

Voluntary Habitat Assessment

Rusty patched bumble bee

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Rusty Patched Bumble Bee (*Bombus affinis*)

Endangered Species Act Section 7(a)(2) Voluntary Consultation Technical Assistance

Version 4

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U.S. Fish & Wildlife Service



Rusty patched bumble bee

Photo courtesy of Tamara Smith, U.S. Fish and Wildlife Service

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Appendix E. Voluntary Habitat Assessment Form

While voluntary, use of this form will provide the user with information that will accelerate use of the range-wide determination key and expediate USFWS reviews. For quick reference, refer to the habitat summary table, below. Circle one answer for each of the questions per habitat type (if applicable) in your project area that will be impacted by the proposed action and choose the appropriate habitat quality based on your assessment (unsuitable, low, or medium to high quality). If your project contains habitats of varying qualities based on your assessment, choose the quality of habitat with the greatest quantity of acres that will be impacted by the proposed action. If you are wavering between two qualities based on your assessment, choose the higher quality of the two.

Habitat Type	Questions to Consider	Unsuitable	Low Quality	Medium-High Quality	Document Your Action Area Habitat Assessment
Nesting	What is the percentage of habitat covered with flowering shrubs, trees or preferred understory native plants?	0-10% coverage of flowering plants	10-25% coverage of flowering plants	Greater than 25% coverage of flowering plants	
	How many species of flowering shrubs, trees or preferred understory native plants are present?	0 to 1 flowering plants	2 to 3 flowering species	At least 4 flowering species	
	Is the potential habitat dominated by uncompacted, well-drained soils?	Compacted and well-drained or perpetually wet	Combination of compacted and uncompacted and well-drained	Primarily uncompacted and well-drained	
	Is the potential habitat dominated by invasive species?	Dense (>50%) coverage of invasive plant species	Sparse to Moderate (25-50%) coverage of invasive plant species	Absent or Sparse (<25%) coverage of invasive plant species	
	Is there evidence of rodent activity or pre-existing cavities?	No	Yes (some)	Yes	

Overwintering	What is the percentage of habitat covered with flowering shrubs, trees or preferred understory native plants that will be flowering in spring?	0-10% coverage of spring flowering plants	10-25% coverage of spring flowering plants	Greater than 25% coverage of spring flowering plants	
	How many species of flowering shrubs, trees or preferred understory native plants that will be flowering in spring are present?	0 to 1 flowering species	2 to 3 flowering species	At least 4 or more flowering species	
	Is the potential habitat dominated by uncompacted, well-drained soils?	Compacted and well-drained or perpetually wet	Combination of compacted and uncompacted and well-drained	Primarily uncompacted and well-drained	
	Is the potential habitat dominated by invasive species?	Dense (>50%) coverage of invasive plant species	Sparse to Moderate (25-50%) coverage of invasive plant species	Absent or Sparse (<25%) coverage of invasive species	
	Is there leaf litter present?	No	Yes (some)	Yes	
Foraging	What is the percentage of habitat covered with flowering shrubs, trees or preferred understory native plants ?	0-10% coverage of flowering plants	10 to 25% coverage of flowering plants	Greater than 25% coverage of flowering plants	
	How many species of flowering shrubs, trees or preferred understory native plants are present?	0 to 1 flowering species	1 to 3 flowering species	At least 4 or mor flowering species	
	Is the potential habitat dominated by invasive species?	Dense (>50%) coverage of invasive plant species	Sparse to Moderate (25-50%) coverage of invasive plant species	Absent or Sparse (<25%) coverage of invasive species	

Summary descriptions of medium - high, and low nesting, overwintering, and foraging habitats for the rusty patched bumble bee, with estimated disturbance acreage thresholds for each that would reach a 5% probability of destroying a nest, overwintering queen, or no longer be discountable foraging loss. For nesting and overwintering, the thresholds refer to ground disturbance, whereas the forage loss acreages are for foraging habitat.

Habitat Type	Medium -High Quality Habitat Description	Medium-High Quality Habitat Disturbance Threshold (acres)	Low Quality Habitat Description	Low Quality Habitat Disturbance Threshold (acres)
Nesting	Upland open grasslands, shrublands, savanna with native grasses, moderate to abundant coverage (>25%) of at least 4 species of flowering shrubs, trees and/or rusty patched bumble bee preferred understory native plants (such as hyssop, Joe pye weed, wild bergamot, mountain mint, Culvers root, New England asters, coneflowers, milkweed, jewelweed, leadplant, spiraea, native Ranunculaceae spp., and native Hydrangea spp.), and dominated by uncompacted, well-drained soils. Or upland forested edge habitats adjacent to open areas with at least 4 species of flowering plants, absent or very sparse coverage of invasive vegetation in understory (<25%), dominated by uncompacted and well-drained soils, and evidence of rodent activity or pre-existing cavities. In Central Appalachian Forests (MD, VA, WV), interior forest with flowering trees with the soil, cavities and invasive species elements as described above.	0.30	Upland open grasslands, shrublands, savanna native grasses, sparse coverage (10-25%) of 2-3 species flowering shrubs, trees and/or understory native plants (such as hyssop, Joe pye weed, wild bergamot, mountain mint, Culvers root, New England asters, coneflowers, milkweed, jewelweed, leadplant, spiraea, , native Ranunculaceae spp., and native Hydrangea spp.), with a combination of compacted and uncompacted soils that are well-drained. Or upland forested edge habitats adjacent to open areas less than 2-3 species of flowering plants, sparse to moderate coverage of invasive vegetation in the understory (<50%), combination of compacted and uncompacted well-drained soils, and some evidence of rodent activity or pre-existing cavities. In Central Appalachian Forests (MD, VA, WV), interior forest with flowering trees with the soil, cavities and invasive species elements as described above.	1
Overwintering	Upland forest at least 25 m from a non-forested edge and a minimum patch size greater than 0.75 acres, moderate to abundant coverage (>25%) of at least 4 species of spring flowering shrubs, trees and/or herbaceous native plants (species preferred by the rusty patched bumble bee, such as Serviceberry, gooseberry, willows, Virginia waterleaf, wild geranium, shooting star, wood betony, wild lupine, Dutchman's breeches,	0.30	Upland forest patches at least 25 m from a non-forested edge and a minimum patch size of 0.75 acres, sparse coverage (10-25%) of at least 2-3 species of spring flowering shrubs, trees and/or understory native plants (such as Serviceberry, gooseberry, willows, Virginia waterleaf, wild geranium, shooting star, wood betony, wild lupine, Dutchman's breeches, native Rhododendron spp ,and Virginia bluebells), some leaf	1

	native Rhododendron spp., and Virginia bluebells), absent or sparse coverage of invasive vegetation in understory, abundant leaf litter, and uncompacted and well-drained soils.		litter, sparse to moderate coverage of invasive vegetation (present but not dense) in the understory, and primarily uncompacted and well-drained soils, but some compaction is evident (e.g., pre-existing trails or logging skid roads and landings).	
Foraging	Open grasslands, shrublands, savanna, riparian areas, and/or palustrine wetlands and seasonally -flooded wetlands with moderate to abundant coverage (>25%) of at least 4 species of flowering shrubs, trees and/or understory native plants (such as hyssop, Joe pye weed, wild bergamot, mountain mint, Culvers root, New England asters, coneflowers, milkweed, jewelweed, leadplant, spiraea, Serviceberry, American basswood, certain flowering crops like blueberries and cranberries). Or forested edge habitats adjacent to open areas with at least 4 species of flowering plants (e.g., Virginia bluebells, native Ranunculaceae spp., and native Hydrangea spp.) and over 25% vegetative cover. Ideally, foraging resources should be present throughout the active flight season (spring, summer and fall), however this may not be possible given the habitat type. Foraging resources available during at least two seasons. Absent or sparse coverage (<25%) of invasive vegetation in understory.	2	Open grasslands, shrublands, savanna, riparian areas, and/or palustrine wetlands and seasonally -flooded wetlands with sparse coverage (10-25%) of 1-3 species of flowering shrubs, trees and/or understory native plants (such as hyssop, Joe pye weed, wild bergamot, mountain mint, Culvers root, New England asters, coneflowers, milkweed, jewelweed, leadplant, spiraea, Serviceberry, American basswood, certain flowering crops like blueberries and cranberries). Or forested edge habitats adjacent to open areas with 1-3 species of flowering plants and between 10-25% vegetative cover. Foraging resources available during at least one season during the active flight season (e.g., only fall). Sparse to moderate understory invasive species coverage (25-50%).	10