and 4.5-10), yet Table 4.5-10 rates this as a “less than significant impact”. This is at the level that causes hearing damage from short-term exposure. This table must be amended to show significant impacts of noise on residents on Tinian and Saipan.

4.7 Land and submerged land use

4.7.3 Tinian

4.7.3.1.1.2 Land Acquisition (Jurisdictional Control) Outside the Military Lease Area Alternative 1 (also 4.7.3.2 Alternative 2 and 4.7.3.3 Alternative 3)

“Because of the large amount of land already under federal jurisdictional control, the re-acquisition of 3% of the total land on Tinian would not represent a significant impact. Therefore, Tinian Alternative 1 would result in a less than significant impact to land use with regard to changes in jurisdictional control.”

It is absurd to claim that the loss of jurisdictional control of 467 acres to the Federal Government would constitute a “less than significant impact” because there is so much that is already under federal jurisdiction. On the contrary, since the majority of Tinian is already controlled by the U.S. Military, any further loss of the small remaining area currently not under military control would be a significant impact, especially a total area in the order of 467 acres. Further, the location of these areas (at the Tinian International Airport and the Port of Tinian), both essential facilities to the people of Tinian, makes this a significant impact, as current and future use of these facilities will be impeded by the loss of these lands.

4.7.3.1.3.1 Land Use Within the Military Lease Area Alternative 1 (also 4.7.3.2 Alternative 2 and 4.7.3.3 Alternative 3)

“Four areas are being assessed as potential conservation areas for the protection of the Nighi and other wildlife species (Section 4.9, Terrestrial Biology; Figure 4.9-2). These areas may also be used for additional natural resource conservation actions such as forest enhancement and/or invasive species control. The Department of Defense is coordinating with the Federal Aviation Administration and the U.S. Fish and Wildlife Service on these potential conservation areas.”

“The DoN has identified and proposed a total of 2,554 acres (1,034 hectares) of land for grazing areas within the Military Lease Area. Of this total 1,010 acres (409 hectares) would be

unencumbered and 1,544 acres (625 hectares) would be encumbered by surface danger zones (Figure 4.7-2)."

The proposed grazing and conservation area mitigation sites overlap (Figures 4.7-2, 4.9-2). The proposed wildlife conservation areas 3 and 4 on Figure 4.9-2 are also proposed as grazing areas on Figure 4.7-2. The DoD cannot claim to plan to mitigate for two conflicting uses in the same area – grazing and wildlife conservation are not compatible land uses. In order to mitigate for the loss of the conservation area and grazing lands, the DoD must propose separate mitigation areas for each purpose. We cannot assess whether the loss of the conservation area would be less than significant unless we know where and how large the mitigation sites will be, exactly how they are to be protected and managed, and how they will be affected by proposed actions, including noise, nearby construction activities, and training activities.

The DoD must consult with the CNMI government in addition to the US Fish and Wildlife Service on the location of the Tinian Military Retention Land for Wildlife Conservation mitigation site, as the CNMI Government was a signatory on the original agreement (Government of CNMI and United States of America 1999).

4.7.3.1.4.1 Current and Proposed Submerged Land Use Alternative 1 (also 4.7.3.2 Alternative 2 and 4.7.3.3 Alternative 3)

Given that there is a significant overlap in submerged lands of Tinian and Saipan (see Figure 2 of the current document), the DoD must address impacts on the current and proposed submerged lands use of both islands.

"Both of the CNMI Areas of Particular Concern and the proposed training areas are shown in Figure 4.7-3."

Figure 4.7-3 does not show the APCs of the submerged lands off the MLA on Tinian – they have been deliberately omitted. The Areas of Particular Concern of the submerged lands of the MLA on Tinian must be shown and the environmental impacts of proposed actions must be included in the DEIS.

"The proposed action would be consistent to the maximum extent practicable with the Coastal Zone Management Act and the enforceable policies of the CNMI Bureau of Environmental and Coastal Quality. Therefore, operation under Tinian Alternative 1 (also 2 and 3) would result in less than significant impacts to submerged land uses subject to the Coastal Zone Management Act."

This statement is vastly inadequate. We cannot assess the extent of environmental impacts from proposed activities on submerged lands unless they are presented and analyzed in the DEIS. The DoD must present the activities and their environmental impacts here in the EIS for the public and agencies to review and comment. Stating that these actions and environmental impacts will be addressed in the CZMA federal consistency determination does not excuse the DoD from presenting them here and allowing public comment. We are unable to evaluate and comment on this claim unless the extent to which the proposed actions will impact submerged lands are

presented here. The DoD cannot assert that this impact will be less than significant unless it is presented here for review and comment. Just because something is consistent with DCRM's enforceable policies does not mean it will necessarily have less than significant impacts. There is nothing in DCRM's enforceable policies that states only less than significant impacts will be permitted in the CNMI. Being consistent with the enforceable policies of the CNMI Coastal Zone Management Program does not necessarily mean that impacts will be less than significant – there is a long history of past military environmental impact statements within the CNMI that contained many significant impacts, yet were still deemed consistent with the CZMA and enforceable policies of the CNMI Coastal Zone Management Program. The DoD must present the actions and their impacts on submerged lands here in the EIS for review and comment.

This claim also highlights a gross misunderstanding by the DoD of the CNMI Coastal Management Program, which is not restricted to APCs, but includes the entire CNMI coastal zone. All actions are included in the CNMI coastal zone and must be consistent to the maximum extent practicable with DCRM's enforceable policies, whether they are within an APC or not, since the entire area of the CNMI is within the “coastal zone”, and the actions within this DEIS would constitute a “major siting” under DCRM's regulations.

Why is the DoD trying to get away with not presenting certain actions and impacts on submerged lands under the guise that they do not have to, as they will be addressed in the federal consistency determination? This argument would equally apply to everything included here in the DEIS. It is extremely deceitful for the DoD to attempt to claim they do not have to present environmental impacts here in the DEIS because they state they will be addressed elsewhere under a different law, and is not in compliance with NEPA.

Figure 4.7-3 Tinian All Action Alternatives Areas of Particular Concern

This map depicts wetland APCs within the MLA (federal lands because it is under federal lease), but does not depict the shoreline, lagoon and reef APCs off the coast of Tinian (federal submerged lands). This is inconsistent, as the map does show wetland and mangrove APC within the MLA. The DoD uses the argument “*Because Areas of Particular Concern are CNMI designations, not federal designations, they are considered during the coastal zone consistency determination*” (Section 4.7.3.1.4.1) however this does not make sense and is contradicted numerous times. All of the proposed actions presented in the DEIS are within the CNMI coastal zone and will be considered during the CZMA consistency determination. The actions and their impacts in these APCs are no different to any other actions and impacts. In order to be in compliance with NEPA, environmental impacts on these APCs must be presented here for review and comment, regardless of the CZMA consistency determination, just like all other environmental impacts must.

This map does not accurately depict the wetland and mangrove APC within the Mahalang region. It has only shown 8 of the 24 sites, with no explanation as to why these 8 sites were depicted and not the rest. This is in contrast to Figure 3.3-1 which does show all of the Mahalang sites.

4.7.3.1.4.2 Public Access Alternative 1 (also 4.7.3.2 Alternative 2 and 4.7.3.3 Alternative 3)

“Submerged lands adjacent to the Military Lease Area would remain under federal jurisdictional control. However, the public access to submerged lands (and the waters above) would be restricted during training events 20 weeks per year. Although there are restrictions that occur with the current level of training, the restricted access would increase in frequency and duration under the proposed action. However, the areas of submerged land that would be restricted are not unique. Therefore, Tinian Alternative 1 (also 2 and 3) operations would result in less than significant impacts to the public access of submerged lands.”

Restricted access to areas for 20 weeks per year and increase in frequency is a significant impact on public access to submerged lands. In addition, the DoD must include the impacts of pre- and post-training periods on public access. Section 2.1 states: *“This EIS/OEIS analyzes 20 weeks per year of live-fire training on Tinian and 16 weeks per year of live-fire training on Pagan. In addition to the weeks of live-fire training for Tinian and for Pagan, other activities including pre-training and post-training activities (arrival and departure of trainees and equipment), non-live-fire training (e.g., logistics training), and RTA maintenance and management functions would occur outside of the live-fire training durations throughout the year.”* Therefore training impacts on public access will not be restricted to the 20-week training period and these additional periods must be included in the environmental impacts analysis. Finally, the DoD must acknowledge impacts to public access from the 8-10 year construction period. We assert that these combined will result in significant impacts to submerged land use associated with public access for Tinian.

The 3 geographical mile submerged lands of Tinian reach the shoreline of Saipan, and overlap over 207 square miles with the submerged lands of Saipan. If the DoD is to claim these submerged lands all the way to the shoreline of Saipan, this would result in significant public access restrictions from the coast of Saipan. The coastline in this location features public access beaches and a golf course (see Figure 2 of the current document). An individual would not be able to step off the beach on Saipan’s southern coastline without being on DoD-restricted submerged lands. This would result in a significant impact for Saipan.

This section fails to address impacts on public access to CNMI-owned submerged lands on Tinian that are not adjacent to the MLA.

4.7.3.2 Tinian Alternative 2 (also 4.7.3.3 Tinian Alternative 3)

“Implementation of Tinian Alternative 2 (and 3) would result in less than significant impacts to land use with regard to changes in jurisdictional control, to current and planned land use outside the Military Lease Area, to adjacent land uses due to elevated noise levels, and to submerged land use subject to the Coastal Zone Management Act.”

For the same reasons as mentioned in comments to sections within 4.7.3.1 above, we dispute the finding of less than significant impacts to land use in regard to changes in jurisdictional control, current and planned land use outside the MLA, adjacent land uses due to elevated noise levels,

and to submerged land use under DLNR jurisdiction and subject to the CZMA. In addition, all of the coastal zone (not just submerged lands) of the CNMI are subject to the CZMA.

4.7.3.4 Tinian No-Action Alternative

“No impacts were identified under land use in the Mariana Islands Range Complex EIS/OEIS (see Section 3.12.6; DoN 2010b).”

The MIRC is being superseded by actions contained within the MITT EIS/OEIS in 2015 and therefore any future actions on Tinian will occur according to the MITT EIS/OEIS, not the MIRC EIS/OEIS. The DoD needs to state the actions and the significant impacts in the MITT EIS/OEIS, not an obsolete document.

Table 4.7-1. Summary of Impacts for Tinian Alternatives

Table 4.7.1 claims that construction impacts are “not applicable” for all three Tinian alternatives. This is a major oversight. Construction activities on Tinian are planned to span 8-10 years. These activities will have impacts on all that are planned to will have impacts on all the following resource areas: jurisdictional control of lands and submerged lands, existing and planned land use within the MLA, public access to lands within the MLA, existing and planned land use outside the MLA, public access to lands outside the MLA, noise in lands outside the MLA, existing and planned submerged lands use outside the MLA, and public access to lands outside the MLA. These impacts must be presented here for review and comment.

4.7.4 Pagan

4.7.4.1.3.2 Public Access Alternative 1 (also 4.7.4.2 Alternative 2)

“Since 1981, Pagan has been largely closed to public access due to volcanic risk”

This is untrue. There is no current closure of Pagan due to volcanic risk.

“While unauthorized (i.e., no use permits obtained from the CNMI government), individual visitors use the land for subsistence.”

The DoD has still not stated what permits are currently required for visiting Pagan.

“Therefore, Pagan Alternative 1 (and 2) operations would result in less than significant impacts to land use associated with public access.”

Since the DEIS does not state when the planned 16 weeks of operations will occur, we can assume that they will occur during the summer when the seas are calm. This also coincides with the time when visitors, researchers and tourists would normally visit. Therefore we argue that this would result in a significant impact on public access. In addition, the DoD must include the impacts of pre- and post-training periods on public access. Section 2.1 states: *“This EIS/OEIS analyzes 20 weeks per year of live-fire training on Tinian and 16 weeks per year of live-fire*

training on Pagan. In addition to the weeks of live-fire training for Tinian and for Pagan, other activities including pre-training and post-training activities (arrival and departure of trainees and equipment), non-live-fire training (e.g., logistics training), and RTA maintenance and management functions would occur outside of the live-fire training durations throughout the year.” Therefore training impacts on public access will not be restricted to the 16-week training period.

4.7.4.1.4.1 Current and Planned Submerged Land Use Alternative 1 (also 4.7.4.2 Alternative 2)

“The proposed use of submerged land by the U.S. military for amphibious training exercises would constitute a change in submerged land use from the present use, conservation. Given the military use would be for 16 weeks per year, other (non-U.S. military) uses could occur during the remainder of the year. Although proposed training would not be consistent with the existing conservation submerged land use, it would still be partially compatible given the limited time that training activities would occur. Therefore, operations associated with Pagan Alternative 1 (and 2) would result in less than significant impacts to existing submerged land conservation uses.”

We cannot accept that amphibious training exercises for part of the year can possibly be construed as compatible with conservation for the remainder of the year. Amphibious trainings are destructive, and their effects will last beyond the period of time during which training occurs. The reefs will not be able to recover in time for the next training. Amphibious trainings must be considered a significant impact on submerged land use. In addition, the DoD must acknowledge and take into account the 8-10 year construction period and the pre- and post-training periods in their assessment of impacts on current and planned submerged land use. Finally, conservation use entails research and management activities, which would most likely occur during the calmer summer months when access is safest. This will not be possible during the 8-10 year construction period and since we assume that the 16 week training period (plus pre- and post-training activities) would also occur during this period, we cannot see how this can be successfully carried out by CNMI resource agencies. Therefore we cannot accept the finding of less than significant impacts to existing submerged land conservation use.

“The proposed action would be consistent to the maximum extent practicable with the Coastal Zone Management Act and the enforceable policies of the CNMI Bureau of Environmental and Coastal Quality. Therefore, operation under Pagan Alternative 1 (and 2) would result in less than significant impacts to submerged land uses subject to the Coastal Zone Management Act.”

We are unable to evaluate and comment on this claim unless the extent to which the proposed actions will impact submerged lands are presented here. The DoD cannot assert that this impact will be less than significant unless it is presented here for review and comment. Just because something is consistent with DCRM’s enforceable policies does not mean it will necessarily have less than significant impacts. There is nothing in DCRM’s enforceable policies that states only less than significant impacts will be permitted in the CNMI. Being consistent with the enforceable policies of the CNMI Coastal Zone Management Program does not necessarily mean that impacts will be less than significant – there is a long history of past military environmental

impact statements within the CNMI that contained many significant impacts, yet were still deemed consistent with the CZMA and enforceable policies of the CNMI Coastal Zone Management Program. In addition, all activities and impacts of this proposed action are within the CNMI Coastal Zone and therefore must be consistent to the maximum extent practicable with the CZMA, not just those impacting submerged lands. It is unclear why the DoD thinks that submerged lands impacts are special and do not have to be presented here because they are addressed under the CZMA – these actions and impacts still fall under the NEPA. The DoD must present the actions and their impacts on submerged lands here in the EIS for review and comment.

“Given the military use would be for 16 weeks per year, other (non-U.S. military) uses could occur during the remainder of the year. Although proposed training would not be consistent with the existing conservation submerged land use, it would still be partially compatible given the limited time that training activities would occur. Therefore, operations associated with Pagan Alternative 1 (and 2) would result in less than significant impacts to existing submerged land conservation uses.”

Once again, we cannot accept that amphibious training exercises for part of the year can possibly be construed as “partially compatible” with the use of submerged lands for conservation purposes for the remainder of the year. Amphibious trainings are destructive, and their effects will last well beyond the period of time during which training occurs. The reefs will not be able to recover in time for the next training. Amphibious trainings must be considered a significant impact on submerged lands use. In addition, the DoD must acknowledge and take into account the 8-10 year construction period and the pre- and post-training periods in their assessment of impacts on current and planned submerged lands use.

“The proposed action would be consistent to the maximum extent practicable with the Coastal Zone Management Act and the enforceable policies of the CNMI Bureau of Environmental and Coastal Quality. Therefore, operation under Pagan Alternative 1 (and 2) would result in less than significant impacts to submerged land uses subject to the Coastal Zone Management Act.”

We cannot review and comment on proposed actions and impacts unless they are presented here. It is unacceptable to argue that they will be less than significant since they will need to be consistent with the CZMA. All actions within the CNMI coastal zone must be consistent with the CZMA, yet they still need to be presented here in order to be in compliance with NEPA. It does not exempt them from being presented here in the DEIS. The DoD must present the actions and impacts here for review and comment by the public and agencies. Being consistent with the enforceable policies of the CNMI Coastal Zone Management Program does not necessarily mean that impacts will be less than significant – there is a long history of past military environmental impact statements within the CNMI that contained many significant impacts, yet were still deemed consistent with the CZMA and enforceable policies of the CNMI Coastal Zone Management Program.

Figure 4.7-4 Pagan All Action Alternatives Areas of Particular Concern

This map does not depict the Wetland and Mangrove APCs of Pagan, which would include the two lakes.

4.7.4.1.4.2 Public Access Alternative 1 (and 4.7.4.2 Alternative 2)

“For safety reasons, public access to the waters above submerged lands would be restricted during training exercises 16 weeks per year. Danger zones would be instituted to restrict ocean areas, as described in Chapter 2, Proposed Action and Alternatives. Since Pagan and the submerged land surrounding the island are infrequently visited, Pagan Alternative 1 (and 2) would result in less than significant impacts to submerged land associated with public access.”

The DoD has once again failed to identify when this 16-week training period will occur. We can assume that this will occur during the summer months, as this is the time that the seas are calmest and would be the optimal period for access to Pagan. Since this is also the peak period for the public and CNMI agencies to visit and utilize Pagan for recreation and research, we refute the claim that this will result in less than significant impacts to submerged land associated with public access. In reality it will preclude almost all public access to submerged lands due to the timing of the training. In addition, the DoD must acknowledge and take into account the impacts of 8-10 years of construction activities and the pre- and post-training periods in their assessment of impacts on current and planned submerged land use.

Table 4.7-3. Summary of Impacts for Pagan Alternatives

Table 4.7.3 claims that construction impacts are “not applicable” for both Pagan alternatives. This is a major oversight. Construction actions on Pagan will have impacts on land acquisition (jurisdictional control), land use- current and planned use, land use - public access, submerged land use – current and planned, and submerged land use – public access. These impacts must be presented here for review and comment.

4.8 Recreation

“Visitors and residents regularly visit recreational, historical, and cultural sites around Tinian. A reduction in access to these sites may have an impact to tourism.”

A reduction in access will (not may) have a negative impact on tourism. Tourists will be less likely to go to Tinian if they know they may not be allowed to participate in recreational activities. The DoD must address this negative repercussion of the loss of recreation access in the EIS.

“Indirect impacts to the enjoyment of recreational resources may also occur, particularly to those resources located outside the Military Lease Area.”

Indirect impacts are inevitable even outside the Military Lease Area. The DoD must include this negative repercussion to recreation in the DEIS.

4.8.1 Approach to Analysis

"Existing baseline data for the impact analysis are limited because the CNMI agencies and organizations do not collect comprehensive visitor data"

Given the importance of recreational activities on Pagan and especially Tinian to the local economy, it is unacceptable that a more detailed effort was not performed to collect visitor data. Tinian and Pagan are frequently used for recreation by tourists from Saipan and Tinian, as well as by tourists from outside the Commonwealth.

4.8.2 Resource Management Measures

"The DoN would provide proposed training schedules to the U.S. Coast Guard who would issue and broadcast a Notice to Mariners that will identify the location of the danger zones and direct vessel operators to navigate clear of the danger zones during specified time periods."

This is not sufficient especially for many recreational users that will not be aware that there are warnings and danger zones that they must check before engaging in recreational activities. Danger zones must be transmitted to all media outlets well in advance as well as the USCG and local government agencies.

"Trained observers, or surface radar, would scan the danger zones prior to and during live-fire training to ensure that there are no vessels or individuals within or approaching the danger zone."

Many users of recreational areas may be in small vessels that will be difficult, if not impossible to track with radar. Recreational users that are swimming in the water will not be visible on radar. SCUBA divers underwater that enter from shore will not be visible on surface radar. This is not a sufficient monitoring plan to prevent dangerous and potentially deadly interactions.

"If vessels or individuals are at risk from operation of the range, the vessel would be contacted via marine radio and instructed to vacate the area and/or alter its course to avoid the danger zone."

Many recreational small vessel users do not monitor marine radios or even have them on their vessels. This management measure will not be able to contact a large portion of the recreational vessels that may enter the area. A more effective means of contacting small vessels should be employed. The current plan will lead to dangerous and potentially deadly interactions.

"If required, the range would suspend activities until the vessel has cleared the danger zone."

If the vessel is not detected properly then activities may not be suspended. This is not a sufficient monitoring plan to prevent dangerous and potentially deadly interactions.

4.8.3 Tinian

"As discussed in Section 3.8, Recreation, Tinian contains the following recreational opportunities:

- *Twelve historic and cultural sites*
- *Eight beaches and parks*
- *Ocean-based resources, including snorkeling and diving (five sites), recreational fishing, and boating*
- *Scenic points*
- *Seven annual events"*

Section 3.8 is not comprehensive of all recreational opportunities. There are additional historic sites, cultural sites, beaches, parks, dive sites, fishing sites, scenic points, and events that are not included there. The DoD must include a comprehensive list of all recreational opportunities in Tinian and allow the public and agencies to review impacts on these opportunities.

4.8.3.1.1 Construction Impacts Alternative 1 (also 4.8.3.2.1 Alternative 2 and 4.8.3.3.1 Alternative 3)

"Therefore, depending on location, Tinian Alternative 1 (and 2 and 3) would improve access to various recreational resources during those times the resources are accessible to the public."

This is misleading. The improved access is of little value if the improved access can seldom be accessed because of ongoing training activities. The DoD provides no information on how often the public will be able to access these resources, for how many hours during the day, and under what conditions. For example, will the public be required to obtain military passes prior to accessing these sites, similar to accessing military lands on Guam, and how easy will it be for civilians and non-US citizens to obtain permission to access the MLA?).

"...therefore, access to dive sites would not be impacted by land-based construction projects."

Dive site access is not solely based on the physical ability to arrive at the dive site. A dive site that has poor or zero water visibility due to sediments entering the water from construction projects is not accessible because the features that make the dive site desirable are no longer visible. Dive site quality will be affected by construction and thus affect dive site access. This should be accounted for.

As mentioned earlier in this review, the DEIS does not include a comprehensive list of dive sites. Physical access to dive sites near in water construction at Unai Chulu and possibly other sites will be affected. A comprehensive list of all dive sites should be included and access should remain open to those areas.

"However, the closure would be temporary, and construction is only expected to last up to 8 months."

The closure for construction would be temporary, but after construction the closure of the beach for exercises would be consistent and possibly frequent. Access to the beach should be maintained.

"Although construction would limit or prohibit access to recreational resources within the construction area, this impact would be temporary."

The closure for construction would be temporary, but after construction the closure of the recreation for exercises would be consistent and possibly frequent. Ready access to recreation areas should be maintained.

"Therefore, Tinian Alternative 1 (also 2 and 3) construction activities would result in less than significant direct or indirect impacts to recreational resources."

Tinian is heavily dependent on tourism. Disrupting the recreation areas of the Military Lease Area for 8 to 10 years would put a consistent burden on the tourism industry in Tinian. Persistent burdens on an industry that is very dependent on the every changing economies of foreign nations could lead to a decrease in tourism in the CNMI. Tinian Alternative 1, 2 and 3 construction would result in a significant indirect impact, if not a significant direct impact too.

Table 4.8-1. Summary of Impacts for Tinian Alternatives

The DoD has once again failed to address impacts of construction on all recreational resources, instead using the “not applicable” term for all of the recreational resource areas. Construction impacts are applicable and must be addressed in the EIS.

4.8.3.1.2.1 Historic and Cultural Sites

“In as much as possible, training would be scheduled around peak tourist holidays, such as the three World War II anniversaries”

This ignores the Festivals and Fiestas that occur on island and the fact that off-island visitors choose these sites as a primary areas to visit.

4.8.3.1.2.2 Beaches and Parks

“However, because the beaches and parks within the Military Lease Area are generally not heavily frequented, the increase in visitors to the beaches and parks outside the Military Lease Area would be small. Therefore, the capacity of the beaches and parks outside the Military Lease Area to absorb additional users would likely not be exceeded, nor is it expected that there would be substantial conflicts between recreation users.”

There are no data available to support this claim. In fact, these areas inside the MLA are popular with visitors and Tinian residents.

“the in-water landing ramp and cleared area of the beach would not impede recreational users from utilizing the resource during non-training times.”

The use of the landing ramp would impact the integrity and intrinsic and cultural value of the beach, as well as socioeconomic. No percentage information is provided on use.

4.8.4 Pagan

4.8.4.1 Pagan Alternative 1 (also 4.8.4.2 Pagan Alternative 2)

“Pagan is officially uninhabited and does not contain any official recreational areas...”

A place does not require an "official recreational area" designation to be an area used for recreation. The entire island of Pagan is used for recreation, including hunting, fishing and hiking.

4.8.4.1.1 Construction Impacts Alternative 1 (also 4.8.4.2.1 Alternative 2)

“The public would be restricted from accessing areas where construction is occurring. These access restrictions would be temporary and intermittent. Therefore, Pagan Alternative 1 (and 2) would result in less than significant impacts to recreational resources during construction activities.”

The DoD has not stated how “intermittent” the construction activities will be, and therefore how much public access will be available during these 8-10 years. We can assume then that there will be no public access at all during this period. A period of 8-10 years is far from “temporary”. The DoD must adequately address the impacts of construction on recreational resources on Pagan. It is incomprehensible to argue that construction impacts spanning 8 to 10 years could be “less than significant”.

In addition, the cumulative impacts of 8-10 years of construction activities restricting public access for recreational purposes, combined with ongoing restrictions of more than 4 months per year, presumably during the peak summer months, will forestall any current efforts to develop recreational use of Pagan, as well as future development of recreational use.

4.8.4.1.2 Operation Impacts Alternative 1 (also 4.8.4.2.2 Alternative 2)

“Since there are no formally identified recreational facilities on Pagan, and Pagan only hosts occasional recreational visitors, Pagan Alternative 1 (and 2) operations would not substantially limit or prohibit access to recreational resources, nor would it substantially reduce the number of recreational opportunities. Therefore, Pagan Alternative 1 (and 2) operations would result in less than significant impacts to recreational resources during operation.”

We do not need “formally identified recreational facilities” in order to be able to utilize a location for recreation. Pagan is currently used for recreation, and more is planned. Pagan Alternative 1 and 2 operations will limit or prohibit access for all recreational purposes, and will substantially reduce recreational opportunities on Pagan. No information is provided on the time of year that the operations (both training and the pre- and post-training periods) will occur. We can assume that these will occur during the summer months, when recreational use of Pagan is at a peak. Restrictions in access to Pagan during the training and the pre- and post-training periods will most certainly result in a significant impact to recreational resources on Pagan during operation.

In addition, the cumulative impacts of 8-10 years of construction activities restricting public access for recreational purposes, combined with ongoing restrictions of more than 4 months per year, presumably during the peak summer months, will forestall any current efforts to develop recreational use of Pagan, as well as future development of recreational use.

4.9 Terrestrial Biology

4.9.1 Terrestrial Biology Approach to Analysis

“Pollutants that are released during military training”

Pollutants are listed as one of only 4 indirect effects of action alternatives. Yet, pollutants are never discussed and their impacts are never mentioned again in the Terrestrial Biology section. Pollutants released must be addressed and explained and their impacts on terrestrial wildlife and vegetation must be analyzed and evaluated.

“General principles used to evaluate impacts are: The extent, if any, that the action would result in substantial loss or degradation of habitat or ecosystem functions (natural features and processes)”.

This section fails to actually address ecosystem functions or processes. The meaning of the term, “natural features”, is unclear. This document must address impacts on ecosystem processes and functions. For example, vegetative succession (and the species harmed by changes in succession) is a process that will be impacted significantly by proposed actions but is never addressed in this section.

“The extent, if any, that the action would permanently degrade ecological habitat qualities that special-status species depend upon”

This section fails to address or evaluate habitat quality except to the extent that noise is discussed. Even then, the discussion focuses mainly on whether wildlife will leave the area or will not leave, i.e. suitable habitat or unsuitable habitat. This section must evaluate whether habitat quality is decreased while wildlife continues to use that habitat, and the resultant declines in survival and reproductive success that can be predicted. This section must evaluate whether displaced wildlife are likely to end up in lower quality habitats and the resultant declines in reproduction and survivorship that will result. The document labels habitats by type, i.e., native forest, mixed native-introduced forest, etc., with no discussion of differences in quality within the habitat types. This document must include evaluation of habitat quality differences within and between habitat types, and the resultant effects of differing habitat quality levels on wildlife individual and population outcomes.

More worrisome than the failure of this document to consider and evaluate the impacts differing habitat quality levels, the document must evaluate impacts on habitat and habitat quality on a species-specific basis. For example, the document fails to consider that the habitat needs of a forest bird and a seabird are vastly different, and the needs of individual seabird species are different. The authors speak of protected migratory bird species as a whole without individually addressing the specific habitat needs of each species, and the impacts of proposed actions on the individual species. The term, “habitat” is meaningless unless used in reference to the organism or group for which the area constitutes habitat. As such, this document must address native and special-status species in reference to their individual habitat requirements. Impacts on habitat and

resultant population outcomes cannot be adequately assessed without individually addressing species and their divergent habitat needs and responses to habitat quality level.

“If significant impacts were determined, then mitigation may be proposed to minimize or offset the impacts”

There is no useful purpose in saying that mitigation *may* be proposed. In reality, mitigation has *not* been proposed. Were mitigation measures proposed, these would be available to the public and to CNMI resource agencies for review and comment to determine if mitigation were feasible, likely to achieve the proposed goals, whether the goals are useful, and whether the mitigation would result in more problems. Because mitigation is not actually being proposed, no mitigation plans exist.

4.9.1.2 Native Wildlife

“To identify potential impacts to wildlife the activities associated with the proposed action were considered in the context of affected species’ life history and ecology.”

The actions were not, and must be, considered in the context even of individual species, let alone in the context of the species’ life history and ecology. Only for very few endangered species (e.g. Mariana fruit bat) is there consideration of a species’ life history or ecology, and this treatment is incomplete.

“An action would be considered significant if there was...decreased productivity of native wildlife populations.”

The DEIS repeatedly fails to adhere to this standard. Throughout this section a finding of “less than significant impact” is stated in spite of the fact that the actions will irrefutably cause a decrease in the population’s survival and/or reproductive success rates. The DoD must follow this standard consistently when assessing impacts on wildlife populations.

“Assessment of likelihood of these impacts was based on information from published scientific literature and the knowledge of subject matter experts.”

The DEIS rarely cites published scientific references when giving scientific information. Gray literature (internal DoD reports) is far more often cited, and overwhelmingly, no citations are given at all. Repeatedly, citations are offered that do not apply to the situation or location, and other literature that would produce contrary findings is overlooked entirely. The supposed “subject matter experts” are not named. The DoD must name the experts consulted, if any, and cite their opinions using “pers. comm.” and a date; provide balanced and reputable use of published scientific literature, admit when information is not available, and rely less on gray literature which is not peer-reviewed and most often does not achieve adequate standards of reliability.

The list of potential causes of wildlife impacts is not a complete list, is inappropriate and inadequate. Corridors have little applicability to islands and intact habitats as addressed in this

document. “*Removal or degradation of a natural community or ecosystem*” is an excessively large and broad impact. Because we are concerned with any actions that lead to a decline in wildlife populations, and island populations are invariably small, this list must state that any activity that disrupts individuals’ chances of successful survival and reproduction will impact that population. The extent to which these impacts will affect population growth must then be evaluated.

4.9.1.3 Special-status Species

Section 3.9.1.3 of the DEIS defines “special-status species” as “(1) *those listed as threatened or endangered under the federal Endangered Species Act that currently occur in the wild on Tinian or Pagan*, (2) *species proposed for listing under the federal Endangered Species Act*, (3) *species protected under the Migratory Bird Treaty Act*, (4) *those designated by legislative authority in the CNMI as threatened and endangered*, and (5) *Species of Special Conservation Need as identified in the CNMI’s Comprehensive Wildlife Conservation Strategy*”. However the DoD has only addressed the first four categories within Section 4.9.1.3, and has neglected to include “species of special conservation need” as identified in the CNMI CWCS. Terrestrial “species of special conservation need” in the CNMI that are present on Tinian but have not been included in this section include: Rufous Fantail, Saipan Bridled White-eye, *Emoia atrocostata* (Tide-pool skink) and *Birgus latro* (Coconut crab) (Berger et al. 2005). Terrestrial “species of special conservation need” in the CNMI that are present on Pagan but have not been included in this section include: *Nactus pelagicus* (Rock Gecko), *Emoia atrocostata* (Tide-pool skink) and *Birgus latro* (Coconut crab) (Berger et al. 2005). The DoD must rewrite Section 4.9 to address environmental impacts on each special-status species present on Tinian and Saipan for our review and comment.

We request that individual assessments be presented for all MBTA-listed species present on Tinian and Pagan. In addition, we request that all Mariana Islands endemic species be treated as special-status species, due to their limited range and likelihood of being listed as threatened or endangered should impacts be significant. We also request individual assessments of each impact on each of special-status species be included, instead of the repeated assumption that impacts will be the same for all species. Finally, we request that the appropriate avoidance, minimization and mitigation measures be outlined for each species.

“A base map of this information was overlaid onto the footprint of potential disturbance from construction and operation, and the magnitude of impacts was then identified”

We need this base map to be presented for our review and comment for completion and accuracy. If this “base map” is referring to the maps in Chapter 3 (Figure 3.9-3 and 3.9-6) and in Chapter 4 (Figures 4.9-5a and b and 4.9.9), these maps are woefully inadequate for the purpose claimed here. These maps have cartoon-like illustrations of spot locations of species where they have historically been observed, instead of scientifically depicting the current known and potential range of each species within Tinian and Pagan. The maps in Chapter 4 even acknowledge that “*Species observations are historical sightings over multiple years and multiple surveys and do not represent the current population status or distribution of species within the depicted area*” (though the same maps in Chapter 3 are missing this caveat). Furthermore, these

maps do not include all species proposed for listing, do not include species protected under the MBTA, and do not include species identified as “special conservation need” in the CWCS.

“Similar to the criteria applied to evaluate impacts to wildlife, the significance of impacts to special-status species were based on the presence of these species and the anticipated level of disturbance to the areas where they are present. The presence of species and their estimated densities were determined based on field surveys and wildlife inventories.”

This denotes a foundational and significant flaw in this DEIS. By and large the surveys used to determine species presence are partial, incomplete, very often out-of-date, and inadequate. Areas on Tinian and Pagan were not thoroughly surveyed, and were not surveyed using necessary replication in time and in different seasons. For most species, valid population size estimates and range have not been obtained. In the vast majority of surveys, the absence of a species cannot be determined in a scientifically valid manner. In the case of the wildlife impacts evaluated in this DEIS, the evaluations are inaccurate and invalid, and can only become acceptable once thorough, valid, accurate wildlife surveys are completed. The entirety of Tinian and Pagan must be surveyed for each species evaluated, across seasons and years, using scientifically accepted sampling designs that produce valid estimates of density and presence/absence for the entire areas of both islands. Tinian and Pagan do not constitute large areas and conducting accurate surveys for each native species and special-status species is necessary, feasible and warranted.

“Potential causes of impacts to special-status species may include, but are not limited to:

- Permanent removal or degradation of a natural community or ecosystem that would substantially decrease the population size or distribution of any special-status species*
- Permanent loss of or decrease in populations or habitat of any Endangered Species Act-listed species, any species that has been proposed for listing under the Endangered Species Act, any Migratory Bird Treaty Act-protected species, any CNMI-listed species, or any CNMI Species of Special Conservation Need*
- Permanent loss or long-term disruption of a regionally important corridor for the movement of any special-status species*
- Inadvertent introduction of the brown treesnake to Tinian or Pagan by personnel, equipment, or supply movement from Guam*
- Disruptions of key elements of the life history (e.g., breeding, nesting, foraging, resting) of any population of a special-status species from noise, lighting, or other components of the action”*

The list of potential causes of wildlife impacts is not a complete list but is inappropriate as well as inadequate. Corridors have little applicability to islands and intact habitats as addressed in this document. “Removal or degradation of a natural community or ecosystem” is an unacceptably large impact.

4.9.1.3.1 Endangered Species Act-listed Species

“The proposed avoidance, minimization, and mitigation measures described in this EIS/OEIS to benefit Endangered Species Act-listed and proposed species are preliminary”

Far from being even “preliminary measures”, the proposed measures are most often a plan to develop a plan. These statements are neither measures nor plans. Moreover the authors repeatedly state that a plan *may* be developed. Throughout this section, there is no commitment to make a specific plan or to implement measures to avoid, mitigate or minimize impacts. In effect, there are almost no measures presented to mitigate, minimize or avoid wildlife impacts. In many cases, such measures may not even be feasible. It is impossible to evaluate the feasibility or effectiveness of these plans as they have not been presented here. For the many plans alluded to in this document as something that will be developed, the plan must be included in this EIS and must include specific protocols, measures, practices, schedules and standard operating procedures.

4.9.2 Resource Management Measures

Appendix D claims that “*Chapter 4...discusses how the proposed action incorporates resource management measures that avoid and/or minimize environmental impacts...*” Yet no resource management measures are actually presented in Chapter 4 sections 4.9.2.1 or 4.9.2.2. The intent to create a plan is mentioned in these two sections, but there is no information provided to reviewers on that plan or those resource management measures. Table D-1, Best Management Practices, ostensibly a table showing actual practices, instead repeatedly states that the BMP is to develop or prepare a plan. The cross-referencing between Section 4.9.2 and Appendix D is misleading.

Further, Appendix D states, “*Mitigation measures are provided in Chapter 4*”. In actuality, mitigation plans, commitments to carry out mitigation, and descriptions of actual mitigation measures are not provided for terrestrial biology in Chapter 4. As we have noted throughout these comments, the section repeatedly states that mitigation measures may be developed, and fails to provide actual plans, measures or protocols.

4.9.2.1 Avoidance and Minimization Measures

Preparation...of a Bird/Animal Aircraft Strike Hazard Plan

No plan is given here. The DoD must present the specific plan so that we can evaluate whether the plan is feasible and reliable, and to determine what level of disturbance wildlife will face when this plan is implemented.

Preparation and implementation of a Range Environmental Vulnerability Assessment

This document must provide the results of this assessment so that we can evaluate whether the risks are unacceptable or could be minimized to an acceptable range. This section states “*The purpose of the Range Environmental Vulnerability Assessment is to identify whether there is a release or a substantial threat of a release of munitions constituents...and determine if the release causes an unacceptable risk to human health and/or the environment.*” It is critical that the public and agencies be able to evaluate the results of this assessment. We must review whether the release of munitions results in unacceptable risk to wildlife health and ecosystem

function. This document is not valid without presentation of the details of munitions constituents and the extent to which they will be released.

Preparation and implementation of a Range Fire Management Plan

This document must describe the specific plan such that we can evaluate whether the plan is feasible and reliable, and to determine what level of disturbance wildlife will face when this plan is implemented.

Biosecurity

This Biosecurity section only discussed brown tree snake invasion prevention. Yet, the proposed actions cause a critical level of risk of species introductions and invasions from thousands of species, including agricultural pests, marine invasives, aggressive competitors to native vegetation, etc. Many of these potential invaders threaten to cause ecological collapse of native biodiversity, natural processes and ecosystem services and functions. This document must describe and evaluate the risk of the collection of highly invasive plants, vertebrates and invertebrates that pose serious and likely threat to CNMI. Ecosystems and native species on nearby Guam have been gravely degraded by inadvertent species introductions due in large part to military activities. Because troops, vehicles and equipment will often be transported between Guam, Tinian, Pagan and other islands under the action alternatives, this DEIS must specifically address risks of all the most likely species to invade, and present the measures that will be implemented to prevent these invasions and minimize risks. This evaluation and the measures must include the plant, vertebrate and invertebrate species that are causing environmental and economic impacts on Guam. The costs of increases to interdiction efforts must be presented. The current cost for interdiction of the brown tree snake is estimated at \$4 million per year. The DoD must provide mitigation for these increased costs on CNMI agencies.

“For all brown tree snake interdiction work, the skills and standards...will be agreed upon mutually by DoD, USGS BRD, and USFWS”

CNMI agencies are the leaders on the ground conducting brown tree snake interdiction and control programs within the islands of the CNMI and must be included in brown tree snake control and interdiction planning.

4.9.2.2 Best Management Practices and Standard Operating Procedures

“The US military would develop and implement a comprehensive Integrated Pest Management Plan”

It is not appropriate to cite a plan that does not exist. We cannot rely on whether such a plan will ever exist. The specific plans, practices and SOP's must be presented in this DEIS so that reviewers can review and comment on feasibility and potential effectiveness of the specific plan, and resultant impacts on wildlife and natural resources.

“The DoD will require development and implementation of Hazard Analysis and Control Point plans”

It is not appropriate to cite a plan that does not exist. We cannot rely on whether such a plan will ever exist. The plans must be presented in this DEIS so that reviewers can evaluate the feasibility and potential effectiveness of the specific plan, and resultant impacts on wildlife and natural resources.

“A biosecurity outreach and education program will be implemented”

The DEIS must describe the program such that we can evaluate whether the program is feasible, reliable, and how likely the program is to achieve the stated goals.

“Protocols for interdiction and control methods will be developed and implemented for Regional Biosecurity Plan recommendations”

The DEIS must describe the protocols such that we can evaluate whether the plan and the protocols are feasible and reliable, and to determine what level of disturbance wildlife will face when this specific plan is implemented.

“The DoN has developed an education program to ensure construction contractor personnel are informed of biological resources in the project area”

No plan is referenced. The details of the specific plan must be provided here for review and comment. This DEIS fails to describe any measures that will be used to ensure compliance of personnel with recommendations for not harming wildlife or the environment. Education does not equal compliance or effectiveness, and the CNMI has not been informed what actions are being recommended to personnel.

4.9.3 Tinian

We discuss alternatives 1, 2 and 3 together hereafter. Since these three alternatives are practically identical in terms of environmental impacts, our comments apply to corresponding section subheadings for Tinian Alternative 2 and Tinian Alternative 3.

4.9.3.1.1 Construction Impacts Alternative 1 (also 4.9.3.2.1 Alternative 2 and 4.9.3.3.1 Alternative 3)

Section 3.9.1.3 defines “special-status species” as ESA-listed, proposed or candidate, CNMI listed as threatened or endangered, MBTA-listed or species identified as Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. However this section only includes ESA-listed or proposed “special-status species”, and species listed by the CNMI as threatened or endangered. It does not address those species listed under the MBTA, nor species identified as Species of Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. We also assert that endemic species must be included in the definition of “special-status species” and included here.

The analysis in this section is based on incomplete data on locations of special-status species based on inadequate and incomplete surveys of Tinian, as outlined in our general comments and our comments on 3.9.4 above. The analysis will need to be repeated once adequate surveys are completed by the DoD.

4.9.3.1.1.1 Vegetation Communities Alternative 1 (also 4.9.3.2.1.1 Alternative 2 and 4.9.3.3.1.1 Alternative 3)

“The conversion of 6.3 acres (2.5 hectares) to developed area under Tinian Alternative 1 (and 2 and 3) would result in significant, direct impacts to the regional vegetation community and its function.”

The loss of native forest due to construction is a direct, significant, negative impact on the vegetation community, notably because the vast majority of Tinian’s native forest has already been lost, and this rare habitat type has great value to native and special-status species. Restoring native forest species compositions, processes and services is likely impossible due to the complexity of the system and the loss or endangerment of many component species. We find that the loss of any native forest on Tinian to be not only significant, but unacceptable, and is not easily mitigable. We request that the DoD amend their plans so that no native forest on Tinian is removed.

“Based on recent wetlands surveys on Tinian, one of these two ephemeral ponds is considered an isolated wetland that supports wetland habitat during years of high rainfall.”

Again the DoD is trying to use the very strict definition of “jurisdictional wetland” for purposes of USACE permitting under the CWA for purposes beyond the CWA. In this case, the question is related to wetland habitat for endangered species. Therefore the USFWS of “wetland” should be used here.

“This loss of less than 0.5 acre (0.2 hectare) of wetland habitat would not be significant.”

Endangered moorhens rely on this habitat type, and there is very little wetland habitat available on Tinian. Habitat loss constitutes a permanent loss to the potential for this endangered species population to grow and recover. The loss of any wetlands due to construction in all 3 action alternatives will have significant, negative impact on moorhens and ecosystem functioning on Tinian, and must be mitigated.

“Mitigation measures may be implemented”

It is not appropriate to rely on mitigation measures that do not yet exist, and may or may not be implemented. “May” indicates that there is no commitment to attempt mitigation or develop measures. There must be an assurance that these measures will be implemented. These measures must be presented in this DEIS so that reviewers can evaluate the feasibility and potential effectiveness of the measures, and resultant impacts on wildlife and natural resources.

“The DoN would propose to implement forest enhancement”

“Forest enhancement” is unlikely to benefit the wildlife and ecological services damaged due to construction. We do not have any details on this forest enhancement measures, whether the DoD has committed to them, how much these will cost, whether they have the funds to carry them out, or what the details are for the public and agencies to review and comment on their efficacy in achieving mitigation for habitat destruction and disturbance.

“The Department of Defense would prepare a Forest Enhancement/Restoration and Monitoring Plan”

A forest bird monitoring plan is briefly mentioned that is not prepared, but would be prepared. This plan needs to be presented for the public and agencies to review and comment.

“The anticipated benefit of implementing these potential mitigation measures is improved habitat quality for native flora and fauna”

It is impossible to evaluate this claim unless the mitigation measures are presented for review, and represent a solid commitment rather than a “maybe”.

Table 4.9-1. Potential Direct Impacts to Vegetation Communities with Implementation of Tinian Alternative 1 (also Table 4.9-4 Alternative 2 and Table 4.9-7 Alternative 3)

“Although two ephemeral ponds associated with the Mahalang Complex would be impacted under Alternative 1, these are not considered wetlands.”

Under which definition are these not considered “wetlands”?

4.9.3.1.1.2 Native Wildlife Alternative 1 (also 4.9.3.2.1.2 Alternative 2 and 4.9.3.3.1.2 Alternative 3)

All three action alternatives propose to destroy 8% to 9% of all vegetation on Tinian due to construction alone. The total habitat loss of forest, scrub, beach strand, wetland on Tinian equals 1798 acres for Alternative 1, 1938 acres for Alternative 2 and 1914 acres for Alternative 3 for construction alone. This does not include over 1000 acres that will eventually need to be cleared for UXO removal. This destruction of vegetation constitutes a significant, negative impact to Tinian’s ecosystem functioning and native and special-status wildlife species, due in part to the historical destruction of many habitats, and in part to the small size of the island, which limits Tinian’s ability to support viable populations of wildlife. Combining historical destruction, the rarity of native species, Tinian’s small size, and the levels of development already present and planned, and adding the large-scale land conversion proposed in the action alternatives in this DEIS, native species viability on Tinian is severely threatened. The most vulnerable species may well be extirpated with no recovery possible.

These sections speak only of monitoring work done by the USFWS, ignoring the decades of long-term native wildlife monitoring conducted by DLNR. The DoD must consult with the DLNR on the impacts of proposed activities on native wildlife.

“The current Tinian Military Retention Land for Wildlife Conservation...which was established for the protection of Tinian monarch habitat under a previous Endangered Species Act consultation (US FWS 1998, Government of the CNMI and United States of America 1999), would be impacted by proposed constructed activities. Four areas are being assessed as potential conservation areas...”

Some of the four areas under consideration as substitute conservation areas are also earmarked as future grazing lands – an incompatible land use.

Loss of the current Tinian Military Retention Land for Wildlife Conservation will constitute a permanent net loss of habitat on Tinian and thus, a permanent net loss of monarch population numbers. The areas that are under consideration already contain Tinian monarchs, and most likely cannot sustain much of an increase in number of Tinian monarchs. Offering to protect habitats already used by monarchs will not make up for the loss of habitat and resultant decrease in Tinian Monarch population within the current Tinian Military Retention Land for Wildlife Conservation.

“In addition, noise and the presence of construction equipment and human activity may cause wildlife to temporarily avoid areas...”

Construction activities will proceed for 8 to 10 years. This is well within the expected life span of most wildlife species. This is not a temporary impact. In addition, displaced animals often do not survive, due to increased vulnerability to predation, inter- and intra-species conflict, human-related mortality, lack of needed resources, etc. Wildlife that is disturbed and displaced over a period of months or years will abandon their ranges and suffer declines in survival and reproductive success due to direct mortality or increases in energy expenditure.

“These temporary direct impacts to wildlife populations from construction noise and human activities would be less than significant”

For the same reasons as stated above, this finding is invalid. The impacts will be long-term as related to annual cycles of bird reproduction. The level of disturbance will significantly impact bird species individuals at a scale large enough and long enough to result in significant population declines (including from failed reproduction), and this constitutes a significant negative impact.

We agree that impacts on many bird species will be significant. Of the 44 native bird species on Tinian, only 5 species are mentioned in this section as significantly impact. Far more native bird species will be significantly, negatively impacted due to the same causes as the 5 species mentioned. This DEIS must address the significant negative impacts to many other native wildlife species.

“The proposed area of forest enhancement is not large enough”

No forest enhancement or location has been committed to, described or proposed. This discussion is disingenuous. The document mentions that forest enhancement *may* be proposed, but it is not here proposed or described. Neither forest enhancement, nor other mitigation measures, will be able to mitigate the massive impacts to Tinian native wildlife populations caused by the direct and indirect impacts of construction and operations in the three action alternatives.

“Potential indirect impacts associated with potential introduction of non-native species and wildfires would be avoided and minimized through the implementation of resource management measures (see Section 4.9.2)”

Section 4.9.2, upon which we have commented above, constitutes a list of plans that *would* be, but have not been, prepared. The statement that “potential indirect impacts...would be avoided and minimized...” is invalid, because no specific plan, protocols, measures, schedules or SOP’s have been described or even developed. It is not possible and nonsensical to state that indirect impacts can or will be absolutely avoided.

“The DoN would propose to implement forest enhancement”

“Forest enhancement” is unlikely to benefit the wildlife and ecological services damaged due to construction. It is unclear exactly how forest enhancement will mitigate for the environmental impacts of the proposed actions.

These forest enhancement measures must be presented in this DEIS so that reviewers can review and comment on the feasibility and potential effectiveness of the forest enhancement measures (not yet produced), and resultant impacts on wildlife and natural resources. “May”, used earlier in this section, indicates that there is no commitment to attempt mitigation or develop measures.

The sparse details presented, with no actual commitment, indicate that forest enhancement, even if implemented, will not effectively mitigate the damages caused by physical habitat destruction. “*Establishing dominant and rare species that are characteristic of native limestone forest habitats*” is an extremely difficult, expensive, and long-term proposition, and may well have no net benefit to species harmed by habitat destruction and disturbance.

“The DoN [Section 4.9.3.1.1.1 contains the same claim but says the DoD] would prepare a Forest Enhancement/Restoration and Monitoring Plan”

A forest bird monitoring plan is briefly mentioned that is not prepared, but would be prepared. This plan needs to be presented for the public and agencies to review and comment.

“The data from this monitoring effort would enable the DoN to determine if the Tinian monarch is experiencing declines in abundance or distribution.”

In actuality, declines in both Tinian monarch abundance and distribution are guaranteed by the direct and indirect impacts of construction and operations in the action alternatives. This document makes no commitment or proposal that would meaningfully arrest or reverse a decline in Tinian monarchs, merely to monitor the decline. The action alternatives presented here put this island endemic species at high risk of global extinction.

Table 4.9-2. Potential Direct and Permanent Impacts to Five Native Bird Species from Proposed Construction Activities under Tinian Alternative 1 (also Table 4.9-5 Alternative 2 and 4.9-8 Alternative 3)

Tables 4.9-2, -5, and -8, presents predictions for only the permanent losses of only 5 of the 44 native bird species on Tinian due directly (not including indirect or cumulative impacts) to construction (not operations). These tables, with their limited scope of the many impacts that will cause losses to bird populations, display losses from 6.6% to 8.1% ($\mu=7.5\%$) of each of the 5 native bird populations presented. This size of permanent loss to an isolated wildlife population is highly alarming and could well lead to the extirpation of the population due to a combination of stochastic, demographic, biological and disturbance factors. This DEIS must display the expected losses from both direct and indirect impacts, from both construction and operations combined, which would lead these population loss figures to be much larger and would more accurately show the significant threat of extinction caused by the proposed action alternatives.

No data similar to tables 4.9-2, 5 and -8 are presented for Tinian's other 39 bird species, besides projections for losses to 3 migratory bird species, which is presented in other tables. Considering the highly significant losses of habitat and permanent reduction of bird numbers in an environment with strictly limited terrestrial space, scientifically rigorous projections for losses to the other bird species must be presented.

The Tinian monarch, endemic only to Tinian, was previously a listed endangered species. Tables 4.9-2, -5 and -8 project permanent Tinian monarch population losses of 7.2% to 7.9%, and 6633 to 7230 birds. Combined with indirect losses due to construction (noise, on-going disturbance, activity), and the highly disturbing and destructive direct and indirect impacts of operations proposed in the action alternatives, the species is not likely to remain viable and may well become globally extinct. Moreover, the action alternatives will ensure that the Tinian monarch is again listed as an endangered species. This listing will negatively impact economic opportunities and livelihoods of the people of Tinian and the CNMI.

4.9.3.1.1.3 Special-status Species: Endangered Species Act-listed and Proposed Species Alternative 1 (also 4.9.3.2.1.3 and 4.9.3.3.1.3)

“Potential direct impacts to special-status species...include the removal of habitat, fragmentation of remaining habitat, and associated noise, light and human activities.”

These are not impacts. These are actions that result in impacts. The impact of these activities is the decline of survival and reproductive success for native wildlife individuals leading to a loss of long-term viability potential at the population level. The DoD must properly assess and outline the impacts on wildlife species.

Mariana Fruit Bat

Forty-five of 720 acres of Mariana fruit bat foraging and roosting habitat will be permanently lost under Alternative 1, 2 or 3. This constitutes a significant, permanent loss of habitat for this species (16%). This section notes that limited numbers of bats have been found in surveys, the most recent in 2008. These surveys are incomplete and out of date. This evaluation of fruit bat impacts is invalid without current, complete and adequate surveys covering in detail all available Mariana fruit bat habitats on Tinian.

Moreover, the CNMI government is working diligently to recover and achieve downlisting of this species. The permanent removal of 16% of all fruit bat habitat on Tinian, an island critical for species recovery, will undermine long-term, intensive efforts to recover the species. Protected status of this bat has greatly restricted meaningful cultural and subsistence activities of CNMI residents. The “less than significant” finding is not warranted. The construction impacts of all action alternatives will significantly lessen the chances of recovery, and diminish population and species viability for the Mariana fruit bat.

“The potential mitigation measures described above in the Vegetation Communities section would also result in a conservation benefit to the Mariana fruit bat due to the proposed forest enhancement.”

This section only stated that mitigation measures *may* be proposed. No mitigation has been committed to. The proposed forest enhancement has also not been described nor committed to. Mitigation measures or plans must be presented in this document for review and comment, including protocols, measures, schedules and goals. Otherwise, it is disingenuous and misleading to continually mention mitigation measures that have not been committed to, developed or presented for review.

Mariana Common Moorhen.

The DEIS states that noise from vegetation clearing and construction may result in moorhens flushing from and avoiding occupied habitats while 2 ephemeral ponds constituting habitat will be removed. It is claimed that “*moorhens would likely move*”. Displaced animals face high levels of mortality, and on an island with extremely limited available habitat, are unlikely to find unoccupied suitable habitat. Increased energetic demands due to displacement lead to diminished survival and reproductive success. The finding of “*less than significant direct and indirect impacts to the Mariana common moorhen population*”, due in part to, “the ability of the moorhens to move” is entirely unfounded. There is no evidence that moorhens would or could simply move to other areas with no cost, and it is highly unlikely that high quality unoccupied habitat exists where the moorhens could move without facing high risk and energetic cost. The direct and indirect impacts of construction on moorhens included high levels of long-term noise, human activity, vehicles, and the destruction of wetland habitat. Independently and combined with operations impacts, the action alternatives pose significant negative impact to the moorhen population on Tinian.

Appendix F Figure 10 indicates that 100% of vegetation will be removed from the High Hazard Impact Area throughout the Mahalang complex. Moorhens require vegetation around wetland areas for roosting and shelter. The removal of vegetation will render all of these sites unsuitable for moorhens. The DoD must offer mitigation for the loss of wetland habitat for all of the Mahalang sites.

In addition, proposed construction of the Hand Grenade Range and Grenade Launcher Range within the western portion of the High Hazard Impact Area would remove two ephemeral ponds totaling less than 0.1 acre

This contradicts 4.9.3.1.1.1 and elsewhere throughout the DEIS which states that the removal of these two ponds would total 0.5 acres, not 0.1 acres.

Micronesian Megapode.

“Currently there is no megapode population on Tinian within the Military Lease Area”

This statement is unfounded. Section 3.9.4.4.1.2 states that Micronesian Megapodes were detected in Tinian as recently as 2013. All past surveys have only sought to determine presence/absence of Micronesian megapodes on Tinian, and none have sought to determine whether a resident population exists. A color-banding resight study or radiotelemetry study would be required to definitively determine whether a resident population exists on Tinian.

Sea Turtles

The DEIS does not explain if beach activities will occur during the day or at night. If the activities occur at night, female turtles that approach the beach to nest during the activity may be disoriented and head inland, dying during daylight from heat exhaustion (NMFS and USFWS 1998). Hatchlings can also be disoriented and misdirected by lights at night, and could fail to reach the ocean (NMFS and USFWS 1998). The DEIS must indicate the extent to which activities will occur at night, and impacts to females approaching the beach and to hatchlings trying to reach the ocean.

“To minimize and avoid potential impacts from hazardous substances...appropriate resource management measures would be implemented”

The significant potential for construction equipment and human activities to crush sea turtle nests and eggs is not addressed. No resource management measures are described or committed to. These measures must be described in this documents and be made available for review and comment, including goals, protocols, schedules and standard operation procedures.

“Although loss of sea turtle nesting habitat would occur over one nesting season...impacts would occur at the level of individual nesting turtles, and not at the population level. Therefore, construction activities...would result in less than significant direct and indirect impacts to nesting sea turtles.”

The green sea turtle is currently listed as threatened but the Central West Pacific distinct population segment is proposed for uplisting to endangered status (USFWS and NOAA 2015). It is farcical to claim that for such a species, impacts on the individual level will not affect the population. All impacts are at the individual level, and if there are enough such impacts on individuals these will translate to population-level impacts. This is particularly true for threatened and endangered species, which inherently have low, declining populations. Any impact at the individual level will affect the population.

Loss of nest beach habitat, habitat alteration and compaction will diminish the value of the habitat for sea turtle nesting, and thus leading to decreased reproductive success. Because turtles do not nest yearly and are known to come back to known beaches to nest, these impacts are not individual, but will impact future generations. Further, relatively few animals reach adult breeding age. Any effects on adult nesting sea turtles will have a disproportionately large impact on status of the population. The habitat destruction and long-term disturbance due to the action alternatives will significantly impact the endangered sea turtle population on Tinian.

Humped Tree Snail

The DEIS claims that there will be no direct impacts on humped tree snails as a result of construction activities from any of the action alternatives. The most recent surveys revealed that the snails had not been extirpated on Tinian as had previously been believed and 2 discrete populations were located on Tinian. More populations of humped tree snails are likely to exist within suitable habitat on Tinian. Even this snail survey refers to itself as “*limited*” (Appendix L3). The transects did not cover all potential habitat within the MLA (Figure 13, Appendix L3). All potential habitats within the action areas must be thoroughly surveyed using rigorous methods that will produce high quality presence/absence and density determinations. Otherwise, the no impact assessment given in this DEIS is not valid.

Heritiera longipetiolata

The DEIS claims that there will be no direct impacts on *Heritiera longipetiolata* as a result of construction activities from any of the action alternatives. However, the DoD has failed to perform complete island-wide surveys of all potential habitats for this species on Tinian using rigorous methods that will produce high quality presence/absence and population estimates across the island. Otherwise, the no impact assessment given in this DEIS is not valid.

Dendrobium guamense

The DEIS claims that there will be no direct impacts on *Dendrobium guamense* as a result of construction activities from any of the action alternatives. However, the DoD has failed to perform complete island-wide surveys of all potential habitats for this species on Tinian using rigorous methods that will produce high quality presence/absence and population estimates across the island. Otherwise, the no impact assessment given in this DEIS is not valid.

Figure 4.9-3a and b Northern and Southern Military Lease Area - Tinian Alternative 1, Occurrence of Special-status Species (also Figures 4.9-5a and b Alternative 2 and 4.9-7a and b Alternative 3)

These figures do not accurately depict the known locations of the sites within the Mahalang complex that have been used by Mariana common moorhens. The DoD has excluded the Mahalang wetland sites within the proposed vegetation clearance area where moorhens have been detected. In 2013 moorhens were observed in M07, M10 (not M11) and M21 (L. Zarones, pers. obs.). In 2014 moorhens were observed in M22 (L. Zarones, pers. obs.). The DoD must revise the map to accurately depict the sites within the Mahalang complex where moorhens have been observed.

Section 3.9.1.3 defines “special-status species” as ESA-listed, proposed or candidate, CNMI listed as threatened or endangered, MBTA-listed or species identified as Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. However these figures only includes ESA-listed or proposed “special-status species”, and species listed by the CNMI as threatened or endangered. They do not include occurrences of those listed under the MBTA, nor species identified as Species of Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. These figures must be revised to include the above special-status species.

These figures do not include the approximate locations of the *Heritiera longipetiolata* or *Dendrobium guamense* that are mentioned in Table 3.9-3, and described in Sections 3.9.4.4.1.9 and 3.9.4.4.1.10, respectively. The DoD must include approximate locations for these two species.

4.9.3.1.1.4 Special-status Species: Migratory Bird Treaty Act-listed Species Alternative 1 (also 4.9.3.2.1.4 Alternative 2 and 4.9.3.3.1.4 Alternative 3)

Although 39 bird species protected under the Migratory Bird Treaty Act are known to occur on Tinian (Table 3.9-4), the DEIS only discusses impacts on 3 species here for all three action alternatives. These are all significant negative population-level impacts. The DoD must present the impacts of the proposed actions on all 39 of the protected migratory bird species for review and comment. These birds have different habitat needs, behaviors, life histories and habits.

For the 3 bird species evaluated, under the 3 different action alternatives, populations are expected to permanently decrease by a range of 5.4% to 7.4% as a result of construction activities. These figures include only direct impacts considered in this document to be permanent, and only due to construction, not operations. The DEIS must evaluate the further impacts on these bird populations when both indirect and direct impacts of both construction and operation are included. Section 4.9.3.1.2.4 does not give an expected percentage loss for operations, merely claiming that the impacts would be “less than significant”. The expected permanent decrease of all MBTA-listed bird species will be greater than the 5.4% to 7.4% outright loss described in this section, and the DoD must present the total expected losses resulting from all activities (construction and operation). These levels of loss, whether or not

combined with the many indirect and combined effects of the action alternatives, endanger the long-term viability of these bird species.

This section again states that birds will be displaced, but fails to note that displaced birds suffer extraordinarily high levels of mortality. The impact of lights from construction equipment must be evaluated in much more detail for the full range of migratory birds. Lighting is well known to cause sometimes massive mortality, notably for seabirds, to the extent that Hawaiian Islands have overhauled their systems of street lighting to decrease this important impact on endangered seabirds. The finding that “these temporary and direct impacts to bird populations from construction noise and human activities would be less than significant” fails to account for heightened mortality due to lights and displacement from noise and activity, as well as decreases in reproductive success. This document must evaluate the impacts of lights, noise and activities species by species, for the 39 protected migratory birds species on Tinian based on their behaviors and resource needs.

“more birds are expected to eventually occupy areas of proposed forest enhancement”

No mitigation has been committed to and no forest enhancement plan or proposed locations exist. Any mitigation measures or forest enhancement plan must be described in this DEIS, including goals, protocols, measures of success, schedules and methods, such that we can evaluate the efficacy and feasibility of that specific plan. It is disingenuous and misleading to mention measures and areas that don’t exist and that the DoD is not committing to. The DoD must further describe these supposed “forest enhancement” measures and provide examples of how these have successfully increased forest carrying capacity in similar areas for similar species. The DoD must indicate they have committed to carrying out such forest enhancement measures, and map the areas in which this is to occur.

“Potential indirect impacts associated with potential introductions of non-native species and wildfires would be avoided and minimized through the implementation of resource management measures (see Section 4.9.2).”

Section 4.9.2, upon which we have commented above, constitutes a list of plans that *would* be, but have not been, prepared. The statement that “potential indirect impacts...would be avoided and minimized...” is invalid, because no specific plan, protocols, measures, schedules or SOP’s have been described or even developed. It is not possible and nonsensical to state that indirect impacts can or will be absolutely avoided.

“the DoN proposes to implement forest enhancement, and a Forest Enhancement/Restoration and Monitoring Plan would be prepared”

No forest enhancement plan or protocol is described. These measures and this plan must be presented in this DEIS so that reviewers can evaluate the feasibility and potential effectiveness of the forest enhancement measures (not yet produced), and resultant impacts on wildlife and natural resources. “Forest enhancement” is unlikely to benefit the wildlife and ecological services damaged due to construction. Cultivating a few native species is unlikely to replicate vital ecological structures or processes, and the native species may not long survive.

4.9.3.1.1.5 Special-status Species: CNMI-listed Species Alternative 1 (also 4.9.3.2.1.5 Alternative 2 and 4.9.3.3.1.5 Alternative 3)

Micronesian gecko

Surveys for the gecko were inadequate and incomplete. The entire potential range of the gecko must be surveyed using rigorous methods to produce a high quality determination of range and population size. The lapse of 57 years when the gecko was thought not to exist on Tinian underlines the fact that the gecko is easy to miss. Until adequate surveys are completed, this DEIS cannot evaluate impacts on gecko population, and the no impact finding is invalid.

“Potential mitigation measures described above in the Vegetation Communities section would also result in a conservation benefit to the Micronesian gecko.”

These measures have not been described or committed to. It is inappropriate to claim these measures would result in a conservation benefit to the gecko because no measures have been prepared or described for review.

4.9.3.1.2 Operation Impacts Alternative 1 (also 4.9.3.2.2 Alternative 2 and 4.9.3.3.2 Alternative 3)

Section 3.9.1.3 defines “special-status species” as ESA-listed, proposed or candidate, CNMI listed as threatened or endangered, MBTA-listed or species identified as Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. However this section only includes ESA-listed or proposed “special-status species”, and species listed by the CNMI as threatened or endangered. It does not address those species listed under the MBTA, nor species identified as Species of Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. We also assert that endemic species must be included in the definition of “special-status species” and included here.

The analysis in this section is based on incomplete data on locations of special-status species based on inadequate and incomplete surveys of Tinian, as outlined in our general comments and our comments on 3.9.4 above. The analysis will need to be repeated once adequate surveys are completed by the DoD.

4.9.3.1.2.1 Vegetation Communities Alternative 1 (also 4.9.3.2.2.1 Alternative 2 and 4.9.3.3.2.1 Alternative 3)

“Potential impacts to vegetation communities from training operations would be avoided and minimized by implementing resource management measures summarized in Section 4.9.2”

Section 4.9.2, upon which we have commented above, constitutes a list of plans that *would* be, but have not been, prepared. The claim that “potential impacts...would be avoided and minimized...” is invalid, because no specific plan, protocols, measures, schedules or SOP’s have been developed. These plans need to be presented for review and comment before we can accept

this claim. It is not possible and nonsensical to state that indirect impacts can or will be absolutely avoided.

This section describes a great deal of impact and disturbance to vegetation and associated wildlife communities, caused by:

- trampling of hundreds of individuals at a time;
- land and amphibious vehicle use
- training exercises
- equipment staging
- ordnance deployment,
- vegetation removal to create firebreaks
- removing vegetation from High Hazard Areas.

Resultant erosion and wildfire potential will exacerbate these impacts. These activities at the scale proposed will cause significant damage to vegetation and will benefit disturbance-adapted species over non-disturbance-adapted species, causing long-term and widespread negative ecological impacts. This constitutes a significant level of damage to wildlife and vegetation. The finding of less than significant direct and indirect impacts to vegetation communities is not valid.

“would result in less than significant direct and indirect impacts to vegetation communities.”

This section fails to address the impact of the many activities mentioned above (clearing land, digging, OHV’s, ordnance deployment, etc.). The direct and indirect impacts of all these activities will cause very significant damage to vegetation, vegetation communities, and wildlife communities that will be widespread in both time and space. We cannot accept this finding of less than significant impact to vegetation communities.

“Edge effects” caused by disturbance and vegetation removal are well known to result in species composition changes, favoring disturbance-adapted species and negatively impacting native species, and increased risk of windfall. Native and special status species on Tinian are gravely threatened by disturbance-adapted species, which are most often invasive species that crowd out native species or degrade the value of habitat for native species. Other edge effects include significant decreases in insular habitat required by many native species for successful breeding, foraging, reproduction and evasion of predators; increased wildfire probability degrading yet more habitat; and increased accessibility to human activities, which could include poaching and off-road vehicle use. Edge effects have not been considered as an indirect impact here.

The scale of impact to vegetation structure proposed in the action alternatives will benefit some species (mostly disturbance-adapted species) of plants and animals, and will harm other species (mostly non-disturbance-adapted species), significantly altering the balance of trophic interactions among species. By altering the balance of species interactions, the impacts of the proposed disturbance and removal of vegetation will propagate throughout the adjacent ecosystems and across time, affecting species composition, distribution, richness and density. The document must address the significant, long-term propagation of impacts throughout complex food webs and the alteration of ecological balance among species. Long-term effects

will be complex and become more widespread over time and will significantly decrease the viability of native wildlife populations.

Impacts of introducing a new invasive species to the island must be addressed in this section. The movement of hundreds or thousands of troops and their equipment and vehicles on and off Tinian, and between Guam, other islands, and Tinian, results in extraordinarily high risk, probability and threat of highly detrimental non-native species introductions. Damage from non-native species introductions are very unlikely to be minimized and will lead to decreased viability or complete extirpation of native and special status wildlife species. Species introductions due to military activity on Guam have decimated the native bird species and caused the collapse of ecological processes, the vast alteration of forest structure, the simplification of forest ecosystems, and devastating loss of ecosystem functioning that is now propagating through the island's ecosystem. Establishment of non-native species on Tinian will cost the CNMI government large sums of money and effort to manage, and will undermine ecotourism development, a prime sector for economic growth and sustainability in the CNMI.

In spite of BMP's discussed, the probability of wildfire greatly increases with the proposed activities. Effects of wildfire in this non-wildfire adapted ecosystem will be ecologically devastating and significantly undermine the viability of native wildlife species. Wildfire will cause direct mortality, loss of habitats needed to survive and effectively reproduce, and will benefit disturbance-adapted species while harming non-disturbance-adapted species. As such, small or large wildfires would create ecological change that will propagate throughout time and space, harming native species viability. Plans to reduce the impact of potential introduction of non-native species and wildfires are presented as things that DoD "may" do. These are not commitments and thus we cannot assume that any reductions measures will be undertaken. The plans that "may" be put in to effect are not adequate to remove or meaningfully minimize the large risks posed. This section states that a "Fire Prevention and Management Plan *would be developed*". This plan must be presented in this document in order to assess its efficacy. At present no specific plan exists, and thus, cannot result in any impact.

4.9.3.1.2.2 Native Wildlife and 4.9.3.1.2.3 Special-status Species: Endangered Species Act-listed Species and Proposed Species Alternative 1 (also 4.9.3.2.2.2, 4.9.3.2.2.3 Alternative 2, 4.9.3.3.2.2. and 4.9.3.3.2.3 Alternative 3)

" Potential impacts to special-status species from munitions, non-native species, and potential wildfires from training activities associated with Tinian Alternative 1 (also 2 and 3) would be similar to those discussed above under Native Wildlife, and would be less than significant."

In response, the entirety of our comments below on section 4.9.3.1.2.2, 4.9.3.2.2.2 and 4.9.3.3.2.2 Native Wildlife also apply to 4.9.3.1.2.3, 4.9.3.2.2.3 and 4.9.3.3.2.3 Special-status Species.

We have already commented under 4.9.3.1.2.1 on the propagating impacts of even limited levels of disturbance on Tinian's ecosystems, which also apply to native wildlife here. The impacts of construction activities and operations activities are additive concerning impacts on wildlife populations and terrestrial biology. The combined construction and operations impacts must be

addressed and evaluated in this document. This discussion must provide specific information on the spatial extent, frequency, duration, numbers of persons and numbers and types of equipment, vehicles and munitions used in operations, and the resulting impacts on wildlife and ecosystems. Pollutants are listed as a potential indirect impact on terrestrial biology, yet they are not further discussed, explained and their impacts evaluated in section 4.9.3.1.2.

Maneuver Training

“and wildlife would be able to avoid injury by moving away from vehicles.”

Many types of wildlife will not be able to simply move away from vehicles, and thus risk injury or death, which would have individual- and population-level consequences.

Fires

While measures can be taken to minimize fire potential, the proposed action alternatives vastly increase the chances of fire on Tinian. The environmental consequences of fire, as we discussed above, have long-term, significant negative impacts on native species, special-status species, ecological balance, disturbance and succession regimes, and ecosystem processes, structures, energy cycles and services. Few specific measures are proposed and fire cannot be absolutely avoided. This section must account for the significant impacts of introduced fire to the ecosystem in both space and time.

Noise

“Wildlife within the Military Lease Area would be exposed to noise of more than 85 decibels A-weighted day-night average...and 130 decibels Peak level...”.

It is inappropriate and misleading to use day-night averages when discussing sounds that come in blasts such as live-fire. These are abrupt, non-continuous events. A useful measure should be applied, such as the frequency of blasts of noise within periods of actual firing, along with the average and peak decibel level of those blasts in vicinities applicable to wildlife. It is important to note that the Peak (15) decibel levels presented are less than maximum decibel levels.

The assertion that impacts are minimized because training takes place 20 non-consecutive weeks per year is incorrect. Detrimental impacts of those noises on wildlife are not minimized due to occurring for 20 weeks as opposed to some other number of weeks. Noise for 20 weeks per year is long term and substantial, and will cause a loss to population viability through the repeated disturbance of individuals and disruption of their activities, energy balance, and ability to successfully reproduce.

This document must discuss the impact of physiologic stress caused to animals due to all activities described. Noise from munitions and weapons fire is likely to cause high levels of physiologic stress which will diminish animals' survival and reproductive potential, with significant negative population-level impacts.

“...wildlife species have been shown to habituate to noise associated with military live-fire training activities...”

This assertion has no validity for the species and situation in the CNIM and on Tinian. Every species has different physiologies, tolerances, behaviors, needs and responses. The scientific literature is full of examples of species not being tolerant to noise levels such as those proposed in the action alternatives. Species reactions and population responses to the noise levels described here cannot be inferred by simple behavioral observation of completely different species under different conditions exposed to different noise levels. It is invalid and illogical to assume that Tinian species will be able to habituate to live-fire and be unaffected by it. Tinian's native wildlife species will be caused to increase their energy expenditures through increased movements and stress levels, and will experience heightened mortality risk and decreased reproductive success rates.

Introduction of Non-native Species.

As discussed in this section, non-native species invasions pose tremendous and highly significant risk to the viability of Tinian's native wildlife species. The movement of hundreds or thousands of troops and their equipment and land and amphibious vehicles on and off Tinian, and between Guam, other islands, and Tinian, results in extraordinarily high risk, probability and threat of highly detrimental non-native species introductions.

Damage from non-native species introductions are very unlikely to be minimized and will lead to decreased viability or complete extirpation of native and special status wildlife species. Species introductions due to military activity on Guam have decimated the native bird species and caused the collapse of ecological processes, the vast alteration of forest structure, the simplification of forest ecosystems, and devastating loss of ecosystem functioning that is now propagating through the island's ecosystem.

Successful establishment of non-native species on Tinian will cost the CNMI government large sums of money and effort to manage, and will undermine ecotourism development, a prime sector for economic growth and sustainability in the CNMI.

Plans to reduce the impact of potential introduction of non-native species and wildfires (Section 4.9.2) are presented as things that DoD “may” do. These are not commitments and thus we cannot assume that any reductions measures will be undertaken. The specific plans that “may” be put in to effect are not adequate to remove or meaningfully minimize the large risks posed.

Aircraft strikes

“a Bird/Animal Strike Hazard Plan would be prepared to minimize occurrence of bird/animal aircraft strikes...”

The plan must be included in this document for evaluation of whether this specific plan would actually be feasible and effective. We are not given enough information here to judge whether

strikes can be minimized. Because no actual plan is presented we must assume that strikes will not be effectively minimized and that native wildlife will suffer harm from strikes.

“Special briefings would be provided to pilots whenever the potential exists for increased bird/animal strikes.”

It is unclear how this potential for strikes will be determined and when pilots will be briefed. With many birds and animals in the vicinity, the potential for strikes always exists. Briefing a pilot does not mean that the pilot can avoid striking a bird or animal. This is an ineffective measure unlikely to minimize strikes.

“With implementation of these resource management measures described above, potential direct and indirect impacts to native wildlife species from proposed operations would be less than significant.”

Because no specific resource management measures are proposed or described (beyond plans to prepare plans), this statement is not merited. The many environmental impacts of action alternatives on Tinian will lead to significant negative impacts including declines in population viability for Tinian’s native wildlife species and will degrade ecosystem functions.

4.9.3.1.2.3 Special-status Species: Endangered Species Act-listed Species and Proposed Species Alternative 1 (also 4.9.3.2.2.3 Alternative 2 and 4.9.3.3.2.3 Alternative 3)

“Potential impacts to special-status species from munitions, non-native species, and potential wildfires from training activities associated with Tinian Alternative 1 would be similar to those discussed above under Native Wildlife, and would be less than significant.”

The DEIS must address all impacts on special-status species individually. We do not accept that impacts to special-status species are the same as for other species. Their special status is because they are rare, endangered, limited in population size or distribution, specialized in habitat needs or other reasons. These attributes mean that they will be impacted differently than more common or widespread species and must be addressed individually.

This section fails to address impacts from foot and vehicle traffic and repeated, long-term disturbance of human activities.

Mariana Fruit Bat

These surveys are inadequate and out of date. This evaluation of fruit bat impacts is invalid without current, complete and adequate surveys covering in detail all available Mariana fruit bat habitats on Tinian. Fruit bats may well have formed colonies and established roosting sites since the last survey in 2010.

“...given the rarity of occurrence of fruit bats on Tinian...exposure to these stressors would be discountable or insignificant.”

Stressors to this threatened species are not “discountable or insignificant” because the species is rare. The low numbers of individuals goes hand in hand with the fact that the species is threatened and certainly does not negate the impacts of stressors including live-fire operations and foot and vehicle traffic. The impact of these stressors on bats, and on preventing bats from recovering on Tinian is significant and detrimental to the species.

DLNR is working diligently to recover and achieve delisting of this species. The combination of permanent removal of 16% of all fruit bat habitat on Tinian, plus the cumulative impacts on Pagan and from other military environmental impacts statements, and repeated disturbance due to human activities will undermine long-term, intensive efforts to recover the species. Protected status of this bat has greatly restricted meaningful cultural and subsistence activities of CNMI residents.

Mariana Common Moorhen

Movements of troops and vehicles along boundary roads near wetlands will disturb these secretive birds, causing physiologic stress and lowered survivorship and reproductive potential. Noise levels of Peak 15: 108, 130, 131, 138 and 147 decibels will also cause stress, decreased survivorship and reproductive success, and probably hearing loss. Birds displaced by noise suffer high mortality rates and high energy expenditures.

It is inappropriate to present average noise when discussing weapons fire and munitions. As noted, these are abrupt, non-continuous events. A useful measure should be applied, such as the frequency of blasts of noise within periods of actual firing, along with the average and peak decibel level of those blasts in vicinities applicable to wildlife. It is important to note that the Peak (15) decibel levels presented are less than maximum decibel levels.

“Moorhens are not likely to flush from nests in response to these noise levels...effects on reproductive success are not anticipated.”

Moorhens are highly likely to flush from nests due to noise. In addition, moorhens will avoid habitats and potential nest sites in areas continuously disturbed by noise. Combined with the impacts of noise on behavior, leading to increased energy expenditures and less benefit to cost when foraging, moorhen reproductive success will be negatively impacted due to noise resulting from Tinian training proposed in all three action alternatives.

“Sound levels...may cause moorhens to flush from and avoid the Mahalang area periodically or permanently”

“Sound levels...may cause moorhens to exhibit startle behaviors or flush from the Bateha sites periodically.”

“the birds may move between sites in response to the intermittent noise events.”

Again, this repeated stress, flushing, startle and displacement will result in significantly higher mortality levels and lower reproductive success in moorhens due to increased physiologic stress

and a less beneficial energy balance. The levels of noise described for the different moorhen habitats will cause a significant, negative population-level impact to the moorhen. Combined with impacts of permanent habitat loss and disturbance caused by construction, the moorhen population will be placed in serious jeopardy.

“training exercises would occur approximately 20 non-consecutive weeks per year”.

“Because training would not be continuous and wildlife species have been shown to habituate to noise associated with military live-fire training activities, noise impacts to the Mariana common moorhen population on Tinian are anticipated to be less than significant.”

The assertion that impacts are minimized because training takes place 20 non-consecutive weeks per year is incorrect. Detrimental impacts of those noises on wildlife are not minimized due to occurring for 20 weeks as opposed to some other number of weeks. Noise for 20 weeks per year is long-term and substantial, and will cause a loss to population viability through the repeated disturbance of individuals and disruption of their feeding activities, energy balance, and ability to successfully reproduce, as birds will abandon nests repeatedly. The assertion that some wildlife can habituate to unspecified noise levels, and that therefore Mariana common moorhens will habituate to repeated live fire of up to 147 dB, is baseless. These are highly secretive birds that avoid even very subtle disturbance. The moorhens will experience physiologic stress, displacement and energetic stress due to noise and training activities, with significant negative impact at the individual and population levels. Lake Hagoi has more moorhens than any other wetland site in the Marianas, and there are no other unoccupied wetlands of this size and quality for these birds to move to.

Micronesian Megapode

“only limited, non-invasive, on-foot military training...”

On-foot military training will be invasive to Micronesian megapodes, which occupy undisturbed habitats without human activities.

“As megapodes would not occur within or near...”

As noted above, megapodes have not been adequately or completely surveyed on Tinian and the most recent data are out of date.

“Given the above, and the extremely rare occurrences of megapodes on Tinian, noise...is expected to result in less than significant direct and indirect impacts to megapodes on Tinian.”

Rare occurrence is not related to impact. Impacts will be significant, negative and will result from a range of activities (disturbance) in addition to just noise.

“...currently there is no megapode population on Tinian within the Military Lease Area.”

The most recent surveys did not cover a substantial portion of the military lease area. Surveys were not adequate to determine absence of megapodes by standard biological methods. Megapodes have recently appeared on Managaha Island off Saipan, and may well live within the military lease area on Tinian. Detailed surveys must cover all potential habitats on Tinian using suitable species presence/absence determination methodology.

Sea Turtles.

Serious impacts on sea turtle behavior are noted in this section due to excessively high noise exposure: Peak 15 110, 121, 127 and 138 decibel repeated exposures during 20 weeks per year. Amphibious training activities including landing and use of beach and submerged lands by amphibious vehicles and hundreds of personnel will clearly cause major declines in habitat use of this beach by turtles and in reproductive success which can expected to be 0% in years when operations are active.

The proposed mitigation measures are not sufficient for Sea turtles. Vibration and noise impact from AAV and LCAC are not considered in this mitigation measure. No mention is made on avoidance when nesting area is within the path of the landing craft and cannot be avoided.

“However, implementation of training restrictions such as those described by...would ensure that these disturbances would not affect sea turtles on the beach or their nests.”

No specific plan or measure are committed to. The actions proposed in the DEIS will certainly affect sea turtles on the beach and at nests, if the turtles attempt to nest. We need the DoD to fully outline these training restrictions for us to evaluate and comment on them.

“Restrictions include implementing a monitoring program during amphibious training events that includes pre-event surveys to delineate boundaries around nest sites as well as postponing landing activities when a nesting sea turtle is observed on land.”

These restrictions are inadequate. It is not stated how long the pre-event surveys would occur. Only very recently excavated nests are obvious – wind and wave action will cover tracks and diggings very quickly. Daily beach monitoring over at least 60 days prior to the amphibious training events would be required to ensure that all nests are detected and delineated.

“Similar training and measures within...that also support sea turtle nesting have also proven effective in protecting turtles and their nests.”

No specific protocols or plans are described or in place, and reviewers cannot effectively assess potential results of these measures. However, the repeated long-term, highly invasive activities on these beaches will result in turtle displacement and avoidance of nesting habitat, resulting in population viability consequences.

Some of these negative effects have been acknowledged in previous military EIS documents for Tinian. The Final EIS for Military Training in the Marianas states that for LCACs parked on the beaches of Tinian *“compaction of the sand could make exit from the nests difficult for hatchlings.*

Offloaded vehicles driving across the beach may crush turtle's nests". The DoD must explain why these activities that were acknowledged to have serious negative impacts on sea turtle nests on the beaches of Tinian in previous EIS documents are assumed to have less than significant effects this time around, when the activities are the almost the same.

Humped Tree Snail.

The document predicts no impacts on humped tree snails, yet complete surveys across suitable habitat has not taken place. The most recent surveys revealed that the snails had not been extirpated on Tinian as had previously been believed and 2 discrete populations were located. More populations of humped tree snails are likely to exist on Tinian. All potential habitats within the action areas must be thoroughly surveyed using rigorous methods that will produce high quality presence/absence and density determinations. Otherwise, the assessment given in this DEIS is not valid.

Heritiera longipetiolata

The DEIS claims that there will be no direct or impacts on *Heritiera longipetiolata* as a result of operation activities from any of the action alternatives. However, the DoD has failed to perform complete island-wide surveys of all potential habitats for this species on Tinian using rigorous methods that will produce high quality presence/absence and population estimates across the island. Otherwise, the no impact assessment given in this DEIS is not valid.

Dendrobium guamense.

The DEIS claims that there will be no direct or impacts on *Dendrobium guamense* as a result of operation activities from any of the action alternatives. However, the DoD has failed to perform complete island-wide surveys of all potential habitats for this species on Tinian using rigorous methods that will produce high quality presence/absence and population estimates across the island. Otherwise, the no impact assessment given in this DEIS is not valid.

4.9.3.1.2.4 Special-status Species: Migratory Bird Treaty Act-listed Species Alternative 1 (also 4.9.3.2.2.4 Alternative 2 and 4.9.3.3.2.4 Alternative 3)

"Direct and indirect impacts from operational activities on the 39 protected bird species are similar to those discussed under the Native Wildlife section and would be less than significant."

This is unacceptable. Each of the 39 bird species must be assessed for direct and indirect impacts on an individual basis. Each species has a different population size, range, trend, habitat needs, and life history traits and therefore will be impacted differently. We request separate analyses of environmental impacts on each species be presented, and that the appropriate avoidance, minimization and mitigation measures be outlined for each species.

4.9.4 Pagan

Tables 4.9-2 through 4.9-11 provide summaries of impacts to species and potential mitigation measures for terrestrial species on Tinian. There are no equivalent tables for Pagan. The DoD must provide these tables.

4.9.4.1.1 Construction Impacts Alternative 1 (also 4.9.4.2.1 Alternative 2)

Section 3.9.1.3 defines “special-status species” as ESA-listed, proposed or candidate, CNMI listed as threatened or endangered, MBTA-listed or species identified as Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. However this section only includes ESA-listed or proposed “special-status species”, and species listed by the CNMI as threatened or endangered. It does not address those species listed under the MBTA, nor species identified as Species of Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. We also assert that endemic species must be included in the definition of “special-status species” and included here.

The analysis in this section is based on incomplete data on locations of special-status species based on inadequate and incomplete surveys of Pagan, as outlined in our general comments and our comments on 3.9.5 above. The analysis will need to be repeated once adequate surveys are completed by the DoD.

4.9.4.1.1.1 Vegetation Communities Alternative 1 (also 4.9.4.2.1.1 Alternative 2)

Alternative 1 proposes removing 623 acres of vegetation, including 19.8 acres of native forest, and a total of 356 acres of forest and scrub. Alternative 2 proposes 445 acres of vegetation, including 13 acres of native forest, and a total of 306 acres of forest and scrub. This does not include the eventual clearance for UXO removal.

Due to the strictly limited amount of available habitat for wildlife species on this small island, a loss of such large areas of vegetation will significantly, negatively impact viability for numerous wildlife species. Higher levels of vegetation removal in specific habitat types (e.g. 15.6% of grasslands, 11.9% of mixed native-introduced forest for Alternative 1, 8.1% of grasslands and 6.4% of mixed native-introduced forest for Alternative 2) will have even larger impacts on wildlife species that are dependent on those habitat types.

This section must address alteration of vegetation communities due to the removal and disturbance of large swaths of vegetation in multiple habitat types. Disturbance itself, as well as “edge effects” caused by disturbance and vegetation removal, are well known to result in species composition changes, favoring disturbance-adapted species and negatively impacting native species. Native and special status species in the CNMI are gravely threatened by disturbance-adapted species, which are most often invasive species that crowd out native species or degrade the value of habitat for native species.

“Potential indirect impacts to vegetation associated with potential introduction of non-native species and wildfires would be avoided and minimized through the implementation of resource management measures”.

“To mitigate for significant impacts to native forest on Pagan, the DoD may facilitate native forest regeneration on southern Pagan by implementing feral ungulate removal.”

“May” does not mean will. There is no actual commitment to mitigate.

In addition, there is no evidence presented as to whether and how feral ungulate removal would result in native forest regeneration. With many disturbance-adapted species already dominating the disturbed environments frequented by feral ungulates, removing feral ungulates will not lead to regeneration of native forest.

“with the goal of eradicating all feral ungulates from southern Pagan”.

Feral ungulates on southern Pagan represent a vital food source for Pagan residents, and an important species for recreational and commercial hunting used by CNMI residents. A plan to remove all feral ungulates must take into account:

- the significant degradation of food security for Pagan residents;
- the removal of hunting resources that have been used and valued by generations of CNMI residents;
- the removal of a traditional source of indigenous livelihood;
- and the destruction of a resource for future tourism.

Cultural, subsistence and economic impacts will be significant and must be assessed, measured and addressed in this DEIS.

“DoD may also implement monitoring and control of non-native invasive species...”

May is not *will*. This is not a commitment and we cannot assume that the DoD will implement any monitoring or control of non-native species.

In Section 4.9.4.2.1.1 the differences in amount of vegetation removed by habitat type are briefly noted and Table 4.9-12 is cited in error. Table 4.9-14 contains the information for Pagan Alternative 2.

4.9.4.1.1.2 Native Wildlife Alternative 1 (also 4.9.4.2.1.2 Alternative 2)

Table 4.9-11 is cited in this section but we suspect Table 4.9.12 is meant, showing acreage of habitat on Pagan affected by construction. Table 4.9-11 shows mitigation proposed on Tinian.

“258 acres of forested habitat would be removed by construction...This permanent loss of habitat would affect approximately 5% of the island’s forest habitat and reduce the available habitat for wildlife populations. Therefore, implementation...would result in less than significant direct impacts to native wildlife populations.”

This statement also doesn't include the 6.9% of herbaceous scrub and 15.6% of grasslands that will be removed (not included in the forest calculation) and hold value for native wildlife. Table 4.9-12 shows a total loss of 355.8 acres of forest and 266 acres of grassland. 11.9% of all highly valuable mixed native-introduced forest will be removed. A significant proportion of important wildlife habitat is being proposed for removal, causing significant and permanent declines in wildlife populations on Pagan. In addition, the impact of UXO clearance has not been addressed.

In comparison, Section 4.9.4.2.1.2 states “*Approximately 212 acres (86 hectares) of forested habitat would be removed during construction (Table 4.9-14). Therefore, implementation of Pagan Alternative 2 and the removal of approximately 212 acres (86 hectares) of forested wildlife habitat would result in significant impacts to native wildlife populations*”. How can it be that the removal of 258 acres not be significant to native wildlife populations yet the removal of 212 acres would be significant?

The document must assess the impacts of vegetation removal to individual species, whether native species, protected migratory birds, or protected or candidate endangered species. Only by addressing individual species, would we be able to address the importance of different habitat types to those species, and the resultant impacts of the removal of preferred vegetation types on native wildlife species, migratory birds, and endangered or candidate species. This DEIS fails to adequately evaluate impacts of vegetation removal on wildlife species.

8.9% of all vegetation communities on Pagan will be cleared under Alternative 1, and 7.4% under Alternative 2. This island is tiny to begin with (11,502 acres) and functionally isolated from other islands for most species. Losses to different vegetation types are presented in Table 4.9-12 and Table 4.9-14. The losses shown from direct impacts will have highly significant negative impacts of native species, migratory birds and endangered/candidate species, whose numbers are already permanently limited by the small land mass available. Vegetation removals at the scales presented in Table 4.9-12 and 4.9-14 will greatly limit and threaten the viability of native species, migratory birds and listed and proposed endangered species.

Disturbance itself, as well as “edge effects” caused by disturbance and vegetation removal, are well known to result in species composition changes, favoring disturbance-adapted species and negatively impacting native species. Native and special status species on Pagan are gravely threatened by disturbance-adapted species, which are most often invasive species that crowd out native species or degrade the value of habitat for native species.

Impacts to native and special status species due to vegetation disturbance include:

- increased windfall leading to exacerbated destruction of late seral stage vegetation communities by expansion of clearings;
- increased invasion of plant and animal species that benefit from disturbance and very often directly or indirectly threaten native and insular-adapted species (e.g. increased predation and parasitism);
- significant decreases in insular (not affected by edge) habitat required by many native species for successful breeding, foraging, reproduction and evasion of predators;

- increased wildfire probability degrading yet more habitat;
- and increased accessibility to human activities now and in the future, which could include poaching and off-road vehicle use.

Impacts of disturbance create conditions that lead to increasing levels of disturbance and decreasing levels of undisturbed habitats. The document must address the ongoing process of habitat degradation that commences with removal and disturbance of vegetation on the scale addressed in the DEIS.

“Potential indirect impacts to vegetation associated with potential introduction of non-native species and wildfires would be avoided and minimized through the implementation of resource management measures”.

Indirect impacts include far more than wildfires and species introductions. Indirect impacts include the disruption of ecosystem physical and food web structure. The large scale of impact to vegetation structure proposed in the action alternatives will benefit some species (disturbance-adapted species) of plants and animals, and will harm other species (non-disturbance-adapted species), significantly altering the balance of trophic interactions among species.

By altering the balance of species interactions, the impacts of the proposed disturbance and removal of vegetation will propagate throughout the adjacent ecosystems and across time, affecting species composition, distribution, richness and density. The document must address the significant, long-term propagation of impacts throughout complex food webs and the alteration of ecological balance among species. Long-term effects will be complex and become more widespread over time and will significantly decrease the viability of native wildlife populations.

Impacts of introducing a new invasive species to the island are very unlikely to be minimized and will lead to decreased viability or complete extirpation of native and special status wildlife species. Species introductions due to military activity on Guam have decimated the native bird species and caused the collapse of ecological processes, the vast alteration of forest structure, the simplification of forest ecosystems, and devastating loss of ecosystem functioning that is now propagating through the island’s ecosystem. Species invasions are likely to produce similar results on Pagan due to its geographic, biological and climatic similarity to Guam, and the proposed military presence.

Successful establishment of non-native species on Pagan will cost the CNMI government large sums of money and effort to manage, and will undermine ecotourism development, a prime sector for economic growth and sustainability in the CNMI. This potentiality and its impacts on both wildlife and socioeconomics must be analyzed and presented in the DEIS.

In spite of BMP’s outlined, the probability of wildfire greatly increases with the proposed activities in Alternatives 1 and 2. Effects of wildfire in this non-wildfire adapted ecosystem will be ecologically devastating and significantly undermine the viability of native wildlife species. Wildfire will cause direct mortality, loss of habitats needed to survive and effectively reproduce, and will benefit disturbance-adapted species while harming non-disturbance-adapted species. As such, small or large wildfires would create ecological change that will propagate throughout time

and space, harming native species viability. Wildfire will reset vegetative succession to an early seral stage, benefiting invasive species to the detriment of native species.

Plans to reduce the impact of potential introduction of non-native species and wildfires are presented as things that DoD “may” do. These are not commitments and thus we cannot assume that any reductions measures will be undertaken. The non-native species and wildfire prevention plans that “may” be put in to effect are not adequate to remove or meaningfully minimize the large risks posed.

4.9.4.1.1.3 Special-status Species: Endangered Species Act-listed and Proposed Species Alternative 1 (also 4.9.4.2.1.3 Alternative 2)

“Based on historical data and surveys conducted in support of this EIS/OEIS, Figure 4.9-9 provides the general locations of special-status species”.

These surveys are vastly inadequate and incomplete. Species, including special status species and native wildlife have not been adequately surveyed on Pagan. No assessment of impacts or minimization, avoidance or mitigation is possible without conducting thorough and current species for all native, special-status and non-native plants and animals on Pagan. This map does not include the occurrences of all “special-status species” (see comments on Figure 4.9-9 below).

“With the exception of the Marana fruit bat, none of the areas proposed for construction would occur within the vicinity of federally listed or proposed species habitat on Pagan”.

No adequate, complete surveys have been conducted. Crews of trained taxonomists desperately need to immediately conduct thorough and directed surveys for all special-status species on Pagan. Without these surveys, the analyses presented in this document are invalid and have little basis in reality. The lack of adequate surveys of species and habitats used is not in compliance with NEPA requirements.

Noise levels and construction activities in northern Pagan proposed in the action alternatives would cause Mariana fruit bats to abandon critical habitats in the form of secure nest and roost sites. This would cause significant negative impact to ongoing recovery effort for the species and significant negative impact to reproductive success. These impacts would not be “less than significant”.

Combined with impacts noted later in the Training section of this section, fruit bats will be very seriously impacted and may well no longer be viable on Pagan if either of the action alternatives are implemented.

Figure 4.9-9 Pagan Alternative 1, Occurrence of Special-status Species (also Figure 4.9-11 Alternative 2)

The map includes the following caveat: *“Species observations are historical sightings over multiple years and multiple surveys and do not represent the current population status or distribution of species within the depicted area.”* This is unacceptable. We need accurate, up-to-

date distribution maps of the special status species in order to fully understand the environmental consequences of the proposed actions. This map instead displays cartoon-like depictions of some species observations. Furthermore, why is this note not also included on Figure 3.9-6, which shows the same information? Finally, Section 3.9.1.3 defines “special-status species” as ESA-listed, proposed or candidate, CNMI listed as threatened or endangered, MBTA-listed or species identified as Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. However this figure only includes ESA-listed or proposed “special-status species”, and species listed by the CNMI as threatened or endangered. It does not include those listed under the MBTA, nor species identified as Species of Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. This figure must be revised to include current distribution maps of all of the above special-status species.

4.9.4.1.1.4 Special-status Species: Migratory Bird Treaty Act-listed Species Alternative 1 (also 4.9.4.2.1.4 Alternative 2)

The lack of assessment of impacts on MBTA-listed species presented in this section is a clear violation of NEPA standards. Seabirds are not even discussed. Any seabirds in the vicinity will be negatively impacted by noise and lights. Both noise and lighting at night are well-known to lead to abandonment of vital nesting and foraging areas by migratory seabirds. Lighting has often caused direct mortality, and is well known to cause birds’ navigation to become confused, causing the birds to expend vital energy reserves and decreasing survivorship and reproductive success.

There has been no recent thorough survey for MBTA-listed seabirds on Pagan. These must be surveyed. The impacts of all activities must then be analyzed and presented for review and comment for all migratory birds, including seabirds, on Pagan to comply with NEPA.

“...258 acres of forested habitat for native species would be removed...”

No vegetation removal or construction activities are discussed in this section except that affecting forested areas. Yet, MBTA-listed birds use many habitats that are not forested. Habitat use, numbers and behaviors of all MBTA-listed birds must be surveyed thoroughly. Impacts to all MBTA-listed bird species on Pagan must be analyzed and presented for all habitats, not just forest.

The finding of “less than significant direct and indirect impacts” is invalid because:

- only forest is included as impacted;
- birds have not been properly studied or surveyed;
- seabirds have not been included.
- Noise, lighting, activity level and vegetation and topographic alterations due to construction are likely to significantly impact migratory birds on Pagan.

4.9.4.1.1.5 Special-status Species: CNMI-listed Species Alternative 1 (also 4.9.4.2.1.5 Alternative 2)

We do not have a clear idea of which CNMI-listed species exist and in what numbers or distribution on Pagan. This analysis and section of the DEIS is invalid without adequate surveys.

4.9.4.1.2 Operation Impacts Alternative 1 (also 4.9.4.2.2 Alternative 2)

Section 3.9.1.3 defines “special-status species” as ESA-listed, proposed or candidate, CNMI listed as threatened or endangered, MBTA-listed or species identified as Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. However this section only includes ESA-listed or proposed “special-status species”, and species listed by the CNMI as threatened or endangered. It does not address those species listed under the MBTA, nor species identified as Species of Special Conservation Need in the CNMI’s Comprehensive Wildlife Conservation Strategy. We also assert that endemic species must be included in the definition of “special-status species” and included here.

The analysis in this section is based on incomplete data on locations of special-status species based on inadequate and incomplete surveys of Pagan, as outlined in our general comments and our comments on 3.9.5 above. The analysis will need to be repeated once adequate surveys are completed by the DoD.

4.9.4.1.2.1 Vegetation communities Alternative 1 (also 4.9.4.2.2.1 Alternative 2)

This section describes a great deal of impact and disturbance to vegetation and associated wildlife communities, caused by:

- trampling of hundreds of individuals at a time;
- off-road vehicles use that is not quantified in any way;
- training exercises that include clearing land, digging, bivouac and camping by hundreds of individuals;
- equipment staging of unspecified equipment,
- ordnance deployment.

Resultant erosion and wildfire potential exacerbate these impacts.

These activities at the scale proposed will cause significant damage to vegetation and will benefit disturbance-adapted species over non-disturbance-adapted species, causing long-term and widespread negative ecological impacts. This constitutes a significant level of damage to wildlife and vegetation. Finding of less than significant direct and indirect impacts to vegetation communities is not valid.

“A fire prevention and management plan would be developed...”

If no specific plan has yet been developed, nor is actually being proposed here, the plan cannot be reviewed, assessed or assumed to have any impact on minimizing wildlife damage to wildlife and vegetation.

“...would result in less than significant direct and indirect impacts to vegetation communities due to foot traffic and vehicle use.”

This section fails to address the impact of the many activities mentioned above (clearing land, digging, OHV's, ordnance deployment, etc.). The direct and indirect impacts of all these activities will cause very significant damage to vegetation, vegetation communities, and wildlife communities that will be widespread in both time and space.

Section 4.9.4.1.2.1 and 4.9.4.2.2.1 must address change to native wildlife and their habitats due to the removal and significant alteration of vegetation in multiple habitat types.

Disturbance itself, as well as “edge effects” caused by disturbance and vegetation removal, are well known to result in species composition changes, favoring disturbance-adapted species and negatively impacting native species. Native and special status species on Pagan are gravely threatened by disturbance-adapted species, which are most often invasive species that crowd out native species or degrade the value of habitat for native species.

Impacts to native and special status species due to vegetation disturbance include increased windfall leading to exacerbated destruction of late seral stage vegetation communities; increased invasion of plant and animal species that benefit from disturbance and very often directly or indirectly threaten native and insular-adapted species (e.g. increased predation and parasitism); significant decreases in insular (not affected by edge) habitat required by many native species for successful breeding, foraging, reproduction and evasion of predators; increased wildfire probability degrading yet more habitat; and increased accessibility to human activities now and in the future, which could include poaching and off-road vehicle use.

Impacts of disturbance create conditions that lead to increasing levels of disturbance and decreasing levels of undisturbed habitats. The document must address the ongoing process of habitat degradation that commences with removal and disturbance of vegetation on the scale addressed in the DEIS.

“Potential impacts to vegetation communities from training would be avoided and minimized through the implementation of resource management measures...”

Indirect impacts include the disruption of ecosystem physical and food web structure and are not addressed in the Best Management Practices, Appendix D. The scale of impact to vegetation structure proposed in the action alternatives will benefit some species (mostly disturbance-adapted species) of plants and animals, and will harm other species (mostly non-disturbance-adapted species), significantly altering the balance of trophic interactions among species. By altering the balance of species interactions, the impacts of the proposed disturbance and removal of vegetation will propagate throughout the adjacent ecosystems and across time, affecting species composition, distribution, richness and density. The document must address the significant, long-term propagation of impacts throughout complex food webs and the alteration of ecological balance among species. Long-term effects will be complex and become more widespread over time and will significantly decrease the viability of native wildlife populations.

Impacts of introducing a new invasive species to the island must be addressed in this section. The movement of hundreds or thousands of troops and their equipment and off-road vehicles on and off Pagan, and between Guam, other islands, and Pagan, results in extraordinarily high risk, probability and threat of highly detrimental non-native species introductions.

Damage from non-native species introductions are very unlikely to be minimized and will lead to decreased viability or complete extirpation of native and special status wildlife species. Species introductions due to military activity on Guam have decimated the native bird species and caused the collapse of ecological processes, the vast alteration of forest structure, the simplification of forest ecosystems, and devastating loss of ecosystem functioning that is now propagating through the island's ecosystem. Successful establishment of non-native species on Pagan will cost the CNMI government large sums of money and effort to manage, and will undermine ecotourism development, a prime sector for economic growth and sustainability in the CNMI.

In spite of BMP's discussed, the probability of wildfire greatly increases with the proposed activities. Effects of wildfire in this non-wildfire adapted ecosystem will be ecologically devastating and significantly undermine the viability of native wildlife species. Wildfire will cause direct mortality, loss of habitats needed to survive and effectively reproduce, and will benefit disturbance-adapted species while harming non-disturbance-adapted species. As such, small or large wildfires would create ecological change that will propagate throughout time and space, harming native species viability.

Plans to reduce the impact of potential introduction of non-native species and wildfires are presented as things that DoD "may" do. These are not commitments and thus we cannot assume that any reductions measures will be undertaken. The specific plans that "may" be put in to effect are not adequate to remove or meaningfully minimize the large risks posed.

This section states that a "Fire Prevention and Management Plan" will be established. This specific plan must be presented in this document in order to assess its efficacy. At present no plan exists, and thus, cannot result in any impact.

In Section 4.9.4.2.1.1 the differences in amount of vegetation removed by habitat type are briefly noted and Table 4.9-12 is cited. This is a copy and paste error. Table 4.9-14 contains the information for Pagan Alternative 2.

4.9.4.1.2.2 Native Wildlife Alternative 1 (also 4.9.4.2.2.2 Alternative 2)

"direct strike of wildlife by munitions is unlikely, as animals would flush and move away from target areas in response to munitions noise".

This section relies on animals displacing from operation areas and thus avoiding harm. Yet, displacement causes significant risk and harm to animals in several ways. Displacement uses precious energy needed for successful survival and reproduction, thus, decreasing viability. Displacement puts animals at risk of predation and conflict with conspecifics. And, on a small island, available habitats are almost never unoccupied. Animals rarely will find suitable

unoccupied habitat into which to displace. Displacement typically means death for the animals, and a permanent loss of available habitat, resulting in a smaller population of that species long-term.

“the location of foot traffic would vary during training throughout the maneuver areas”.

Far from a positive, this variation in foot traffic throughout large areas causes large-scale displacement of animals likely to result in their death and lack of reproductive success, which decreases population viability.

“With implementation of these measures, direct and indirect impacts to native wildlife from fire are not anticipated”.

Although they do not anticipate fire, the authors have not presented any methods that would prevent fires. Wildfire must be anticipated. Wildfire risk due to these operations is high, even after the described minimization measures. The impacts of wildfire on native wildlife and vegetation communities must be assessed, analyzed and included as a likely impact in this document.

Noise

It is inappropriate to present average noise when discussing weapons fire and munitions. As noted, these are abrupt, non-continuous events. A useful measure should be applied, such as the frequency of blasts of noise within periods of actual firing, along with the average and peak decibel level of those blasts in vicinities applicable to wildlife. It is important to note that the Peak (15) decibel levels presented are less than maximum decibel levels.

The assertion that impacts are minimized because training takes place 16 non-consecutive weeks per year is incorrect. Detrimental impacts of those noises on wildlife are not minimized due to occurring for 16 weeks as opposed to some other number of weeks. Noise for 16 weeks per year is long term and substantial, and will cause a loss to population viability through the repeated disturbance of individuals and disruption of their activities, energy balance, and ability to successfully reproduce.

This document must discuss the physiologic stress caused to animals due to all activities described. Noise from munitions and weapons fire is likely to cause high levels of physiologic stress which will diminish animals' survival and reproductive potential, with negative population level impacts.

“there would be less than significant impacts to native wildlife species due to noise associated with Pagan Alternative 1 (and 2) training operations”

For the reasons outlined above, there will be significant negative impacts to wildlife individuals and populations, including special status species, due to behavioral and physiologic responses to the noise associated with all action alternatives described.

“However, due to the noise levels, time of day, and large geographic extent of noise that would be generated by live-fire training, there would be less than significant impacts to native wildlife species due to noise...”

This statement is unclear and is not clarified elsewhere in the document. The noise levels anticipated are likely to disturb wildlife, causing stress and displacement and significantly impacting individuals and population levels.

Impacts of time of day on native wildlife are not explained. Native wildlife comprises many species. Impacts of time of day of noise due to operations must be addressed specifically for different species. It is unclear why time of day would cause these impacts to be less than significant on all native wildlife. Wildlife is present day and night – it does not leave the island. It is also entirely unclear what the authors mean by large geographic extent of noise leading to less than significant impacts on all native wildlife. Again, the impacts of geographic extent of noise must be addressed species by species and would depend on the range of those species. The fact that the geographic extent of the noise is “large” indicates that the impacts would be widespread, therefore would have a significant, negative impact on numerous species.

“a Bird/Animal Strike Hazard Plan would be prepared to minimize occurrence of bird/animal aircraft strikes...”

The plan must be included in this document for evaluation of whether this specific plan would actually be feasible and effective. We are not given enough information here to judge whether strikes can be minimized. Because no actual plan is presented we must assume that strikes will not be effectively minimized and that native wildlife will suffer harm from strikes.

“Special briefings would be provided to pilots whenever the potential exists for increased bird/animal strikes.”

It is unclear how this potential for strikes will be determined and when pilots will be briefed. With many birds and animals in the vicinity, the potential for strikes always exists. Briefing a pilot does not mean that the pilot can avoid striking a bird or animal. This is an ineffective measure unlikely to minimize strikes.

“With implementation of these procedures, potential direct and indirect impacts to native wildlife species from aircraft strikes resulting from implementation of Pagan Alternative 1 [and Alternative 2 as indicated later] would be less than significant.”

Because no specific plan is proposed, and briefing pilots does not equate with a pilot being able to avoid strikes, this statement is not merited. Strikes may well have significant impacts on wildlife.

“These activities have the potential to introduce non-native species that could degrade habitat”.

Introduction of non-native species will do far more damage than simply degrading habitat. Introduced species on Guam are well known to directly kill large enough numbers of native

species to have caused the complete extirpation of all native forest bird species. Introduced species cause direct mortality, significantly alter the population levels and interactions among wildlife species, and significantly alter habitat structure. Introduced species upset the ecological balance between species and ecosystems, and among species. Many native species will decline due to the introduction of invasive and competitor species that can remove prey base, parasitize native wildlife, and disrupt species' abilities to forage, rest, breed, reproduce and raise young through direct and indirect effects.

These complex ecological interactions in time and space resulting from introduced species must be addressed in this section. Introduced species may well extirpate multiple species of native wildlife on Pagan.

Species introduced due to operations on Pagan will affect overall species compositions, distribution, richness and densities. This DEIS must address the significant, long-term propagation of impacts throughout complex food webs and the alteration of ecological balance among species. Long-term effects of species introductions will be complex and become more widespread over time, and will significantly decrease the viability of native wildlife populations.

The movement of hundreds or thousands of troops and their equipment and off-road vehicles on and off Pagan, and between Guam, other islands, and Pagan, results in extraordinarily high risk, probability and threat of highly detrimental non-native species introductions. The biosecurity measures discussed are not able to prevent all species introductions, with so many movements over a large number of years. Consequences of species introductions are very severe and therefore the impact is significant. The DEIS must analyze and discuss the likely impacts of invasive species on native wildlife, as judging from experiences elsewhere including on Guam.

“With implementation of resource management measures, the introduction of non-native species would be avoided”.

Introductions of non-native species have not been avoided. Non-native species have been introduced many thousands of times to remote islands including in the CNMI by military operations, including under current biosecurity procedures. There is no evidence that introductions would be avoided, and tremendous evidence that introductions have not been avoided.

The many species that have invaded Guam pose huge risk to CNMI native wildlife, both because of the close similarities in environment, species and climate, and due to the frequent transport of people and goods between Guam and the CNMI for military purposes.

Damage from non-native species introductions are very unlikely to be minimized and will lead to decreased viability or complete extirpation of native and special status wildlife species. Successful establishment of non-native species on Pagan will cost the CNMI government large sums of money and effort to manage, and will undermine ecotourism development, a prime sector for economic growth and sustainability in the CNMI.

The proposed actions will undermine public support for and participation in wildlife conservation efforts by establishing an unfair standard. Residents have been expected to sacrifice including forgoing use of private lands for development and growing food to support native species populations. Yet, the proposed actions will permanently destroy and alter significant portions of native species habitat leading to permanent losses to native wildlife populations. As a result of the diminishment of native wildlife populations to the proposed actions, CNMI residents will face increased restrictions to use of their land.

4.9.4.1.2.3 Special-status Species: Endangered Species Act-listed and Proposed Species Alternative 1 (also 4.9.4.2.2.3 Alternative 2)

Mariana Fruit bat

“There would be significant direct and indirect impacts from munitions noise on the Mariana fruit bat population on Pagan.”

This section must also address the direct and indirect impacts of physical disturbance and human activities on Pagan which will also significantly negatively impact individuals and populations through:

- behavioral alteration,
- increased energy expenditure,
- decreased ability to care for young,
- increased abandonment of roosts and young,
- physiologic stress.

“noise impacts to the Southern 1 colony from proposed large-caliber weapons firing are not anticipated based on modeled sound levels.”

This finding is invalid. Peak 15 (which is not maximum) noise level finding of 120 decibels will cause bats physiologic stress and will alter behavior, increasing energy expenditure and decreasing the survival of adults and young, in the many ways described in this section. Bats may well abandon young and roost sites and abandon this area altogether. Displaced bats face high mortality, energy expenditure and decreased reproductive success.

Likewise noise due to frequent aircraft overflights will create physiologic stress and disrupt bat behaviors resulting in diminished survival and reproductive success. The proposals to impose altitude restrictions within a 0.5 mile buffer zone only for colonies identified in the last survey (5 years ago) of southern Pagan is not adequate. Mariana fruit bats are known to change colony sites within periods of several years.

Mariana fruit bat colonies were not adequately nor recently surveyed on Pagan. Current bat surveys must be conducted of the entire island. There is high likelihood that the surveys cited here missed areas currently used by fruit bats. All the colonies of bats found 5 years ago may already have moved and new colonies may well exist. This DEIS assessment, minimization,

avoidance and mitigation measures are based on old information that may well be completely inaccurate.

This section finds that the action alternatives will result in significant negative impacts to some Mariana fruit bats on Pagan. Realistically, all fruit bat colonies on Pagan will be severely negatively impacted and the species could be extirpated from the island.

“a Bird/Animal Aircraft Strike Hazard Plan would be prepared...This plan will be prepared to minimize the occurrence of aircraft strikes”.

This plan must be included in this document for our review. It is unlikely that an adequate plan can be developed to minimize strikes to a less than significant level, because fruit bats fly in large groups, and because the avoidance plans are based on colony locations from incomplete, inadequate and out-of-date surveys.

The health of the Pagan population of Mariana fruit bats is critical for the recovery of the Mariana fruit bat as described in the USFWS recovery requirements for delisting under the US Endangered Species Act. The action alternatives will significantly decrease the probability that the Mariana fruit bat can be recovered.

Negative impacts to Mariana fruit bat recovery efforts will prolong the suspension of native CNMI people’s right to hunt bats and to use bats as a cultural resource. The cessation of bat hunting on CNMI has had deep social repercussions, sowing mistrust of federal agencies and wildlife managers, and halting the practice and transmission of ancient and meaningful cultural traditions.

The proposed actions will cause social and financial harm to CNMI residents by stymying fruit bat recovery efforts which many residents have made meaningful personal sacrifices to support.

Micronesian Megapode

“Megapodes have been observed only within the southern portion of Pagan within Casuarina, coconut, and mixed native-introduced forests. These areas are located within the Non-Live-Fire Maneuver Area.”

Megapodes have not been adequately or completely surveyed on Pagan, and surveys are now out of date. Megapodes may well occupy maneuver areas, particularly native forest areas which are earmarked for clearing.

“Megapodes persist on Farallon de Medinilla and do not appear to be affected by the noise levels...”

Megapodes are secretive birds and rarely seen in normal circumstances, thus, one would have great difficulty discerning how they are affected based on very few sightings. In what way do the birds appear to not be affected? Has this been studied? This statement has no merit without valid, systematic data on behavioral and physiologic response, and this data has not been collected.

“Megapodes may be exposed to physical disturbance by troops conducting on-foot maneuvers that may result in flushing of birds. However, this level of disturbance is anticipated to have less than significant impacts.”

This is not a valid statement. Repeated flushing of birds, as well as behavioral and physiologic disturbance constitutes harassment and will have significant impacts on individual birds’ ability to survive and reproduce, and on population viability. No reason is given why the authors anticipate that impacts will be less than significant, and this contradicts basic tenets of animal ecology and habitat use.

Green Sea Turtle

“No sea turtles have been observed nesting on the beaches of Pagan”.

No adequate surveys have been conducted to support this statement. Adequate, detailed surveys must be completed in all seasons to document the locations and frequency of sea turtle nesting. The surveys cited in this document were not adequate to assert an absence of turtle nesting.

Humped Tree Snail

“actions prohibited: vehicle maneuvers, mechanical vegetation clearing, digging or excavation without prior approval;”

This statement is unclear. Does the prior approval standard apply to digging or excavation only or to clearing and vehicles as well? The section does not state who gives prior approval, how it is obtained, or how this approval will stop the harm to native or special status species.

In effect, because approval can be granted, digging and excavation can take place within the “No Wildlife Disturbance Areas” described. Vehicle maneuvers and mechanical vegetation clearing can also take place in “No Wildlife Disturbance Areas”. Thus, wildlife may well be disturbed, harmed, injured or killed in “No Wildlife Disturbance Areas”.

“Therefore, military training activities...would result in less than significant direct and indirect impacts to the humped tree snail population”.

This statement is invalid. Tree snails may well be disturbed, harmed and killed within native forests where they live due to the noted “prior approval” of the above destructive activities, and population viability will be negatively impacted.

Slevin’s Skink.

Again, comprehensive surveys have not been completed to determine the presence/absence, distribution or densities of Slevin’s Skink on Pagan.

“given the rarity of occurrence of Slevin’s skinks on Pagan, exposure to these stressors would be discountable or insignificant”.

The number of skinks on Pagan has no relation to how individual skinks or the skink population would be impacted by stressors related to training. This statement is completely incorrect. The impacts of training on skinks must be analyzed and addressed whether there are many or few in this isolated environment.

The statement that follows, *“activities...would result in less than significant direct and indirect impacts to the Slevin’s skink on Pagan”*, is also incorrect. The DEIS has failed to address or evaluate potential impacts of any of the proposed activities and stressors on skink individuals or skink population.

Cycas micronesica.

The proposed conservation measures are inadequate to protect any of the special status species, as discussed earlier. Invasive species interdiction, monitoring and control has not previously been successful. Fire prevention and management is described as a plan that is not here described, and cannot be reviewed for effectiveness. “No Wildlife Disturbance Areas” can include a great deal of disturbance with “prior approval”. Ungulate removal is not committed to in this plan and impacts on *C. micronesica* conservation are dubious.

The finding that “military training activities...would result in less than significant direct and indirect impacts to *C. micronesica* is not merited. Conservation measures may not occur (are not committed to) and may not have any benefit to *C. micronesica*. The species has not been adequately studied or surveyed on Pagan. Training activities may well significantly negatively impact this species and the small Pagan population which is restricted in space.

Bulbophyllum guamense

This species has not been recently observed on Pagan. Yet, no detailed surveys have occurred. Adequate, detailed surveys must be conducted on Pagan for all native species before impacts of any activity can be addressed, assessed, minimized or mitigated.

4.9.4.1.2.4 Special-status Species: Migratory Bird Treaty Act-listed Species Alternative 1 (also 4.9.4.2.2.4 Alternative 2)

This section does not address any of the MBTA-listed bird species. Each species must be addressed and potential impacts on the species, its habitat, behavior, survival and reproductive success and population viability must be evaluated.

This section only states that impact *“would be similar to those discussed under the Native Wildlife section”*. Yet, there is no discussion of seabirds or migratory birds in that section. This analysis fails to present any impacts or responses of migratory birds to actions and is invalid. Impacts are *“expected to be less than significant”* but no reasons are given for this finding.

The range and habitat use of each species on Pagan must be surveyed and documented, and used to analyze the impact of activities on these species. Failure to do so (as is the case in the DEIS) is a clear violation of NEPA.

Disruptions and stressors due to the proposed actions, that will harm and decrease the viability of migratory birds on Pagan include:

- strike, and physical and noise disturbance caused by munitions and weapons fire;
- disturbance, physiologic stress and displacement due to foot traffic and ground-based maneuvers vehicle use, digging, excavating, equipment movements, camping and bivouacking;
- aircraft strikes, especially of seabirds;
- potential wildfire;
- highly likely introductions of non-native species;
- noise disturbance from aircraft;
- lighting at night which is well known to cause seabird mortality and injury;

Introduced species may well extirpate some MBTA-listed species on Pagan. This must be addressed for each MBTA-listed species in this DEIS.

4.10 Marine Biology

4.10.2 Resource Management Measures

4.10.2.2 Best Management Practices and Standard Operating Procedures

Appendix D Best Management Practices is cited but it is not specifically stated which Practice/Standard Operating Procedure Topic is being referred to.

4.10.2.2.1 Construction

“Erosion Control Measures” does not provide specific measures and methods as per each construction event.

No specifics are provided on the supposed Contractor Education Program.

4.10.3.1.1.1 Marine Habitat and Essential Fish Habitat

"These noise levels would result in temporary impacts to Essential Fish Habitat, with increased noise potentially causing some fish to move out of the loudest areas closest to the source."

Construction should not take place during fish spawning months.

"Injury due to peak sound pressure levels during impact pile driving would occur to fish within 30 feet (9 meters) of the pile being driven. Injury due to an accumulated sound exposure level during impact pile driving would occur to fish that remain within a distance of 928 feet (283 meters) for fish weighing more than 0.07 ounces (2 grams), or 1,715 feet (523 meters) for smaller fish, throughout an entire day of pile driving activity. The corresponding distances during vibratory driving or extraction are smaller, 52 feet (16 meters) for fish weighing more than 0.07 ounces (2 grams), and 95 feet (29 meters) for smaller fish."

This is an impact that is should be listed in Table 4.10-7.

"Pile driving activities at Tinian would occur during the daytime, and the effects would occur for a maximum of 105 days."

Dates are inconsistent with what was stated previously. The DEIS needs a specific timeline of proposed construction.

"Behavioral effects on fish during impact pile driving could extend to a distance of 20,695 feet (6.31 kilometers) from the pile."

This would constitute a disturbance extending within territorial waters of Tinian. This was not considered. Moreover there is no mention of bottom fish impacts from noise which is well within the action area. This impact pertains to Tinian and Pagan.

Under Tinian Alternative 1 or 2, construction of the amphibious landing ramp and causeways should not take place during coral spawning and fish spawning months to avoid major damage.

“Turbidity would be briefly and locally increased, but suspended sediments would either settle or be rapidly dispersed, with no long-term effects on photosynthesis.”

The DoD fails to provide reference to this claim.

“The primary physical impact of in-water construction would be to permanently convert complex and variable reef habitat to an essentially flat surface bordered by disturbed areas of coral rubble, sand, and scoured rock.”

The DoD fails to provide reference to this claim.

“The area impacted by physical disturbance at Unai Chulu during construction represents 0.34% of the total reef habitat on Tinian”

The calculation of total reef habitat is designated only as 0-12ft with lower points to 20ft, which fails to cover impacts to deeper and more-utilized areas by fishers.

“In the vicinity of Unai Chulu, coral populations would experience a population discontinuity within the construction footprint. Currently, this location is a continuous coral reef. It is expected the permanent loss of 0.34% of the Tinian reef habitat within and adjacent to the construction area at Unai Chulu would reduce non-coral marine invertebrates by a roughly equivalent amount.”

The ‘equivalent’ take assumption is not based on prior information.

4.10.3 Tinian

4.10.3.1.1.3 Marine Invertebrates

“A possible consequence of construction noise is that coral larvae may avoid settling and remain in the water column for a slightly longer time, drifting until the sound-generating activity subsides. Based on the level of disturbance at the construction site, it is unlikely that natural reef sounds like those made by snapping shrimp and reef fish would be present, where the habitat would be degraded and inhospitable for larval settlement.”

Construction and AAV or Landing Craft Air Cushion usage should not take place during coral spawning months.

Acoustic impacts to marine invertebrates were not adequately considered in this document for construction and operations. Further information is needed. Mitigation measures for acoustic disturbances should be included.

Some effort to relocate marine invertebrates such as but not limited to cnidarians, arthropods, mollusks, and echinoderms from the Amphibious Landing Ramp area prior to construction of the amphibious landing ramp should be considered.

4.10.3.1.1.4 Fish

"Fish are susceptible to acoustic stressors in multiple ways. Fish exposed to short-duration, high-intensity signals, such as those that emanate from pile driving, could result in injury, long-term consequences (A. N. Popper et al. 2006; Stadler and Woodbury 2009), and hearing loss, also known as a noise-induced threshold shift, or simply a threshold shift (Miller 1974). A temporary threshold shift is a temporary, recoverable loss of hearing sensitivity. Fish with hearing specializations (i.e., greater sensitivity to lower sound pressures and higher frequencies) experience some hearing loss after several days or weeks of exposure to increased background sounds, although the hearing loss seems to recover (e.g., Scholik and page 918)"

This is an impact that is should be listed in Table 4.10-7. This impact should also include marine invertebrates. Generally, acoustic impacts to marine invertebrates including but not limited to cnidarians, mollusks, arthropods, and echinoderms were not considered but should be.

4.10.3.1.1.5 Special-status Species

Corals

The DEIS lists Tinian beach landing sites as having “less than significant impact” to corals based on the small overall percentage of the coral reef on Tinian, however it failed to consider the uniqueness of low-relief beaches to maintaining diversity and resiliency of the island population. That is, the DEIS failed to compare the relative importance of beach landing sites to fish and invertebrates, and whether these may be more of a refugia for populations following catastrophic events. The DEIS failed to assess impacts to deeper water species. The proposed activities would have impacts on corals at greater depths because these areas have high relief and are relatively close to the action areas. Impacts include direct contact from sedimentation and rocks/coral rubble that would be washed to deeper waters following military exercises on the beach and inland. Moreover, mud and other debris attached to landing craft and personnel re-entering the water would also provide added sediments and loose rock/rubble to the surrounding area and to deeper waters. This was never addressed in the DEIS.

The DEIS indicates “less than significant impacts” on Pagan, but the DEIS provides no information on the amount of sediment loading to the reef. Increased sediment loads, and aberrant ordnance directly detonating on reef sites, will severely degrade the species abundance, diversity and overall health of corals, reducing structural integrity of the reef and increasing the susceptibility of Farallon de Medinilla to further coastal erosion.

The destruction of this geological formation will accelerate the mid-island breach, which would reduce protection of the leeward side of the island where much of the coral growth and habitat complexity resides. The windward side is conversely highly-impacted by wave and storm activity and this will be extended to the leeward side by breach of the land bridge. Increased

terrestrial bombings, clearings, land modifications will cause increased terrestrial runoff. Runoff usually contains dissolved inorganic nutrients, particulate organic matter and sediments which can affect light attenuation, water quality and substrate quality. This runoff will have negative effects on adult and juvenile corals.

Sedimentation will decrease coral calcification, fecundity, tissue thickness, zooxanthellae density, and photosynthesis and overall coral survival. Sedimentation will decrease coral settlement and metamorphosis, recruitment and juvenile growth and survival. These impacts were not properly assessed.

Amphibious assault of Tinian's beaches (Unai Babui, Unai Chulu and Unai Dankulo) will cause landing craft to come in direct contact with sensitive corals. The impact of proposed activities and their effects and by-products, including spent ordnance, refuse, on deep-water corals has not been evaluated.

Sea Turtles

The surveys performed for sea turtles lack a fundamental systematic sampling design in order to quantify populations and their distributions.

"Sea turtles occurring in the shallow waters of the Unai Chulu construction area would be subject to construction noise. In most cases, during the soft start procedure, sea turtles would either surface or swim away from the noise source and therefore avoid injury before maximum noise levels are reached. Over the course of construction, sea turtles may relocate at a distance where the noise would not further affect their behavior, or individual turtles may become habituated to the noise at disturbance levels between 160-190 decibels (Moein et al. 1994)."

This is an impact that is not listed in Table 4.9-11 or Table 4.10-7. Sea turtles such as *Chelonia mydas* are protected by the ESA. Important nesting and foraging habitat will be lost and/or degraded due to acoustic harassment. Impacts to sea turtles should be included in Table 4.9-11 or Table 4.10-7.

"Sea turtles in the southern Mariana Islands, including Tinian, are locally harvested"

Sea turtles such as *Chelonia mydas* are protected by the ESA and currently are not legally harvested.

Marine Mammals

The surveys performed for marine mammals lack a fundamental systematic sampling design in order to quantify populations and their distributions.

"Proposed construction would involve construction equipment and human activity on the beach in the shallow-water environment for approximately 36 weeks."

The time period is inconsistent with what was stated in section 4.10.3.1.1.1. The DEIS needs to include a specific timeline of proposed construction dates.

If sea turtles or marine mammals are noticed within 150 feet (46 meters) after in-water “construction work has begun, that work may continue only if the activity would not affect the animal(s). For example, divers performing surveys or underwater work would likely be permissible, whereas operation of heavy equipment is likely not.” The DoD must specify how these measurements will be quality controlled. There is no indication of the expertise of personnel to identify and measure (e.g. 150 feet) distances. Will equipment be used or will this just be estimated?

The DOD must provide specifics on the number of personnel and search area provided for each. Are these certain personnel trained in recognizing marine mammals?

“Personnel shall remain alert for marine mammals before and during pile driving. Pile driving will not commence if a marine mammal is observed within 300 feet (90 meters) or a sea turtle is observed within 50 feet (15 meters) of operation.”

The DoD must specify how these measurements will be quality controlled. There is no indication of the expertise of personnel to identify and measure (e.g. 300 feet) distances. Will equipment be used or will this just be estimated?

Minimal information is provided on impact and mitigation measures on marine mammals for the islands of Tinian and Pagan. There are documented populations of marine mammals specifically within the operational areas of Tinian and Pagan.

Numerous species of marine mammals (26+ species, 5 of which are listed under the ESA) utilize the nearshore and offshore waters of the CNMI. There are major concerns about the significant impact of construction and the chosen alternative actions on local populations. These include: Construction of nearshore sites, such as pile driving and mechanized equipment and personnel carriers will impose direct physiological threats as well as behavioral shifts. The “less than significant impact” listing in the DEIS were based on threshold levels that used an unrealistic model. Specifically, the total time of 10 minutes per day of sound to constitute 600 strikes (1 per second) failed to account for non-linear impacts of sound reverberation. The pilings will vibrate and have lower-frequency impacts that species such as residential Culver’s beaked whales are particularly sensitive to.

Unprecedented acoustic activity in the CNMI, including aberrant bombing on Pagan, would likely increase mortality of species that are closely related to nearshore habitats, including sperm whales (resident), humpback whales, false killer whales, and spinner dolphins. Disruption of marine mammals and their subsequent evasion of military activities may impose a significant energetic cost to species that must dive to great depths to obtain food.

The surveys performed under the DEIS, and subsequent assessment of “less than significant impact” are based on sampling methods that are impossible to statistically assess population size

or distribution. Thus, the assessment of “less than significant impact” is not scientifically valid. The DEIS fails to explain the reasons for unorthodox sampling to account for these numbers.

Comments on Chapter 5: Cumulative Impacts

This section must provide any evaluation of cumulative impacts from different planned or all proposed military and private developments, and the impact of climate change, on terrestrial wildlife, habitats or ecosystems. Moreover, this chapter or the previous chapter must assess the cumulative impacts of construction and operational activities proposed in the proposed actions, and the on cumulative impacts of proposed actions on Tinian and Pagan, on marine and terrestrial species and ecosystems. This DEIS is not valid unless the cumulative and combined impacts of construction and operations on Tinian and Pagan are considered.

Cumulative impacts that have not been addressed here include the impacts on coral reefs of the prepositioned ships off the shore of Saipan; impacts on community health of the many Formerly Used Defense Sites on Saipan, current and planned UXO removal on Saipan and Tinian. If the IBB move is not presented in the main chapters, it should at least be presented here.

Cumulative impacts were identified for the following resources within the Tinian study area: noise, airspace, land and submerged land use, recreational resources, terrestrial biology, marine biology, cultural resources. Within the Pagan study area, cumulative impacts were identified only for marine biology and cultural resources. All Pagan cumulative impacts must be identified for review and comment.

5.3.8.2.1 Study Area and Health of Resources Considered

The statements in this section fails to adequately reflect the recreational and commercial activities which have occurred or are planned for Pagan.

Comments on Chapter 6: Additional Considerations

Table 6.3-1. Unavoidable and Irreversible Significant Adverse Impacts

The table states that the proposed action on Tinian would result in unavoidable impacts of *“Operations in the High Hazard Impact Area would result in permanent loss of prime farmland soils.”* and that these unavoidable impacts that are irreversible/irretrievable.

The Tinian Lease Agreement (1983) states that the United States will “correct the damage”. It can be assumed that, should a lease agreement be formed for Pagan, a similar clause would apply. Thus any irreversible/irretrievable impacts would be a violation of both the current Tinian lease agreement and any future Pagan lease agreement.

Although it is stated that for geology and soils resources on Tinian, the proposed action on Tinian would result in unavoidable impacts of *“Operations in the High Hazard Impact Area would result in permanent loss of prime farmland soils.”* and that these unavoidable impacts that are irreversible/irretrievable, the same is not said for Pagan, even though the Pagan alternatives include high hazard impact areas. Since the types of ordnance proposed for bombardment of Pagan (e.g. 2000 lb. high explosive aviation ordnance, Table 2.5-4) are even stronger than for Tinian, it would be logical to assume that Pagan would suffer from the same, if not greater, irreversible/irretrievable impacts on soil and geology. The DoD must correct this omission or explain why the DoD thinks there would be no irreversible/irretrievable impacts on Pagan soils and geology as a result of the proposed action.

“Decreased access to recreational and cultural activity, and decreased likelihood that former Pagan residents or their ancestors would be able to re-settle or homestead the island.”

“Pagan residents or their ancestors” does not make sense. The DoD must change to *“Pagan residents or their descendants”*

Decreased access to recreational and cultural activity, and decreased likelihood that former Pagan residents or their “ancestors” (sic) would be able to re-settle or homestead the island. The DoD claims that this is a reversible/retrievable impact. Given that the DoD acknowledge in Section 6.4 that *“the training would continue well into future generations”*, making it more or less permanent, this impact should be acknowledged as irreversible/irretrievable.

6.3 Unavoidable significant adverse impacts

“The unavoidable impacts are similar among the action”(sic)

The DoD appears to have neglected to include the “no action” alternatives for Tinian and Pagan when making this statement, otherwise to claim that the unavoidable impacts are the same among actions is illogical

The DoD must include the “no action” alternatives for Pagan and Tinian when assessing unavoidable impacts, and acknowledge that there are major differences between the no action alternative and Alternatives 1, 2 and 3 for Tinian and 1 and 2 for Pagan.

REFERENCES

- Amidon, F. 2009. Vegetation Surveys on Tinian and Aguiguan. Pp. 8-18 in *Terrestrial Resource Surveys of Tinian and Aguiguan, Mariana Islands, 2008 – Final Report*. Pearl Harbor, HI: Prepared by U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office for Marine Forces Pacific and Naval Facilities Engineering Command Pacific.
- Amidon, F., A. Marshall, & C. Kessler. 2011. Status of the Micronesian Megapode in the Commonwealth of the Northern Mariana Islands. In *Marianas Expedition Wildlife Surveys 2010: Terrestrial Resource Surveys of Pagan, Commonwealth of the Northern Mariana Islands*. Pearl Harbor, HI: Prepared by U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, HI for U.S. Marine Corps and Naval Facilities Engineering Command, Pacific.
- Army Corps of Engineers. (1961). *Cratering from High Explosive Charges, Analysis of Crater Data* (Technical Report No. 2-547).
- Berger, G. M., J. Gourley & G. Shroer. 2005. *Comprehensive Wildlife Conservation Strategy for the Commonwealth of the Northern Mariana Islands*. Portland, OR: Prepared by CNMI Department of Lands and Natural Resources, Division of Fish and Wildlife for National Advisory Acceptance Team, Migratory Birds and State Programs, U.S. Fish and Wildlife Service. Chee 2008 Makpo.
- Brooke, A. 2009. Mariana Fruit Bat on Tinian and Aguiguan. Pp. 269-272 in *Terrestrial Resource Surveys of Tinian and Aguiguan, Mariana Islands, 2008 – Final Report*. Pearl Harbor, HI: Prepared by U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office for Marine Forces Pacific and Naval Facilities Engineering Command Pacific.
- Cowardin, L. M., V. Carter, F. C. Golet, & E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. Washington, D.C.: U.S. Department of the Interior, Fish and Wildlife Service.
- Division of Fish and Wildlife. 2000. Wildlife and Vegetation surveys Pagan 2000. Technical report #7 CNMI-DFW. Unpublished report by CNMI Division of Fish and Wildlife, Wildlife Section with assistance from The Northern Mayor's Office. Saipan, MP.
- Department of the Navy. 2013b. *Final Wetlands Management Plan for the Mariana common moorhen, Tinian Military Lease Area, Commonwealth of the Northern Mariana Islands* (December). Pearl Harbor, HI: Naval Facilities Engineering Command, Pacific.
- Department of the Navy. 2013c. *Annual Report for Biological Opinion for the Mariana Islands Range Complex (MIRC), Guam and the Commonwealth of the Northern Mariana Islands 2010-2015* (2009-F-0345), 01 October 2012 – 30 September 2013. Pearl Harbor, HI: Prepared by Naval Facilities Engineering Command, Pacific and Naval Facilities Engineering Command Marianas. DoN. 2014. Mariana common moorhen Surveys of the Bateha and Mahalang Wetlands, MLA, Tinian. Prepared by PCR Environmental, Inc., Barrigada, Guam for NAVFAC Marianas, Guam. June.
- Eldridge, L. G., & C. M. Smith. 2001. *A Guidebook of Introduced Marine Species in Hawai'i*. Bishop Museum Technical Report 21. Honolulu, HI.

- Evenhuis, N. L., L. G. Eldredge, K. T. Arakaki, D. Oishi, J. N. Garcia, & W. P. Haines. 2010. Terrestrial Arthropod Surveys on Pagan, Northern Marianas. Pp. 2-72 in *Marianas Expedition Wildlife Surveys 2010: Terrestrial Resource Surveys of Pagan, Commonwealth of the Northern Mariana Islands*. Pearl Harbor, HI: Prepared by U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, HI for U.S. Marine Corps and Naval Facilities Engineering Command, Pacific. Hawaiian Agronomics (International), Inc. 1985. Final Report for Flora and Fauna Survey of Tinian, Northern Mariana Islands (U.S. Navy Contract N62742-84-C- 0141) Volume I of II. Honolulu, HI.
- Farrell, D. A. 2012. *Tinian: A Brief History*. Pacific Historic Parks, Honolulu, HI.
- Government of CNMI and United States of America. 1999. *Dedication of Tinian Military Retention Area Land for Wildlife Conservation*.
- Hawaiian Agronomics International, Inc. 1985. *Final Report for Flora and Fauna Survey of Tinian, Northern Mariana Islands*. Honolulu, HI: Prepared for Commander, Pacific Division, Naval Facilities Engineering Command.
- KUAM 2014. New algae in southern Guam bewilders biologists. KUAM August 20, 2014.
- Liske, J.J. and D.R. Burdick. In prep. 2015 Wildlife Action Plan for the Commonwealth of the Northern Mariana Islands. CNMI DLNR-Division of Fish and Wildlife, Saipan.
- Marianas Avifauna Conservation Working Group. 2013. Marianas Avifauna Conservation (MAC) plan: long-term conservation plan for the native forest birds of the Northern Mariana Islands. CNMI Division of Fish and Wildlife, Saipan, & U.S. DOI Fish and Wildlife Service, Honolulu, Hawaii.
- Marshall, A. P. & F. A. Amidon. 2010. Status of the Land and Wetland Avifauna of Pagan, Mariana Islands. In *Marianas Expedition Wildlife Surveys 2010: Terrestrial Resource Surveys of Pagan, Commonwealth of the Northern Mariana Islands*. Pearl Harbor, HI: Prepared by U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, HI for U.S. Marine Corps and Naval Facilities Engineering Command, Pacific.
- Marshall, A. P., P. A. Radley, J. E. Bradley, J. Lepson, C. Kessler, and F. A. Amidon. 2010. Bird List Northern Mariana Islands Bird Surveys, 2010. Appendix 3 Amidon, F., Marshall, A., & Kessler, C. 2011. Status of the Micronesian Megapode in the Commonwealth of the Northern Mariana Islands. In *Marianas Expedition Wildlife Surveys 2010: Terrestrial Resource Surveys of Pagan, Commonwealth of the Northern Mariana Islands*. Pearl Harbor, HI: Prepared by U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, HI for U.S. Marine Corps and Naval Facilities Engineering Command, Pacific.
- Moore, P., L. Raulerson, M. Chernin, and P. McMakin. 1977. *Inventory and mapping of wetland vegetation in Guam, Tinian and Saipan, Mariana Islands*. Prepared for: The United States Army Corps of Engineers, Pacific Ocean Division, Fort Shafter by University of Guam Biosciences.
- National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1998. *Recovery Plan for U.S. Pacific Populations of the Green Turtle (Chelonia mydas)*. National Marine Fisheries Service, Silver Spring, MD.

- Nexreg Compliance Inc. 2012. Material Safety Data Sheet – Class N Pozzolan. Nevada Cement Co.
- Pratt, L. W. 2010. Vegetation Assessment of Forests of Pagan Island, Commonwealth of the Northern Mariana Islands. In *Marianas Expedition Wildlife Surveys 2010: Terrestrial Resource Surveys of Pagan, Commonwealth of the Northern Mariana Islands*. Pearl Harbor, HI: Prepared by U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, HI for U.S. Marine Corps and Naval Facilities Engineering Command, Pacific.
- Purebase Inc. 2015. Raw Pozzolan Safety Data Sheet.
- Reichel, J.D., G.J. Wiles, and P.O. Glass. 1992. *Island extinctions: The case of the endangered nightingale reed-warbler*. Wilson Bulletin 104, 44-54.
- Richardson, M., USFWS, S. Lee and C. Campora. 2009. General insect surveys on Tinian and Aguiguan. Pp. 19-49 in *Terrestrial Resource Surveys of Tinian and Aguiguan, Mariana Islands, 2008 – Final Report*. Pearl Harbor, HI: Prepared by U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office for Marine Forces Pacific and Naval Facilities Engineering Command Pacific.
- Tinian Lease Agreement. January 6, 1986. Lease Agreement Made Pursuant to the Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union of the United States of America.
- Trusdell, F., R. Moore, M. Sako. 2006. *Preliminary Geologic Map of Mount Pagan Volcano, Pagan Island, Commonwealth Of The Northern Mariana Islands*. Open-File Report 2006-1368.
- U.S. Fish and Wildlife Service. 1988. *Recovery Plan for the Micronesian Megapode* (Megapodius laperouse laperouse). U.S. Fish and Wildlife Service, Portland, Oregon.
- U.S. Fish and Wildlife Service. 1992. *Recovery Plan, Mariana Islands Common Moorhen*, Gallinula chloropus guami. U.S. Fish and Wildlife Service, Portland, Oregon.
- U.S. Fish and Wildlife Service. 2009. *Draft Revised Recovery Plan for the Mariana Fruit Bat or Fanihi* (Pteropus mariannus mariannus). U.S. Fish and Wildlife Service, Portland, Oregon.
- U.S. Fish and Wildlife Service. 2014. *Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for 21 Species and Proposed Threatened Status for 2 Species in Guam and the Commonwealth of the Northern Mariana Islands; Proposed Rule*. Federal Register. 79 (190), 59364–59413.
- U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration. 2015. *Endangered and Threatened Species; Identification and Proposed Listing of Eleven Distinct Population Segments of Green Sea Turtles* (Chelonia mydas) *as Endangered or Threatened and Revision of Current Listings*. Federal Register 80 (55), 15272–15337.
- Zarones, L. In prep. *Dendrobium guamense* observations on Saipan, Commonwealth of the Northern Mariana Islands. Department of Lands and Natural Resources Report.
- Zarones, L., and E. Derrington. In prep. Survey of ephemeral wetlands, Tinian. DLNR and DCRM Report.

- Zarones, L, J. Liske-Clark, T. Willsey and R. Ulloa 2015a. Preliminary survey of three Mariana Island endemic epiphytic orchids *Dendrobium guamense*, *Bulbophyllum guamense* and *Tuberolabium guamense* on Rota, CNMI. Division of Fish and Wildlife and Department of Lands and Natural Resources Report.
- Zarones, L., J. Liske-Clark, T. Willsey, P. Perez. 2015b *Dendrobium guamense* observation on Aguiguan, Commonwealth of the Northern Mariana Islands. Division of Fish and Wildlife and Department of Lands and Natural Resources Report.