

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 generally are considered to affect habitats and species within 200 feet (60 meters) of the development, though this may extend a greater distance in particular 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

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. SBCT-induced fire would have a significant impact, which may be mitigable to less than significant at each of the proposed training areas, but which is not mitigable to the less than significant level when considered project-wide. The proposed live-fire training would increase the probability that there would be a wildland fire in the project ROI (Section 4.12.3, Impact 7). The extensive damage that could be caused both directly (destruction of habitat and individuals) and indirectly (eventual decline of plant and wildlife due to loss and degradation of habitat) due to fire could significantly affect federally listed and nonlisted sensitive species and could result in significant impacts. These impacts would be mitigated to the less than significant level by the regulatory, administrative, and additional mitigations described below. The project-wide impact of SBCT training-related fire at these training areas could have a significant impact on sensitive species and sensitive habitat within the ROI. The combined impacts of fire at PTA, SBMR, and KTA (where live fire is proposed) and KLOA, and DMR (nonlive-fire training is proposed) could cause long-term loss or impairment of a substantial portion of natural

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 on federally listed species and their federally designated or proposed critical habitat.	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Impact on sensitive species resulting from the spread of nonnative species.	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Loss and degradation of sensitive species and habitat.	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Vessel impacts on marine wildlife.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	⊕	⊕	N/A	⊗	⊗	N/A
Threat to migratory birds.	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Noise and visual impacts.	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Impacts on general vegetation and wildlife.	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	○	⊕	⊕	⊕
Runoff impacts on marine wildlife and coral ecosystems.	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	

habitat and the loss of individuals that in total would constitute a population level decline. The mitigation measures described below would lessen the impact of project actions on listed species and federally designated or proposed critical habitat but would still result in project-wide significant impacts, not mitigable to the less than significant level, according to factors detailed in Section 4.10.2.

Regulatory and Administrative Mitigation 1. The effects of SBCT actions on listed species in the ROIs are being evaluated in the Section 7 Consultation with USFWS. The Army would carry out all reasonable and prudent measures determined during this consultation. These measures would help avoid effects and would compensate for impacts of fire on listed species that would result directly and indirectly from implementing the Proposed Action. Nonlisted sensitive species would be benefited from the measures taken to reduce disturbance to listed species. Ongoing USARHAW environmental management and stewardship activities, described in Chapter 2, would decrease impact intensity and duration. WFMPs are being developed to minimize the probability of fire and to shorten the time and

distance that the fire would extend. WFMPs and their mitigation value are described in the Section 4.12.3, Mitigation 7. USARHAW would notify the USFWS if a fire were to escape the firebreak roads within the ROI, but it is not within the Army's ability to prevent and contain all fires.

Additional Mitigation 1. Potential mitigation measures for this impact include replanting and restoration.

Impact 2: Impacts on federally listed species and their federally designated or proposed critical habitat. The Proposed Action may have a significant and mitigable to the less than significant level impact on listed species and critical habitat in each of the training area ROIs, SBMR, DMR, KTA/KLOA, and PTA. Federally listed species and critical habitat, observed in or with the potential to occur within the SBMR, DMR, KTA/KLOA and PTA ROIs are listed in Appendix I-3. SBCT activities in these ROIs include the use of Strykers for off-road maneuvers, increased dismounted maneuvers, and the increase in the 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 use by wildlife, spread of nonnative species, increase in the probability of fire and direct take of listed wildlife, and destruction of listed plants. 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 of these effects on listed species and their federally designated or proposed critical habitat could be significant. This is primarily because of the potential damage to habitat and individuals due to fire, which is described in Impact 1, and mounted maneuver within the PTA ROI. 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, which in total would constitute a population level decline. The following mitigation measures would lessen the impact of project actions on listed species and federally designated or proposed critical habitat but would still be considered significant according to factors detailed in Section 4.10.2.

Regulatory and Administrative Mitigation 2. Section 7 consultation is being conducted, as described in Impact 1. The Army is in Section 7 consultations with the USFWS to ensure the Proposed Action would not jeopardize the continued existence of federally listed species or adversely modify critical habitat. Ongoing USARHAW environmental management and stewardship activities, described in Chapter 2, would decrease impact intensity and duration.

Significant Impacts Mitigable to Less Than Significant

Impact 3: Impact on sensitive species resulting from the spread of nonnative species. 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. USARHAW would follow HQDA guidance developed in consultation with the Invasive Species Council and compliance with Executive

Order 13112, which determines federal agency duties in regard to preventing and compensating for invasive species impacts. USARHAW would 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 would further improve the identification and reduction of environmental risks inherent in mission activities.

Section 7 Consultation and other regulatory and administrative measures identified in mitigations 1, 2, and 4 would apply to this impact and would help reduce the impact to a less than significant level.

Additional Mitigation 3: Potential mitigation measures for this impact include:

- Educating soldiers and other potential users of the facilities and roads in the importance of cleaning vehicles and field gear. Contractors and their employees would be educated about the need to wear clean clothes and to maintain clean vehicles when coming onto the construction site and would comply with measures to avoid introducing alien species to the project site.
- Using 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.
- Requiring all construction vehicles and equipment, excluding privately owned vehicles, to undergo a mandatory wash prior to entering construction sites. The construction vehicles and equipment would be left at the construction site or would be rewashed before returning to the construction site.
- Inspecting and washing all military vehicles at wash rack facilities before they leave SBMR, KTA, or PTA to minimize spreading weeds, such as fountain grass, and relocating invertebrates.
- Building a vehicle wash facility at Kawaihae Harbor so that any Army vehicle transported from another island or training area would undergo a mandatory vehicle wash and inspection before traveling to or from PTA. Implementing this mitigation would depend on the utility requirements and space restrictions at Kawaihae Harbor.

Impact 4: Loss and degradation of sensitive species and habitat. Loss and degradation of sensitive species and habitat would result from the proposed construction and training activities in the SBMR, DMR, KTA/KLOA, and PTA ROIs. The increase in soldiers training at these installations, the use of Stryker vehicles in off-road maneuvers, the increase in firing range activity (including live fire at SBMR and PTA) would further disturb habitat in the ROI. Sensitive species and habitat occurring within the ROI would be negatively affected by a resulting increase in dust, trampling, fire, and spread of nonnative species.

Regulatory and Administrative Mitigation 4. To mitigate this impact, USARHAW is undertaking Section 7 Consultation, as described in Mitigation 1. Regulatory and administrative mitigation

measures identified in Section 4.8, Water, and Section 4.9, Geology, would lessen this impact on sensitive species and habitat.

Additional Mitigation 4. Potential mitigation measures for this impact include:

- Using 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.
- Fencing or flagging, where practicable, any sensitive plant communities from activities that may take place within the ROI.
- Preserving or restoring sensitive habitat, when feasible, on its owned or leased lands.
- Investigating a new regulatory authority to work with nonprofit organizations to purchase buffer lands.
- Continuing to allow grazing on the Ke‘āmuku Parcel when it is not in use for training to keep the fuel load of the alien grasses below a dangerous level.
- Avoiding where practicable all lava tubes found to contain or to potentially support native root-dependent arthropods or cultural resources. All generated construction would be channeled away from lava tubes.
- Dividing up the Ke‘āmuku Parcel into training areas and using ITAM LCTA to determine the optimum training rotation to maximize vegetative regrowth while maintaining training.
- Constructing a natural and cultural resources visitor center at PTA, adjacent to the new Saddle Road alignment. The visitor center would provide interpretive displays of the biological and cultural resources of not only PTA but also the region between Mauna Loa and Mauna Kea and would include a small theater for interpretive video or live presentations. The center also would house the PTA resource managers and lab facilities.

Less than Significant Impacts

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, especially those that migrate at night (USFWS 2000). USARHAW 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 be negative but 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. USARHAW 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. 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 DMR and PTA ROI. No significant impacts from potential runoff are expected for marine wildlife resources or coral ecosystems. The expected increase in erosion to the ocean would be within the natural range that exists due to rainfall and runoff variation. 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 [525 hectares]) impacts 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 still occur just at PTA. There would still be significant and potentially mitigable to the less than significant level at the installation level and project-wide significant and not mitigable to the less than significant level impacts, as well as some less than significant impacts both installation specific and project-wide. 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 significant and mitigable. 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. The impact on sensitive species due to habitat loss and degradation would increase in the PTA ROI under this alternative. There would be no overall increase in the significance level because of the limited area involved in the QTR2

construction, the disturbed nature of the proposed location, and the already severe impact from mounted maneuver in the PTA ROI.

No Action Alternative

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

There would be a continuation of existing significant and mitigable to less than significant impacts. This includes fire impacts on sensitive species and habitat, impacts on federally listed species and their federally designated and proposed critical habitat, impacts on sensitive species resulting from the spread of nonnative species, and loss and degradation of sensitive species and habitat at each training area. The combined impact of these Legacy Force locations would continue to be significant and mitigable to the less than significant level with the application of the extensive fire management plans. The Army has identified impacts to federally listed species and critical habitat and is undergoing consultation with USFWS. Consultation on proposed plant habitat within the ROI would occur on the federal designation of the habitat.

Ongoing USARHAW 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.

The following less than significant impacts on biological resources would occur as a result of SBCT actions within each of the SBCT training area ROIs: threats to migratory birds, noise and visual impacts, and impacts on general vegetation and wildlife. These impacts would be limited and would be addressed by ongoing USARHAW environmental management and stewardship activities.