December 11, 2013

MITT EIS/OEIS Project Manager
Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134

Subject: Environmental Impact Assessment Comment on the Marianas Islands Training and Testing Activities, United States Department of the Navy

Dear Sir/Madam,

The Commonwealth of the Northern Mariana Islands (CNMI) Department of Land & Natural Resources Division of Fish & Wildlife (DFW) appreciates having the opportunity to share its concerns on the Draft Environmental Impact Assessment (EIS) on the Marianas Islands Training Testing (MITT) Activities, United States Department of the Navy. This review contains comments on the overall validity of the EIS, the credibility of risk to marine and terrestrial environments and cultural and socioeconomic conditions, and the requirements by the EIS and U.S. Department of the Navy to assure adequate protections.

General concerns. Proposed activities will have significant impacts on the ecological, cultural, and socioeconomic resources of the CNMI and its surrounding waters. Some impacts, such as the degradation of landscapes, restriction of access to resource users, and the diminishment of cultural value are impossible to monitor, measure, mitigate, and recover. DFW is particularly concerned about the cumulative impact of military buildup and training activities (including the MITT, MIRC, CJMT, Divert, etc.) will have in its jurisdiction.

- The EIS lacks basic information required to assess ecological, socioeconomic and cultural risk.
- DLNR and DFW are rarely afforded the opportunity to conduct independent, third-party monitoring of the impact of ongoing military training activities, particularly those at sea and on remote northern islands in the archipelago.
- Few data collected by Department of Defense (DOD) and its contractors in monitoring and mitigation activities associated with prior and ongoing training activities in the region are shared with DFW. DFW is thus prevented from monitoring or knowing the real impact of military activities in its territorial waters and terrestrial habitats. DLNR and DFW are also prevented from being able to model or predict the likely impact of DOD training activities in its jurisdiction.
• DLNR and DFW are rarely invited to collaborate with DOD on the design, execution, and scientific review of monitoring activities.

• Military activities are presented in “number of activities per year”, not specific durations or seasonality of the activities (e.g. Table 2.8-1, Baseline and Proposed Training Activities).

• Dates and locations of activities are not provided, so added cumulative impact of training activities (ecological, cultural and/or socioeconomic) cannot be predicted or monitored. Activities occurring consecutively versus concurrently would cause significant hardship in exclusion zones within the Restricted Area (Farallon de Medinilla, R-7201 and R-7201A) and Danger Zones near Tinian and Farallon de Medinilla, especially if they are spatially or temporally overlapped with commercial and sport fishing activity. Additive/consecutive activities would instill a level of chronic environmental risk.

• Tinian’s map (3.6-18) shows no Danger Zone for surrounding waters. It is not clear if shoreline excursions will prevent access to surrounding waters during the time of these exercises.

• The EIS ignores the environmental impacts of increased bombing activities in waters surrounding Farallon de Medinilla, specifically within the 3 nm permanent Restricted Area (R-7201). There is a strong likelihood that aberrant ordnance will adversely affect the surrounding coral reef and associated fauna (fish, sea turtles, and marine mammals). The EIS should provide an ordnance-specific probability estimation of land versus sea detonation based on known target success of the specific weapons applied.

• There are few detailed maps showing coral habitat for Farallon de Medinilla (contrast Section 3.3-11 to the maps provided for Tinian in Section 3.3-12). Military-funded surveys have been performed on Farallon de Medinilla in the past, and data from these surveys should be incorporated on the standard series of maps.

• Section 3.3 – Marine Habitats contains all other affected islands except Farallon de Medinilla. This should be addressed in the context of increased ordnance on Farallon de Medinilla with all alternatives presented.

• The EIS ignores some of the most apparent activities that impose risk to surrounding fauna. Some examples include the impact of amphibious landings on turtles and corals, and the increasing bombing activity of Farallon de Medinilla.

• The real ecological impact of proposed activities will be observed and described by DOD-affiliated observers. Such observers have the potential to underreport or report with bias the impact of activities. The proposal does not provide for independent assessment of the impact of proposed military activities.

• The level of access that non-military personnel will have to Farallon de Medinilla in the three-mile exclusionary zone is not well-described.

• Subsurface activities, including anti-submarine warfare, electronic warfare, sonar use, and ordnance detonation on or near seamounts will have significant impacts on populations of marine habitats and animals, including cetaceans, fish, and marine invertebrates.

**Sediments and water quality.** Sedimentation in proximity to land-based activities on Farallon de Medinilla and Tinian will adversely affect nearshore habitats. The EIS’s claims of localized long and short term impact are valid. However, the EIS ignores sedimentation as a significant concern.

• The increased level of bombing and disturbance of soil on Farallon de Medinilla imposes a significant risk to surrounding corals and other sessile invertebrates. The EIS focuses on
the in-water impacts of explosives and potential contamination from ordnance, which will have local and short-term negative impacts. Bombs up to 2000 lbs. will significantly disrupt soil and increase sedimentary load on surrounding reefs.

- Aberrant ordnance around Farallon de Medinilla will decimate surrounding corals and cause mortality of sea turtles, marine mammals, and fish, and it will damage critical fish habitat.
- Amphibious assault with heavy equipment along the shores of Unai Babui, Unai Chulu and Unai Dankulo will increase sediment loads to the nearshore reefs, impacting corals and decreasing quality of fish habitat. The EIS speculates that impacts would only be temporary. However its assessment is only based on short-term observation, and it ignores the 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.

**Sea turtles.** There is significant risk in military activities having an adverse impact on local sea turtle populations. The draft EIS states a limited impact. However, it largely ignores the increased level of ordnance use on Farallon de Medinilla and impact of amphibious assault on Tinian’s beaches.

- Amphibious assault on Tinian’s beaches of Unai Babui, Unai Chulu and Unai Dankulo will impact fragile nesting habitat for green sea turtles. Heavy equipment will crush buried nests and compact the surrounding substrate, reducing suitability as a continued nesting site.
- The EIS, assuming only land strikes of ordnance, ignores the potential impact of abberant ordnance on pelagic sea turtles around Farallon de Medinilla. Green (threatened), hawksbill (endangered), loggerhead (endangered), olive ridley (threatened), and leatherback sea turtles (endangered) utilize nearshore habitats and reef sites as a refuge from predators and for grazing and reproduction. The sparse available habitat for such activities across the CNMI underscores the ecological significance of each island unit. Although the EIS indicates a lower abundance of sea turtles around Farallon de Medinilla relative to other islands, this does not preclude Farallon de Medinilla’s importance as critical habitat.
- The EIS states a low risk of entanglement based on the relatively small size of the parachutes (45 cm diameter) with “short lines” (page 3.4-177), however it is not indicated if all are negatively buoyant (only stating that most have weights). A drifting parachute would pose a significant risk to sea turtles, which may ingest or feed in proximity to the object and become entangled. The estimation of 8,000 parachutes/decelerators per year is large, and indicates a potential risk for entanglement.
- Amphibious assault and amphibious raids at Unai Babui, Unai Chulu, and Unai Dankulo on Tinian during turtle nesting seasons will disrupt the breeding success of green and hawksbill sea turtles.
- Active low frequency acoustic sources such as the active sonar used by anti-submarine warfare sonars associated with the Littoral Combat Ship, the impact of non-explosive munitions, large vessel ship-radiated noise, and explosive devices emanating frequencies in the range of 300-400 Hz would impact the hearing of sea turtles. If their hearing is
compromised, then their ability to navigate and detect predators (the latter is probably the more salient function of hearing in sea turtles) would be negatively affected.

- Activities such as ship movement, munitions use, and the use of active low frequency acoustical devices in areas where marine downwelling gathers and aligns buoyant material (including dispersed food resources in surface waters) would affect sea turtles that congregate at these convergences in their pelagic stage.
- Proposed monitoring and surveillance of sea turtle nesting activity (including nest locations) is insufficient to identify fresh nests and body pits. Daily monitoring before and constant monitoring during military exercises and beach use is required to adequately reduce impact of amphibious training activities. Monitoring by an independent (i.e. not employed or contracted by the Department of Defense) party specially trained in sea turtle nest location is required to provide objective and non-biased assessments of the effect of military activities on sea turtle nesting success and behavior.

**Marine mammals.** Numerous species of marine mammals (26+ spp., 5 Endangered) utilize the nearshore and offshore waters of the CNMI. Although most activities will be performed in excess of 12 nm off shore, there are some concerns about the impact of acoustic activities and submarine explosives on local populations. These include:

- Use of sonar, underwater explosives, and other acoustic devices will have an adverse impact on whales and dolphins, especially residential Culver’s beaked whales which have shown mortality, injury and evasion in response to Navy acoustic activities.
- Unprecedented acoustic activity, including aberrant bombing on Farallon de Medinilla, 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.
- The use of tethered parachutes (total 8,000/year) risks entangling marine mammals. The EIS states the parachutes are mostly weighed; however, they do not provide specific information on the actual weight and known sinking rate of the device.
- 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 use of global-scale population estimates instead of local stocks is insubstantial.

**Corals.** The CNMI has a high-diversity of corals, a number of which are being considered for listing as threatened (38 spp.) or endangered (2 spp.). Corals provide critical fish habitat for reef and bottom fish species, and therefore are integral in the health and sustainability of the CNMI’s fisheries and tourism industry. Corals are also important because they prevent shoreline erosion by buffering ocean waves. Activities offshore will impact corals. The greatest effects will be on Farallon de Medinilla and Tinian.

- Farallon de Medinilla will have greater bombing activity on the land causing increased sediment loads.
- Aberrant ordnance directly impacting reef sites will diminish species abundance and diversity, and the overall health of corals. It will reduce structural integrity of the reef and increase the susceptibility of Farallon de Medinilla to coastal erosion.
- Increased bombing activities of Impact Areas 3 and 2 (live/inert ordnance) on Farallon de Medinilla will compromise the “land bridge” between the two target areas. 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, photosynthesis, and overall coral survival. Sedimentation will decrease coral settlement and metamorphosis, recruitment and juvenile growth and survival.
- 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 (EIS Figure 3.3-3).
- The impact of proposed activities and their effects and by-products, including spent ordnance, refuse, and used sonobouys, on deep corals has not been evaluated.

**Fish.** The EIS states that most activities will be in deeper waters and therefore will have a low risk to fish. This is likely accurate in deeper, offshore waters (>25 nm). The EIS is speculative regarding impacts to fish <25 nm from Farallon de Medinilla and Tinian.

- Increased bombing of Farallon de Medinilla will impact 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 hundreds of meters.
- Increased bombing on Farallon de Medinilla will impact five pomacentrid species of fish, and the Napoleon wrasse (*Cheilinus undulatus*), that have been proposed for listing under the Endangered Species Act. Increased use of 2000 pound bombs on Farallon de Medinilla increases the potential for impact on surrounding reef fish.
- Increased bombing activity will impact the genetic continuity of reef fish populations in the Mariana Archipelago. Bombs reaching the nearshore will kill reef fish, remove multiple year classes, and homogenize coral reef structure.
- A decrease in the functional diversity of the reef surrounding Farallon de Medinilla will decrease grazing by herbivorous fish would likely increase algal production and out-competing of corals.
- No information (past or current) on reef fish populations or densities from Farallon de Medinilla, including reef fish habitat, are available to allow for an assessment of probable impacts from aberrant ordnance within the nearshore (<3 nm) waters of Farallon de Medinilla.
- The use of tracked landing craft on Tinian will crush delicate corals and decrease critical fish habitat. Nearshore waters and their complex habitats are used by nearly all reef fish as nurseries and more pelagic species of jacks. The EIS ignores the impact of these habitats on local fish recruitment and also utilization of adult fish.

**Marine invasive species.** Increased shipping activity and associated fouling and ballast-water organisms will introduce marine organisms to nearshore habitats, especially on Tinian. The EIS claims the likelihood of introducing invasive species is negligible-low, however the occurrence of invasive ship-related organisms in Hawai‘i and Guam (Eldridge & Smith 2001, *A Guidebook of Introduced Marine Species in Hawai‘i*) suggests there is minimally a
moderate chance for introduction of marine invertebrates to the CNMI. Once introduced, marine species are nearly impossible to eradicate, and the consequences of introductions are impossible to predict. The EIS’s findings appear more based on speculation and ignoring of the known threats that fouling and ballast water as vectors of marine invasive species.

**Forest birds.** Proposed activities in the Marpi Maneuver Area (Saipan), Military Lease Area containing North Field (Tinian), in and around the Rota International Airport, and in forested and well-vegetated areas on Rota have the potential to negatively affect the population integrity and breeding biology of numerous forest bird species though habitat modification and human disturbance. Noise, movement, and the physical disruption of nests and roost sites would result in “take” of federally and locally protected species, or contribute to the decline of species of conservation concern.

- Land navigation training, airfield seizure activities, airfield expeditionary training, and ground disturbance (pedestrian and vehicular traffic) in forested and other densely-vegetated areas of the Marpi Maneuver Area will affect breeding and territory use of the federally and locally endangered Micronesian megapode and nightingale reed-warbler; the locally protected Mariana fruit dove, white-throated ground dove, collared kingfisher, Micronesian starling, rufous fantail, and golden white-eye. The golden white eye currently appears to be in decline in this area.
- Field training exercises in the Marpi Maneuver Area, particularly in or near cave entrances and in open grasslands where insects are abundant, would affect foraging, roosting, and breeding behavior of federally and locally protected Mariana swiftlets.
- Ground disturbance and aircraft and aerial target strikes in the Tinian Military Lease Area would negatively affect the breeding biology of Tinian monarchs. Monarchs nest between 1 to 4 meters off the ground in tangan tangan thickets. Disturbance occurring during the breeding season would result in nest abandonment and adult/chick mortality. If reproductive success is significantly affected, the Tinian monarch would be re-evaluated for federal protection under the Endangered Species Act. Collisions between aircraft and Tinian monarchs are also possible.
- Special warfare training, parachute insertion, reconnaissance, field training exercises, aircraft overflight noise and prop wash from both fixed and rotary wing aircraft, exhaust from diesel-fueled vehicles, and combat search and rescue training in or near essential habitat for Mariana crows and Rota bridled-white eyes on Rota would result in the disruption of breeding activities for either or both species. Collisions between aircraft both Mariana crows and Rota bridled white-eyes are also possible.
- Ground based activities including pedestrian and vehicular traffic in and around the Dugi area of Rota would negatively affect the behavior and habitat use of the critically endangered Guam rail, an endemic groundbird species that was extirpated from the CNMI but recently reintroduced as an experimental population. Evidence of this population breeding in the wild was first collected in 2013.
- Ordnance use, extreme noise by fast and low passing jets, and aircraft and aerial target strikes on Farallon de Medinilla will kill and negatively affect the breeding biology of Micronesian megapodes, and it will negatively affect the behavior and reproduction of white-throated ground doves.

**Water birds.** Special operations and land navigation training activities in or near permanent or ephemeral freshwater impoundments on Saipan, Tinian (mostly), and Rota (nominally) would affect the use of these impoundments by birds that rely on them for foraging, breeding,
and refuge. The species of greatest concern is the federally endangered Mariana common moorhen. Other species of concern include the yellow bittern and various migratory ducks that transit the CNMI seasonally. These birds are protected by the migratory Bird Treaty Act. Reed beds surrounding freshwater impoundments have potential to host federally endangered nightingale reed-warblers.

- Special purpose Marine air ground task force; intelligence, surveillance, and reconnaissance, and field training exercises in or near terrestrial freshwater impoundments in the Marpi Maneuver Area (in ephemeral and constructed sources) and Lake Hagoi on Tinian would disrupt the foraging and breeding activities of federally and locally protected Mariana common moorhens and federally protected migratory waterfowl such as pintail ducks.
- Human activity including pedestrian and vehicular traffic and special operations in reed beds, swampy areas, or water impoundments would interfere with territory use and the reproductive success of nightingale reed-warblers. However, this concern is nominal because the most likely location where such activities would occur around Lake Hagoi, and in borrow pits and bomb craters that fill with water during the rainy season, on Tinian – and nightingale reed warblers do not occur on Tinian.

**Migratory sea birds.** Amphibious landings, ordnance use, and human activity in and around the coast and littoral zones on Saipan, Tinian, and Farallon de Medinilla will impact individuals and groups of migratory wading birds and water birds that are either year-round residents or (more commonly) use the CNMI as a stopover point on their biannual migration pathways. These birds are locally valuable because, in many cases, they represent the only populations that occur in the CNMI, and they would be important demes or components of larger regional groups. In most cases, species of concern are protected by the Migratory Bird Treaty Act. In some cases (i.e. short-tailed albatross, Hawaiian petrel, and Newell's shearwater), species are protected by the Endangered Species Act.

- Increased traffic, bilge water release, and oil leakage in the Port of Saipan, Rota Harbor, and Tinian Harbor will affect foraging habits of a wide variety of shorebirds and wading birds such as Pacific golden plover, gray-tailed tattler, whimbrel, ruddy turnstone, lesser sand plover, black-winged stilt, common sandpiper, intermediate egret, little egret, and red-necked stint.
- Special warfare training on or near cliffs or forested roost sites in the Marpi Maneuver Area will affect the breeding of red-tailed tropicbirds, brown noddies, black noddies, and brown boobies.
- Special warfare, amphibious training activities, humanitarian assistance/disaster relief operations, special purpose Marine air ground task force exercises, and noise and prop wash from rotary-winged aircraft at Puntan Masalok, Puntan Lamanibot, and Unai Dankulo will affect the roosting and breeding activity of black noddies, brown noddies, brown boobies, and Pacific reef herons.
- Amphibious landings on Tinian landing beaches will affect foraging migratory shorebirds, including Pacific golden plovers, whimbrels, and gray-tailed tattlers.
- The use of large-sized or a large volume of Mark 77 (incendiary) and Mark 80 series (high explosive) series bombs on Farallon de Medinilla will increase risk of wildfire on the island, which would kill or destroy vital habitat for tree- and forest-nesting birds such as the Micronesian megapode and red-footed booby.
• The excessive overpressure, shock waves and noise (>100 dBA) from the detonations will be sufficient to frighten birds away from the area. This departure will be especially detrimental during mating and nesting periods.

• Byproducts of detonation, including flame, heat, light, and hot gasses from Mark 82 (500 pound), Mark 83 (1000 pound), and Mark 84 (2000 pound) bombs on Farallon de Medinilla risk eliminating or negatively affecting whole colonies of breeding birds from explosive or percussive force and shrapnel.

• Excessive radiant heat from trimethylaluminum and triethylaluminum combustion in Mark 80 series (high explosive) ordnance in or near rookeries in the northern and southern forested areas and the eastern sea caves of Farallon de Medinilla will kill and affect the breeding biology of white-tailed tropicbirds, red-tailed tropicbirds, brown noddies, black noddies, red-footed boobies, brown boobies, masked boobies, sooty terns, and great frigate birds.

• The use of high explosives in smoke, tracer, illumination, and incendiary munitions containing white phosphorus will encourage smoke inhalation by birds and will acidify soil and plant tissue. The acid, until it is degraded by sunlight and microorganisms, will be adsorbed onto food items and come into contact with the tissues of ground-dwelling birds such as the Micronesian megapode and white-throated ground dove, damaging these tissues.

• White phosphorus will cause injuries and death in organisms by burning deep into tissue, by being inhaled as a smoke, and by being ingested. White phosphorous sticks to the skin of organisms. Phosphorus burns carry a greater risk of mortality than other types of burns due to the absorption of phosphorus into the body through the burned location, resulting in significant organ, notably liver, damage.

• Burning white phosphorus produces a hot, dense, white smoke consisting mostly of phosphorus pentoxide which, in even moderate concentration, will irritate the eyes, mucous membranes, and respiratory tracts of wild animals.

• White phosphorus particles in the air may acquire a protective coating that makes them unreactive for several days. In water, white phosphorous slowly reacts with dissolved oxygen and may persist for hours to days. Chunks of white phosphorus coated with protective layers may persist in water and soil for years if oxygen levels in water and soil are low. White phosphorus will bioaccumulate in fish in contaminated water and in birds in contaminated areas.

• The use of high explosives containing thermitites will result in the deposition of heavy metal residues that contain chromium, manganese, iron, barium, and lead (depending on the composition of the thermitites that are used) on the surface of Farallon de Medinilla. Heavy metal residues will be adsorbed onto soil, bioaccumulated in low trophic-level organisms (including microorganisms, plants, and soil-dwelling animals), and ingested by ground-feeding birds such as the Micronesian megapode and white-throated ground dove.

• Heavy metals will also be washed into the ocean in precipitation and erosion events and bioaccumulated in fish that are ingested by white-tailed tropicbirds, red-tailed tropicbirds, brown noddies, black noddies, red-footed boobies, brown boobies, masked boobies, sooty terns, and great frigate birds. These heavy metals are toxic in relatively small concentrations.

• It is reasonable to expect that a proportion of the detonations in the proposed bombing and shelling locations will be low-order. Low-order detonations will result in the deposition of large quantities of toxic high explosives in soil and water. There is, furthermore, potential for delayed detonations as a result of impacts by organisms. The deposition of unexploded
ordnance on and around Farallon de Medinilla will create a persistent physical hazard for wildlife and human users of the island and its coastal waters.

- The use of chemically-propelled munitions and high explosives, particularly when low-order detonations occur, will result in the deposition of propellant constituents such as nitroglycerin, perchlorate, and unbound propellant fibers – and explosive constituents such as 2,4,6-trinitrotoluene (TNT), hexa-hydro-1,3,5-trinitro-1,3,5-triazine (RDX), octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), and trimethylaluminum and triethylaluminum powder – in the soil on Farallon de Medinilla. Accumulation of these substances on and in the soil (TNT and perchlorate adsorb to soil, and they can be transported during soil erosion) and the biological transformation of TNT into highly toxic metabolites such as 2,6-DNT and 2,4-DNT will result in the poisoning of ground-feeding birds such as the white-throated ground dove and the Micronesian megapode. Migration of these chemicals through the soil to the coastal and pelagic zones surrounding the island (RDX and HMX are known to migrate through soils) will result in the poisoning of corals, fish, and piscivorous birds such as white-tailed tropicbirds, red-tailed tropicbirds, brown noddy, black noddies, red-footed boobies, brown boobies, masked boobies, sooty terns, and great frigate birds. Accumulation of these substances would also result in the risk of an explosive hazard.

- Decelerators and parachutes used on ordnance that are not destroyed in the blast risk entangling land birds and choking seabirds that ingest them (if they are washed into the ocean they risk being mistaken for prey items such as squid).

- Ordnance use on Farallon de Medinilla or small rock islets or atolls in the MITT area will displace or kill the federally endangered short-tailed albatross, Hawai’ian petrel, and Newell’s shearwater.

- Disruption of brown, red-footed, and masked booby nests will have particularly devastating effects for the reproductive success these species, since brown and masked boobies are socially monogamous, and all boobies exhibit bi-parental care.

- Ordnance use and associated erosion on the island will likely negatively impact seabirds that forage on the bottom- and reef-breeding fishes of Farallon de Medinilla’s productive fishery.

**Terrestrial mammals.** Two terrestrial mammals, the Mariana fruit bat and Pacific sheath-tailed bat, are endemic to the CNMI, but proposed activities are only likely to directly impact the fruit bat. Fruit bats are extremely sensitive to human presence and activity, including sight, low amplitude (40-60 dB, although only anecdotal data exist) noise, and scent. Pacific sheath-tailed bats only occur in the CNMI on Aguiguan, but their historic range includes Saipan, Tinian, and Rota. Some interisland dispersal would still occur, and reintroduction of this species to Rota is presently being considered. No proposed activities in the MITT EIS are likely to affect this species, but low-ceiling flights and use of cave entrances would affect this species’ likelihood to colonize unused habitat and range. Mariana fruit bats are listed as threatened under the Endangered Species Act, and Pacific sheath-tailed bats are candidate species for listing.

- Aircraft noise, land navigation training, special warfare training, and ground disturbance (pedestrian and vehicular traffic) in limestone and ravine forest on Rota and the Marpi Maneuver Area would negatively affect roosting and breeding colonies and foraging habits of Mariana fruit bats. Low flying aircraft and ground based maneuvers would potentially result in adult flushing and pup abandonment.
• Close air support for urban warfare training in “mock urban environments” on Rota would disrupt colonies of Mariana fruit bats.
• Ordnance use on Farallon de Medinilla will destroy Mariana fruit bat habitat and likely kill individuals of this species. Killing breeding adults would have particularly significant effects, since long-term maternal care is required for the successful rearing of young.

Terrestrial reptiles. CNMI hosts two species of endemic geckos (the Micronesian gecko and the slender-toed gecko) and two species of skinks (the tide-pool skink and the Slevin’s skink). All are believed to be in decline (some significantly) and are of particular conservation concern. Habitat disturbance and modification and the promotion of reptilian competitors such as the common house gecko are the biggest threats to CNMI’s endemic terrestrial reptiles.

• Amphibious assault and amphibious raids at Unai Chulu would negatively impact suspected tide-pool skink and snake-eyed skink populations adjacent to the beach.
• Land navigation training, airfield seizure activities, airfield expeditionary training, and ground disturbance (pedestrian and vehicular traffic) in the native forests of the Mangpang, Lasu, and Basea areas on the Military Lease Area on Tinian will disturb important habitat for the Micronesian gecko. This is a particular concern, since this area has provided the most recent (1995) evidence of the last intact population of Micronesian geckos in the archipelago.
• Refuse heaps associated with training, encampments, and development sites would provide additional foraging habitat for (and encourage the population growth of) mangrove monitor lizards, which are terrestrial predators of endemic birds and reptiles.

Terrestrial invertebrates. The native invertebrate fauna of the CNMI is poorly studied but diverse. While the conservation status of most invertebrate species (particularly insects) is unknown, several charismatic species (mostly Lepidopterans) have been described. Two, the Marianas eight-spot butterfly and the Marianas wandering butterfly, are of particular interest because of their declining and fragmented populations. Proposed military activities have a low likelihood of affecting these populations, but activities that alter habitat would affect crucial breeding resources.

• Close-quarter combat, land demolitions, airfield seizure, convoy, and land navigation training is conducted on non-DOD lands in karst limestone forest within the Marpi Maneuver Area an within the Military Lease Area on Tinian have potential to directly affect the Mariana eight-spot butterfly, and to indirectly affect its habitat and host plants.
• Land navigation training in sub-canopy vegetation in lower strata of intact limestone forest in the Marpi Maneuver Area would destroy habitat or individuals of the humped tree snail, which is a candidate species for federal listing.
• Land navigation training in sub-canopy vegetation in lower strata of intact limestone forest in the Military Lease Area on Tinian would destroy habitat or individuals of the Langford’s tree snail, which is a candidate species for federal listing.
• Land navigation training in sub-canopy vegetation in lower strata of intact limestone forest in native forests of Rota would result destruction of individuals or habitat of the fragile tree snail, which is a candidate species for listing.
• Land navigation training, survival training, airfield seizure activities, airfield expeditionary training, and ground disturbance (pedestrian and vehicular traffic) in
forested and other densely-vegetated areas of the Marpi Maneuver Area would negatively affect locally protected coconut crabs.

**Terrestrial invasive species.** Movement of vessels and cargo from Hawai‘i and Guam increases the risk of introducing invasive species that are present on both islands. 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, and 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.

Of additional concern is the introduction of the brown tree snake and other invasive reptiles and amphibians such as the greenhouse, eastern dwarf tree, Indian rice, Hong Kong whipping, coqui, and Gunther’s amoy frogs from Hawai‘i or Guam. Similarly, the facilitation of terrestrial vertebrate species that are invasive but already established in the CNMI. Such species include rats (particularly the Malaysian black rat on Tinian), mice, and shrews. These species are all significant threats to ground- and tree-nesting birds, and to endemic snails and skinks.

- Movement of vessels and cargo greatly increases the risk of the introduction of predatory ants such as the little fire ant, which has invaded Guam in the last decade and is causing significant agricultural damage. Other ants of concern include the Argentine ant and red imported fire ant.
- Movement of vessels and cargo would also facilitate the establishment of yellow crazy ants, which are already present in the CNMI (on Saipan and Tinian) but at low densities. Importing yellow crazy ants from other regions would encourage aggressive interactions and the establishment of supercolonies. High densities of yellow crazy ants pose significant threats to land crabs; snails; and ground-, cup-, and cavity-nesting birds.
- Similarly, traffic from Hawai‘i and Guam would facilitate the establishment of the bigheaded ant, which was first detected in the Marianas in 1990 and is present at low densities. While the bigheaded ant does not attack humans, it is a well-known household and agricultural pest. When established, it can decimate populations of native invertebrates.
- Increased traffic and shipment of cargo, building materials (notably wood and wood products), vehicles, and personnel from Guam would facilitate the importation of cycad *Aulacaspis* scale crawlers, which would infect the last intact colony of CNMI’s native cycad species, *Cycas micronesica*.
- Traffic from Hawai‘i and Guam would facilitate the importation of *Culex* spp. mosquitoes from Hawai‘i 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 Hawai‘i.
- Traffic from Hawai‘i and Guam would facilitate the importation of *Anopheles lesteri* from Guam, which readily attacks humans and is a primary vector of human malaria.
- Traffic from Hawai‘i and Guam would facilitate the importation of *Aedes* spp. mosquitoes from Guam, which are vectors for Yellow fever, dengue fever, and filariasis.
• Land navigation training in sub-canopy vegetation in limestone forest and tangan tangan forest in the Marpi Maneuver Area and Military Lease Area will exacerbate the spread of introduced red-brown paper wasps (*Polistes olivaceus*) and Indonesian paper wasps (*Ropalidia marginata sundaica*). Structure building (including temporary structures) would facilitate wasp reproduction.

• Movement of personnel and cargo from Guam and Hawai‘i will increase the likelihood of introduction of the brown tree snake, noxious weeds, and invertebrates to Tinian via if transport vessels, cargo, and personnel are not fully inspected prior to departure by trained staff.

• Parachute drops and personnel insertion at the airports on Tinian and Rota will increase the likelihood of introduction of noxious weeds and invertebrates.

• Increased traffic at ports of entry and among islands within the archipelago will strain already limited quarantine, inspection, and response resources in place to monitor for invasive species such as the brown tree snake. The existing infrastructure is already insufficient for the volume of traffic and degree of risk. Increased traffic will exacerbate the problem and increase the likelihood of the introduction of invasive species. We recommend that DOD provide funding to augment existing CNMI Brown Treesnake Interdiction Program.

**Plants.** Proposed ground maneuver activities that involve vegetation clearing present the risk of affecting plants that are protected by the Endangered Species Act, or that are under consideration for protection.

• Amphibious activities at Unai Masalok would disrupt a rare population of endemic *Euphorbia sparrmannii* var. *tianiensis*.

• Amphibious activities at Unai Chiget would disrupt a unique stand of forest of lantern trees (*Hernandia labyrinthica* var. *ovigera*).

• Land navigation training, airfield seizure activities, airfield expeditionary training, and ground disturbance (including pedestrian and vehicular traffic) in vegetated areas of the Marpi Maneuver Area and Military Lease Area would kill or otherwise damage important host plants for the Marianas eight-spotted butterfly *Procris pedunculata* or *Elatostema calcarum*.

• Land navigation training, ground disturbance (including pedestrian and vehicular traffic), and even nominal vegetation clearing in forested areas of Rota would negatively affect or kill rare individuals of federally endangered *Serianthes nelsonii*, *Osloxyilon mariamensis*, and *Nesogenes rotensis* plants on Rota.

• Such activities would also negatively affect candidate species on Saipan, Tinian, and Rota, including *Bulbophyllum guamense* (Rota), *Coelogyne guamensis* (Saipan, Rota), *Cyclus micronesica* (Saipan, Tinian, Rota), *Dendrobium guamense* (Tinian, Rota), *Eugenia byrantii* (Saipan, Tinian, Rota), *Heritiera longipetiolata* (Tinian, Rota), *Nervillia jacksoniae* (Rota), *Solanum guamense* (Saipan, Tinian, Rota), *Tabernaemontana rotensis* (Rota), and *Tuberolabium guamense* (Tinian, Rota).

**Socioeconomic.** The impact to socioeconomic resources by the MITT is not expected to occur based on the EIS’s determination that co-use would be temporary and short duration (hours). Increased military activities in the archipelago will significantly alter lifestyles and attitudes of and perceptions toward people in the archipelago.
• Inadequate information provided in the MITT EIS on the duration of activities precludes any meaningful assessment on socioeconomic impact. The fact that the number of naval activities involving ordnance, particularly on Farallon de Medinilla, is noted in activities per year has no bearing on how long these activities will limit accessibility. Their duration of ‘several hours’ is too vague and open to interpretation that would close Farallon de Medinilla’s waters (outside the 3 nm Danger Zone, R-7201) for extended periods.

• The sheer quantity of military activities in the vicinity of Farallon de Medinilla (within R-7291A) suggests a more protracted closure of the surrounding productive reef area to commercial and sport fishing. An analysis of the total area of reef taken by the 3 nm Restricted Zone, and the 10 and 12 nm Danger Zones also shows the areal extent and impact of this closure would have on fishing. A total of the reef area exclusion would constitute 29, 93 and 98% of Farallon de Medinilla’s fishable reef area. Thus, it seems more likely the activities on Farallon de Medinilla will impose a significant take of the CNMI’s most productive fishing grounds.

• Tinian’s beaches – impacts to tourism. Areas are secluded beaches that are an attraction for tourism.

• There is concern for activities on Tinian which may impose a littoral Danger Zone that would exclude boats from coming close to shore along the northern half of the island. The western side of the island is both a productive fishing ground and tourist destination for SCUBA diving. The shipping lane from Saipan to Tinian would also be included in this Danger Zone. This would increase shipping time and cost to avoid the area. The extended closure of this area during naval activities would therefore impose a significant economic and cultural take of the CNMI’s resources.

• The EIS does not provide information including dates and location of activities, which would be critical for coordinating commercial, recreational, and subsistence fishing activities.

• Economic impact to the marine recreation industry would be evident once closures are established within the Tinian Safety Designation Zone. Dive sites such as the Tinian Grotto, Fleming Wall and Dump Cove are regularly used by dive operators in Tinian and Saipan.

• The overall impact is that the military’s increased activities will have the potential to impact recovery efforts for those corals proposed for Endangered Species Act listing. Ultimately the decrease in locally-protected corals may severely handicap the CNMI when local projects (e.g. harbor improvement or dredging) require assessment of local populations and mitigation.

• Amphibious landings on Tinian Island will significantly degrade areas that have low relief and sandy beach areas (e.g. Unai Babui, Unai Chulu and Unai Dankulo), where there are low-energy leeward reefs and high coral development. Tracked vehicles and other landing craft will undoubtedly crush delicate corals and reef structure that is critical fish habitat. The decimation of reefs constitutes a long-term taking of resources that are critical for fisheries recruitment and sustainability. The destruction of corals also destroys quality SCUBA and snorkel sites in these areas used by locals and tourists.

**Avoidance, Monitoring, and Mitigation of Effects.** We recommend that the following items be provided by DOD to enable the Commonwealth to independently and objectively predict, monitor, and evaluate the impact of military activities proposed in this EIS.

• Provide regional (i.e. within the CNMI’s territorial lands and waters) population estimates of all terrestrial and aquatic species likely to be impacted by activities in this proposal, and
that are listed in this response (these species are condensed into a list in Appendices A and B of this correspondence).

- Provide funds for an archipelagic-wide molecular analyses (nuclear and mtDNA) of selected marine and terrestrial species of concern, as designated by DLNR or DFW, to assess island-specific effective population size and genetic connectivity.
- Provide a summary of the number of species on this list that have been impacted (both Type A and type B “take”) by DOD training activities in the region in the last 20 years.
- Provide funds for CNMI or an independent third-party contractor to perform pre/post inventories of ecosystems most likely to be significantly impacted by proposed activities, such as North Field Naval Air Station (including native limestone and tangan tangan forests adjacent to runways and proposed construction sites, the cyead plantation, wetlands such as Lake Hagoi and adjacent ephemeral water freshwater impoundments where Mariana moorhens have been detected, beaches where sea turtles have been observed nesting and surrounding waters, corals, and the littoral zone adjacent to amphibious landing beaches) and Farallon de Medinilla (including surrounding waters and the coral reef west of the island).
- Allow a full review of environmental surveys by the military (or contractor) a priori by DFW staff. Involve DFW staff in the planning of surveys and pre- and post-survey scientific review.
- Allow DFW staff members to inspect areas likely to be impacted by training activities before, and accompany military observers during, said activities to ensure that “take” is minimized and documented.
- Provide funds for CNMI to employ a Conservation Officer for Tinian, so that sea turtle nesting activity can be more adequately monitored before and during amphibious exercises. The regular presence of this monitor will also deter poaching of sea turtles and nests on Tinian, thus helping DOD achieve its environmental stewardship goals.
- Provide funds for CNMI to employ a Habitat Conservation Biologist, who is dedicated to reviewing DOD documents such as subsequent EIS’s, monitoring impact of military activities, and liaising with DOD, CNMI political officials, and third parties about conservation issues of mutual interest.
- Provide funds to DFW/DLNR to hire additional staff for ongoing marine surveys of fish and invertebrates on Rota, Tinian, Saipan, and Pagan to monitor potential shifts in communities and biodiversity
- To monitor introduced species, provide funds for intensive surveys of marine waters include invertebrate specialists, application of molecular methods. Marine surveys of main ports for assessment of non-indigenous species would include rapid survey assessments of all access islands by professional staff; including the establishment of settling plates in harbors and landing sites for taxonomic and genetic analyses.
- Provide data on all surveys performed around FARALLON DE MEDINILLA for marine invertebrates, reef fishes, marine mammals and sea turtles. Provide access to FARALLON DE MEDINILLA’s waters for DFW to perform independent surveys of fish, invertebrates and wildlife.
- Fund a study that would satellite tag species of marine mammals (especially Culver’s beaked whale) and sea turtles to measure movement and behavioral response of animals to military activities.
- Fund a tag and recapture and acoustic tagging study on Tinian that would measure fish movement across exclusion zones, as well as active movement relative to military activities.
• Provide funds for DFW to establish a benthic monitoring team to monitor and compare impacted to control sites. This would involve hiring two staff, providing training, and providing equipment and funds for fuel to perform the work.
• Ensure that current and future Commonwealth laws and regulations governing the use of designated CNMI Conservation Areas be respected. Ensure that training plans are revised if boundaries of legally designated Conservation Areas change, or if new Conservation Areas are established.
• Improve communication and collaboration with CNMI-DFW on research and monitoring activities related to DOD training described in the MITT. Improvements should include collaborative projects, funding for independent research and monitoring from CNMI-DFW, regular data and information sharing, and consultation prior to training activities that are likely to impact CNMI’s natural resources.
• Provide funds for CNMI to sample, monitor, and research the effects of the release, environmental persistence, and bioaccumulation of explosive and toxic residues left by propellant and ordnance use on and in the waters surrounding Saipan, Tinian, and Farallon de Medinilla.

The CNMI Department of Land & Natural Resources Division of Fish & Wildlife appreciates the opportunity to review and to provide comment on the EIS on the Marianas Islands Training Testing Activities, United States Department of the Navy. We hope that you will give considerable and favorable attention to our comments, and we ask for an open and ongoing exchange of information and a vigorous discussion of your future plans and their implications for our Commonwealth.

Respectfully yours,

Arnold I. Palacios
Secretary, DLNR

Manuel M. Pangelinan
Acting Director, DFW

cc: Governor Eloy S. Inos  
Lt. Governor Jude U. Hofschneider  
House Speaker Joseph Deleon Guerrero  
Senate President Ralph Torres  
Rota Mayor Melchor A. Mendiola  
Tinian Mayor Ramon M. Dela Cruz  
Saipan Mayor Donald G. Flores  
Northern Islands Mayor Tobias Aldan  
Loyal Mehrhoff, US Fish & Wildlife Ecological Services  
Carl L. Goldstein, US Environmental Protection Agency  
Michael Tosato, US National Oceanic and Atmospheric Administration  
Ryan Winn, US Army Corps of Engineers
Appendix A
Animal Species in the CNMI Likely to be Negatively Impacted by MITT Activities

Marianas eight-spotted butterfly (*Hypolimnas octacula marianensis*)
Napoleon wrasse (*Cheilinus undulatus*)
Green sea turtle (*Chelonia mydas*)
Hawksbill sea turtle (*Eretmochelys imbricata*)
Loggerhead sea turtle (*Caretta caretta*)
Olive ridley sea turtle (*Lepidochelys olivacea*)
Leatherback sea turtle (*Dermochelys coriacea*)
Micronesian gecko (*Perochirus scutellatus*)
Pacific slender-toed gecko (*Nactus pelagicus*)
Tide-pool skink (*Eмоia airocostata*)
Slevin's skink (*Eмоia slevini*)
Pintail duck (*Anas acuta*)
Guam rail (*Gallirallus owstoni*)
Mariana common moorhen (*Gallinula chloropus*)
Micronesian megapode (*Megapodius laperouse*)
Mariana fruit dove (*Ptilinopus roseicapilla*)
White-throated ground dove (*Gallicolumba xanthomura*)
Hawaiian petrel (*Pterodroma sandwichensis*)
Newell's shearwater (*Puffinus newelli*)
Wedge-tailed shearwater (*Puffinus puffinus*)
White-tailed tropicbird (*Phaethon lepturus*)
Red-tailed tropicbird (*Phaethon rubricauda*)
Brown booby (*Sula leucogaster*)
Red-footed booby (*Sula sula*)
Masked booby (*Sula dactylatra*)
Brown noddie (*Anous stolidus*)
Black noddie (*Anous minutus*)
HGReat frigatebird (*Fregata minor*)
Pacific golden plover (*Pluvialis fulva*)
Lesser sand plover (*Charadrius mongolus*)
Red-necked stint (*Calidris ruficollis*)
Gray-tailed tattler (*Tringa brevipes*)
Whimbrel (*Numenius phaeopus*)
Ruddy turnstone (*Arenaria interpres*)
Common sandpiper (*Actitis hypoleucos*)
Black-winged stilt (*Himantopus himantopus*)
Pacific reef heron (*Egretta hypoleucos*)
Intermediate egret (*Mesophoyx intermedia*)
Little egret (*Egreta garzetta*)
Yellow bittern (*Ixobrychus sinensis*)
Mariana swiftlet (*Aerodramus bartschi*)
Collared kingfisher (*Todiramphus chloris*)
Micronesian starling (*Aplonis opaca*)
Rufous fantail (*Rhipidura rufifrons*)
Golden white-eye (*Cleptornis marchei*)
Rota bridled-white eye (*Zosterops rotensis*)
Tinian monarch (*Monarcha takatsukasae*)
Mariana crow (*Corvus kubaryi*)
Nightingale reed-warbler (*Acrocephalus luscinus*)
Pacific sheath-tailed bat (*Emballonura semicaudata*)
Mariana fruit bat (*Pteropus mariannus*)
Culver’s beaked whale (*Ziphius cavirostris*)
Appendix B
Plant Species in the CNMI Likely to be Negatively Impacted by MITT Activities

Euphorbia sparrmannii var. tinianensis
Hernandia labyrinthica var. ovigera
Procris pedunculata
Elatostema calcareum
Serianthes nelsonii
Osmoxylon mariannensis
Nesogenes rotensis
Bulbophyllum guamense
Coeogyne guamensis
Cycas micronesica
Dendrobium guamense
Eugenia byranii
Heritiera longipetiolata
Nervilia jacksoniae
Solanum guamense
Tabernaemontana rotensis
Tuberosabium guamense