

## 4.10. BIOLOGICAL RESOURCES

### 4.10.1 Impact Methodology

Potential direct and indirect impacts on biological resources were analyzed for local terrestrial and aquatic ecosystems, including general vegetation and wildlife resources, along with sensitive species, biologically sensitive areas, designated critical habitat, regulated habitats, and biological resource management plans and practices.

The methods for assessing potential direct and indirect impacts on biological resources generally include the following:

- Comparing the location of such resources in relation to the physical locations of the proposed actions to determine potential direct and indirect impacts on these resources; and
- Examining the types and intensity of activities proposed in each location to determine the potential for impacts on these resources.

For this analysis, specific potential impacts on biological resources are based on the following:

- Relative importance or value of the resource affected, for example its legal, commercial, recreational, ecological, or scientific value;
- The resource's relevant occurrence in the region;
- Sensitivity of the resource to the proposed action;
- Anticipated physical extent of the potential impact; and
- Anticipated duration of the ecological ramifications of the potential impact.

Each activity in the Proposed Action is assessed based on its location and associated activities in relation to the known presence and extent of biological resources on the installation. The sensitivity of biological resources is evaluated based on the following criteria, listed in order of importance:

- Designation of the resource by federal and state resource agencies (for example, US Army Corps of Engineers, NOAA Fisheries and the USFWS) as a high value or sensitive resource;
- Any known or presumed regional sensitivity of the resource; and
- Any known or presumed local significance of the resource.

Direct impacts may be short-term or long-term, depending on how the biological resources are altered or lost during the course of the project implementation and operation. Examples of direct impacts from project-related construction include grading or brushing vegetation (using a chain to tear out shrubs and brush to leave behind herbaceous plants), filling drainage areas, and losing or interrupting wildlife foraging or nesting areas. Direct impacts

for each proposed action under each alternative are defined by the expected grading limits for that action. This impact analysis assumes that all biological resources within the area of proposed grading would be lost.

Indirect impacts occur when project-related activities affect biological resources in a manner other than a direct loss of the resource. For example, indirect impacts from a construction project might last only during construction or for the long-term operation of the facility. Noise, lighting, erosion and siltation, substantial reduction in water quality, dust, and increased human activity within or directly adjacent to sensitive habitat areas are examples of potential indirect impacts. Indirect impacts resulting from the proximity of construction and operation along the roads generally are considered here to affect habitats and species within 167 feet (50 meters) of the development. This boundary was determined by looking at survey methods of biological resources along other trails and roads in Hawai'i. Additionally, the dust and noise generated by the limited activity that will occur on these roadways will also fall within this buffer, though may extend a greater distance in isolated instances.

In addition, results from the ATTACC model, which estimates the effects of maneuver training on the landscape, were considered when evaluating the potential impacts.

#### 4.10.2 Factors Considered for Impact Analysis

Impacts on biological resources were evaluated by determining the sensitivity, significance, or rarity of each resource that would be adversely affected by the Proposed Action, as described in the previous section. The significance may be different for each habitat or species and is based on the resource's rarity or sensitivity and the level of impact that would result from the proposed project.

Most impacts on high sensitivity resources are considered significant, while the determination of significance for impacts on the moderate and low sensitivity resources depends more on site-specific factors, such as the habitat quality and population size, as well as the nature and extent of the anticipated impact. For example, impacts on moderate resources could be considered significant if the anticipated impact were to greatly reduce the population or geographic distribution of a species of special concern.

Factors considered in determining whether an alternative would have a significant impact on biological resources include the extent or degree to which its implementation would do any of the following:

- Cause the "take" of a highly sensitive resource, such as a threatened and endangered or special status species (USFWS, NOAA);
- Result in a jeopardy biological opinion by the USFWS or NOAA;
- Reduce the population of a sensitive species, as designated by federal and state agencies, or a species with regional and local significance. This can happen with a reduction in numbers, by alteration in behavior, reproduction, or survival, or by loss or disturbance of habitat;

- Have an adverse effect on a wetland or riparian habitat regulated by the local, state, or federal government or on another sensitive habitat (such as designated critical habitat) identified in local or regional plans, policies, or regulations or by the USFWS or NOAA;
- Interfere with the movement of any native resident or migratory wildlife species (including aquatic species) or with established native resident or migratory wildlife corridors;
- Alter or destroy high to moderate habitat that would prevent biological communities in the area prior to the project from reestablishing;
- Conflict with Hawai'i Coastal Zone Management Program policies;
- Introduce or increase the prevalence of undesirable nonnative species; or
- Cause long-term loss or impairment of a substantial portion of local habitat (species-dependent).

In addition to these factors, public concerns expressed during the scoping process were also considered in the impact analysis. These concerns included impacts on native species, particularly federally listed ones, and the loss or disturbance of natural habitat. Marine mammals and the Humpback Whale Sanctuary were also mentioned as specific issues of concern.

#### 4.10.3 Summary of Impacts

In response to the agency and public comments received during the Draft EIS comment period we reevaluated our analysis of the biological resources. As a result of considering these comments and a reanalysis of the available information, we recognize that the impacts to biological resources from fire could not be mitigated to the less than significant level. However, these impacts will be substantially reduced as a result of mitigation.

Table 4-10 lists the types of biological impacts associated with the evaluated alternatives at the relevant installations. General descriptions of the impacts are also provided.

#### ***Proposed Action (Preferred Alternative)***

The Proposed Action would affect biological resources identified within the SBCT ROI. These resources include general plants, animals, and vegetation communities, as well as sensitive species and habitats. Sensitive habitats refer to BSAs, as identified in the O'ahu and PTA INRMPs (USARHAW and 25th ID[L] 2001a, 2001b), wetlands, and federally designated critical habitat. Impacts to these resources are summarized below and are discussed in detail for SBMR, DMR, KTA, and PTA in the appropriate chapters.

#### ***Significant Impacts***

Impact 1: Impact from fire on sensitive species and sensitive habitats. Fire would have a significant impact on SBMR, KTA, and PTA. At DMR and KLOA impacts would be significant but mitigable to less than significant. Impacts are not mitigable to the less than significant level when considered project-wide. The proposed live-fire training would increase the probability

**Table 4-10**  
**Summary of Potential Biological Resources Impacts**

Impact Issues	SBMR			DMR			KTA/KLOA			PTA			Project-wide Impacts		
	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA	PA	RLA	NA
Impacts from fire on sensitive species and sensitive habitat.	⊗	⊗	⊗	⊖	⊖	⊖	⊗/⊖	⊗/⊖	⊗/⊖	⊗	⊗	⊗	⊗	⊗	⊗
Impacts from construction and training activities on sensitive species and sensitive habitat.	⊖	⊖	⊖	⊖	⊖	⊖	⊖/⊖	⊖/⊖	⊖/⊖	⊗	⊗	⊖	⊗	⊗	⊖
Impacts from the spread of nonnative species on sensitive species and sensitive habitat.	⊖	⊖	⊖	⊖	⊖	⊖	⊖/⊖	⊖/⊖	⊖/⊖	⊖	⊖	⊖	⊖	⊖	⊖
Impacts from construction and training activities on general habitat and wildlife.	⊙	⊙	⊙	⊙	⊙	⊙	⊙/⊙	⊙/⊙	⊙/⊙	⊙	⊙	○	⊙	⊙	⊙
Threat to migratory birds.	⊙	⊙	⊙	⊙	⊙	⊙	⊙/⊙	⊙/⊙	⊙/⊙	⊙	⊙	⊙	⊙	⊙	⊙
Noise and visual impacts.	⊙	⊙	⊙	⊙	⊙	⊙	⊙/⊙	⊙/⊙	⊙/⊙	⊙	⊙	⊙	⊙	⊙	⊙
Vessel impacts on marine wildlife and habitat.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	⊙	⊙	⊙	⊙	⊙	⊙
Runoff impacts on marine wildlife and coral ecosystems.	N/A	N/A	N/A	○	○	○	○/N/A	○/N/A	N/A	⊙	⊙	○	⊙	⊙	○

This table summarizes project-wide impacts. For installation-specific impacts see Chapters 5 – 8.

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

**LEGEND:**

- |  |                                |
|--|--------------------------------|
| ⊗ = Significant  | N/A = Not applicable           |
| ⊖ = Significant but mitigable to less than significant | PA = Proposed Action           |
| ⊙ = Less than significant                              | RLA = Reduced Land Acquisition |
| ○ = No impact  | NA = No Action                 |
| + = Beneficial impact                                  |                                |

that there would be a wildland fire in the project ROI (Section 4.12.3, Impact 7). Full implementation of the terms and conditions of the Biological Opinions for SBCI and current force activities on the islands of O‘ahu and Hawai‘i (dated October 2003 and December 2003, respectively) and full implementation of the Wildland Fire Management Plan (dated October 2003) will substantially reduce the impacts, but not to the less than significant level. The Army has three years to develop and execute the O‘ahu Implementation Plan as directed by USFWS in the Biological Opinion. The Army has two years to execute the terms and conditions defined in the Biological Opinion for the Pohakuloa Training Area. Since there is a risk that a wildfire could result in an irretrievable loss of individuals of sensitive species, the Army has made a conservative determination that although the mitigation will considerably reduce the impacts to biological resources, the impacts may not be reduced to a less than significant level. The mitigation measures below will substantially reduce the impact but not to less than significant.

Regulatory and Administrative Mitigation 1. The effects of the proposed action on listed species in the ROI have been evaluated in the ESA Section 7 Consultation with USFWS. The Army will implement all the terms and conditions defined in the Biological Opinions issued by USFWS for current force and SBCT proposed actions on the islands of O'ahu and Hawai'i. The terms and conditions that implement the reasonable and prudent measures determined during this consultation will be incorporated into the Proposed Action. These measures will help avoid effects and compensate for impacts on listed species that would result directly and indirectly from implementation of the Proposed Action. The Biological Opinions are available upon request.

The IWFMP for Pōhakuoloa and O'ahu Training Areas was updated in October 2003. The Army will fully implement this plan for all existing and new training areas to reduce the impacts associated with wildland fires. The plan is available upon request.

Additional Mitigation 1. No additional mitigation measures were identified for this impact.

Impact 2: Impacts from construction and training activities on sensitive species and sensitive habitat. The construction and training impacts on sensitive biological resources associated with the Proposed Action at PTA are significant and not mitigable to the less than significant level. These activities may have a significant and mitigable impact on sensitive species and habitat (including critical habitat) on SBMR, DMR, and KTA/KLOA. Federally listed species and critical habitat, observed in or with the potential to occur within the SBMR, DMR, KTA/KLOA and PTA ROI are listed in Appendix I-3. SBCT activities in this ROI include the use of tactical vehicles for off-road maneuvers, increased dismounted maneuvers, and increased amount of ammunition used (including live fire at SBMR, KTA [SRTA only] and PTA). The direct and indirect effects would be habitat disturbance, deterrence of wildlife use, spread of nonnative species, increase in the probability of fire and direct take of listed wildlife, and destruction of listed plants. At PTA, individuals of sensitive plant species would be eliminated by tactical vehicle maneuvers, construction, and dismounted training and there is the potential for currently unsurveyed lava tubes with sensitive arthropod species to be crushed during training maneuvers. These installation-specific impacts would be mitigated to the less than significant level by the regulatory and administrative measures described below.

The project-wide impact from construction and training on sensitive species and sensitive habitat, including their federally designated critical habitat, would be significant but not mitigable to the less than significant level. The combined impacts of fire at PTA, SBMR, KTA, and DMR and mounted maneuver at PTA could cause long-term loss or impairment of a substantial portion of natural habitat and the loss of individuals. Though the following mitigation measures would decrease the likelihood of this happening, there is a risk that a wildfire could result in an irretrievable loss of individuals of sensitive species. The overall impact of project actions on sensitive (listed) species and their sensitive habitat (including federally designated critical habitat) is still considered significant, according to factors detailed in Section 4.10.2., but not mitigable to less than significant. The mitigation measures below will substantially reduce the impact, but not to less than significant.

Regulatory and Administrative Mitigation 2. The Army will implement all the terms and conditions defined in the Biological Opinions issued by USFWS for current force and SBCT proposed actions on O‘ahu and the island of Hawai‘i. The terms and conditions that implement the reasonable and prudent measures determined during this consultation will be incorporated into the Proposed Action. These measures will help avoid effects and compensate for impacts on listed species that would result directly and indirectly from implementing the Proposed Action. The Biological Opinions are available upon request. The Army will implement land management practices and procedures described in the ITAM annual work plan to reduce erosion impacts (US Army Hawai‘i 2001a). Currently these measures include implementing a training requirement integration (TRI) program; implementing an Integrated Training Area Management (ITAM) program; a Sustainable Range Awareness (SRA) program; developing and enforcing range regulations; implementing an Erosion and Sediment Control Management Plan; coordinating with other participants in the Ko‘olau Mountains Watershed Partnership (KMWP); and continuing to implement land rehabilitation projects, as needed, within the Land Rehabilitation and Maintenance (LRAM) program. Examples of current LRAM activities at KTA include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; a combat trail maintenance program (CTP); coordination through the Troop Construction Coordination Committee (TCCC) on road maintenance projects; and development of mapping and GIS tools for identifying and tracking progress of mitigation measures.

Additional Mitigation 2: The Army proposes to fence or flag where practicable any sensitive plant communities from activities that may take place in the ROI. The Biological Opinions outline fencing for the majority of the sensitive species. USARHAW will evaluate if additional fencing may be necessary.

### Significant Impacts Mitigable to Less Than Significant

Impact 3: Impact from the spread of nonnative species on sensitive species and sensitive habitat. In general, nonnative plant and animal species pose a threat to Hawaiian native ecosystems (Atlas 1998). The Proposed Action in the SBMR, DMR, KTA/KLOA, and PTA ROIs would increase the potential for the introduction and spread of alien species through troops and equipment movement, construction, and fires. Nonnative species alter habitat, prey on native species, compete for resources, and carry diseases, all of which decrease the success of native species.

Regulatory and Administrative Mitigation 3. As required in the terms and conditions of the Biological Opinions, the Army will implement the following:

- Educate soldiers and others potentially using the facilities and roads in the importance of cleaning vehicles, equipment, and field gear;
- Educate contractors and their employees about the need to wear weed-free clothes and to maintain weed-free vehicles when coming onto the construction site and to avoid introducing nonnative species to the project site;
- Prepare a one-page insert to construction contract bids informing potential bidders of the requirement; and

- Inspect and wash all military vehicles at wash rack facilities before they leave SBMR, KTA, or PTA to minimize the spread of weeds, such as fountain grass and animal (invertebrate) relocations.

USARHAW will follow HQDA guidance developed in consultation with the Invasive Species Council and compliance with Executive Order 13112, which determines federal agency duties for preventing and compensating for invasive species impacts. USARHAW will agree to all feasible and prudent measures recommended by the Invasive Species Council that would be taken in conjunction with SBCT action to minimize the risk of harm. Implementing an Environmental Management System will further improve the identification and reduction of environmental risks inherent in mission activities.

In accordance with USDA regulations and requirements, the USDA will inspect and certify cargo originating outside of Hawai'i to ensure it is not carrying the brown tree snake or other reptiles before cargo is transported for use on training ranges.

Additional Mitigation 3: The Army proposes to use native plants in any new landscaping or planting efforts where practicable. When practicable, natural habitats would remain intact or adjacent areas would be restored as habitat.

#### Less than Significant Impacts

Impacts from construction and training on general habitat and wildlife. The project-wide impact as a result of training on general vegetation, wildlife, and habitat would be less than significant. At all project installations, there are impacts on general vegetation and wildlife from vehicle maneuvers. Impacts are limited to some extent by terrain. Additionally, the Army's ITAM program is used to limit the potential impact on land from training by rotating land used for maneuvers and monitoring factors like vegetation cover and soil moisture. The Army will also develop the DuSMMoP, which should reduce the potential for soil erosion harmful to general habitat and wildlife.

The Army proposes to conduct more intensive surveys of lava tubes, which are identified as potentially supporting native root-dependent arthropods. Lava tubes found to contain or support these arthropods will be avoided where practicable. All generated construction- and training-related drainage will be channeled away from lava tubes where practicable.

Threat to migratory birds. The construction and subsequent presence of FTI antennas would not significantly affect migratory bird species known to occur in the SBMR ROI, even those that migrate at night (USFWS 2000). (Specific location, height, and structural features are described in Appendix D.) In general these monopole antennas will be no higher than 100 feet (33 meters) and will be mounted on existing structures. The Army would apply the SOPs and BMPs identified for federal agencies in Executive Order 13186 to minimize the overall impact of SBCT actions on migratory birds. These are identified in Section 5.10.2 and in more detail in Appendix I-2.

Noise and visual impacts. The Proposed Action would have short- and long-term noise impacts on biological resources within the SBMR, DMR, KTA/KLOA, and PTA ROIs. These

impacts would have negative effects but would be less than significant. These impacts would arise from the increase in soldiers, off-road mounted maneuver, and vessel and helicopter use. They could affect marine mammals, which are sensitive to the presence of and noise produced by vessels and low-flying aircrafts. Terrestrial wildlife would be affected by off-road mounted and dismounted maneuver, the increase in ammunition use and low-flying helicopters. The Army's SOPs restrict the proximity of aircraft to the water surface and would prevent a significant impact occurring as a result of intentional aircraft operation. The remaining sources would not affect species and habitats in any manner identified within the significance factors and methodology described in 4.10.1 and 4.10.2, such as causing a population level decrease or 'take' of a federally listed species.

Vessel impacts on marine wildlife and habitat. Less than significant impacts on marine wildlife are expected from vessel transport between O'ahu and the island of Hawai'i. The increase from 60 to 66 LSV trips a year is minor and not significant. Assuming that low frequency or mid-range sonars are not used from LSVs, impacts from vessel transit is expected to be minor and not significant. (Low frequency and/or mid-range sonars have been shown to cause injury and mortality in marine wildlife (Rossiter 2003), but these emissions typically occur off of vessels engaged in defense training maneuvers, not transport). Existing MMPA regulations prohibit any boats in Hawaiian waters to approach within 100 yards (91 meters) of adult whales and within 300 yards (274 meters) of mother/calf pairs (NOAA 1997). LSVs and barges transit through Penguin Banks, a known high-concentration area for humpback whales. However since they travel at a maximum of 10 knots, collisions are unlikely. Impacts on marine wildlife from vessel transport in the ROI waters and/or in the Sanctuary under the Proposed Action are not considered to be significant. TSVs are not in use at this time. They may be utilized in the future. When and if that occurs, separate NEPA documentation will be done to address impacts from TSV use to marine wildlife.

Runoff impacts on marine wildlife and coral ecosystems. There would be less than significant impacts on marine wildlife and coral ecosystems in the PTA ROI. No impacts from potential runoff are expected for marine wildlife resources or coral ecosystems at the other sites. The expected increase in erosion to the ocean at PTA would be within the natural range that exists due to rainfall and runoff variation. There are no contaminants moving off the range, which is quite a distance from the coastline. No contamination of surface water or groundwater is expected (see Section 8-08 Water Resources). There is no runoff carrying contaminants from UXOs to nearshore ocean waters. There are no UXOs in the marine ROI. No water-contaminating activities are occurring in the upland portions of the marine ROI habitat, so no direct effects from runoff on marine wildlife or coral reefs and their associated organisms would occur. Impacts on marine wildlife and coral ecosystems in the ROI waters are not considered to be significant.

### ***Reduced Land Acquisition Alternative***

All of the impacts described for the Proposed Action would occur under Reduced Land Acquisition. However, because there is a reduction in size of the SRAA (by 1,300 acres [526 hectares]) impacts at that location from construction and training activities described above would be slightly less than those under the Proposed Action. There is no change in the significance level since the SRAA is an already disturbed area and the training proposed at

SRAA would occur just at PTA. Impacts on biological resources in the SBMR ROI would be further decreased under this alternative due to the removal of QTR2 from proposed actions in this area. There would be less of a loss and degradation of general and sensitive habitat in the SBMR ROI but this impact would still be considered less than significant. Impacts in the PTA ROI would increase slightly due to the placement of QTR2 in the ROI and the subsequent increase in mounted maneuver within the PTA ROI. However, this impact would still be significant and not mitigable.

### ***No Action Alternative***

The current baseline of existing conditions would continue under No Action.

There would be a continuation of existing significant and not mitigable to less than significant impacts. This includes fire impacts on sensitive species and habitat. Because there is a risk that a wildfire could result in an irretrievable loss of individuals of sensitive species, the Army has made a conservative determination that even under the No Action Alternative species and habitat could be affected by fire under the current force activities. Significant measures have been developed to prevent and control wildfires, and they will be implemented through the IWFMP.

Impacts from construction and training activities and the spread of nonnative species would be significant and mitigable to less than significant for all project areas.

Ongoing Army environmental management and stewardship activities, described in Chapter 2, would continue to decrease impact intensity and to protect sensitive plants and habitats within the ROI. All determinations made through ESA Section 7 Consultation, as described above and detailed in the project location chapters, would apply under this alternative as well.

The following less than significant impacts on biological resources would occur as a result of continued training under the No Action Alternative:

- Threats to migratory birds and noise and visual impacts;
- Impacts from construction and training on general habitat and wildlife;
- Vessel impacts on marine wildlife and habitat; and
- Runoff on marine wildlife and coral ecosystems.

These impacts would be limited and would be addressed by ongoing Army environmental management and stewardship activities.