Appendix J

Integration and Synthesis Worksheet templates

INTEGRATION AND SYNTHESIS WORKSHEET: CONUS Animal Species

Note to Service biologists: Use the following ranking indicators as a starting point for determining consequences of the action to listed species.

Scientific Name:	**Common Name:**	**Entity ID:**

Factors	Indicator	Selection
VULNERABILITY		
Listing status, with 5-year status review recommendation (if recent, within last 5 years)	High = E, PE, or T with 5-yr review uplisting recommendation; Medium = C, T, PT, or E with 5-yr review downlisting recommendation; Low = 5-yr review delisting recommendation	Choose an item.
Vulnerability factor: distribution	High = Small, endemic, constrained, and/or isolated population(s); Medium = Species/Populations neither constrained nor widespread; Population size/location unknown; Low = Species/Populations widespread or wide-ranging	Choose an item.
Vulnerability factor: # populations	High = Single population; Medium = Multiple populations (few), Population size/location(s) unknown; Low = Multiple populations (numerous)	Choose an item.
Vulnerability factor: species trends	High = Declining population(s) – one or more populations declining; Medium = All populations stable, with none known to be increasing or decreasing; Unknown population trends; Low = Increasing population(s)	Choose an item.
Pesticides identified as a threat (in a listing rule, 5-year status review or recovery plan)?	High = Pesticides, contaminants that may include pesticides or water quality are noted threats; Medium = no mention or not identified as a threat; no Low category	Choose an item.
Environmental Baseline/Cumulative Effects (effects of future state or private activities reasonably certain to occur within the project area)	High = More adverse effects anticipated overall; Medium = Unknown; Known with no significant adverse effects; roughly proportional adverse and beneficial effects anticipated; Low = More beneficial effects anticipated overall (e.g., recovery actions, reduced threats and stressors)	Choose an item.

Factors	Indicator	Selection
Overall Rank: VULNERABILITY	M = Neutral factor; if all others are H's = High; if all others are L's = Low; all M or mix of H/L = Medium, unless Status is L then overall = Low, or H with uplisting recommendation = High	Choose an item.
RISK		
Direct effects (lethal and sub-lethal)	High = >5% mortality and/or >10% sub-lethal effects, Medium = 1-5% mortality and/or 5-10% sub-lethal effects; Low = <1% mortality and < 5% sub-lethal effects	Choose an item.
Indirect effects (e.g., loss of key prey items, pollinators, host fish, forage base for non-predators, etc.)	High = >20% indirect effects, Medium = 5-20% indirect effects; Low = < 5% indirect effects	Choose an item.
Risk modifiers: adjustments based on anticipated effects not accounted for that would shift the ranking up or down	Adjust based on High, Medium and Low ranges above; use this ranking in place of Direct and/or Indirect factors above as applicable (supporting rationale should be in the I&S for the species)	Choose an item.
Overall Rank: RISK	Use Direct effect ranking if it is the same, higher or only one rank lower than Indirect; If Direct is L and Indirect is H, use Medium overall rank. Use modified rankings in place of Direct and Indirect rankings if applicable.	Choose an item.
USAGE		
Total percent of the species range with anticipated usage for uses that may have effects to the species[1]	High = >10%; Medium = 5-10%; Low = <5%	Choose an item.
Confidence level: Modifier for consideration of this factor	CalPUR data = 75-100%; Standard data = <75% CalPUR data (based on % of range in CA)	Choose an item.
Overall Rank: USAGE	Based on H, M or L in total percent above.	Choose an item.

[1] Totals are not reduced for potential overlap between mosquito control and other uses, as the extent to which these uses may occur on the same sites is unknown.

INTEGRATION AND SYNTHESIS WORKSHEET: Island Animal Species

Note to Service biologists: Use the following ranking indicators as a starting point for determining consequences of the action to listed species.

Factors	Indicator	Selection
VULNERABILITY		
Listing status, with 5-year status review recommendation (if recent, within last 5 years)	High = E, PE, or T with 5-yr review uplisting recommendation; Medium = C, T, PT; Low = 5-yr review delisting or downlisting recommendation	Choose an item.
Vulnerability factor: distribution	High = Small, endemic, constrained, and/or isolated population(s); Medium = Species/Populations neither constrained nor widespread; Population size/location unknown; Low = Species/Populations widespread or wide-ranging	Choose an item.
Vulnerability factor: # populations	High = Single population; Medium = Multiple populations (few), Population size/location(s) unknown; Low = Multiple populations (numerous)	Choose an item.
Vulnerability factor: species trends	High = Declining population(s) – one or more populations declining; Medium = All populations stable, with none known to be increasing or decreasing; Unknown population trends; Low = Increasing population(s)	Choose an item.
Pesticides identified as a threat (in a listing rule, 5-year status review or recovery plan)?	High = Pesticides, contaminants that may include pesticides or water quality are noted threats; Medium = no mention; (L is NA)	Choose an item.
Environmental Baseline/Cumulative effects (effects of future state or private activities reasonably certain to occur within the project area)	High = More adverse effects anticipated overall; Medium = Unknown; Known with no significant adverse effects; roughly proportional adverse and beneficial effects anticipated; Low = More beneficial effects anticipated overall (e.g., recovery actions, reduced threats and stressors)	Choose an item.

Factors	Indicator	Selection
Overall Rank: VULNERABILITY	M - Neutral factors; if all others are H's = H; if all others are L's = L; mix of H/Low = M, unless Status is L then overall = L, or H with uplisting recommendation = H	Choose an item.
RISK		
Direct effects (lethal and sub-lethal)	High = likely to experience mortality and/or sub-lethal effects, Medium = may experience mortality or sublethal effects, Low = unlikely to experience mortality and/or sub-lethal effects	Choose an item.
Indirect effects (e.g., loss of key prey items, pollinators, host fish, forage base for non-predators, etc.)	High = likely to experience mortality and/or sub-lethal effects, Medium = may experience mortality or sublethal effects, Low = unlikely to experience mortality and/or sub-lethal effects	Choose an item.
Risk modifiers: adjustments based on anticipated effects not accounted for that would shift the ranking up or down	High = Species known to occur in and forage in use sites, Medium=may occur in use site and forage in use sites, Low=species may occur in and forage in use sites, but no effects expected	Choose an item.
Overall Rank: RISK	Use Direct effect ranking if it is the same, higher or only one rank lower than Indirect; If Direct is L and Indirect is H, use M overall rank. Use modified rankings in place of Direct and Indirect rankings if applicable.	Choose an item.
USAGE		
Total percent of the species range with anticipated usage for uses that may have effects to the species[2]	High = >10%, Medium = 5-10%, and/or 4.8% of agricultural crops treated with insecticides and 5% of developed and open space developed, Low =< 5%	Choose an item.
Confidence level: Modifier for consideration of this factor		Choose an item.

[2] Totals are not reduced for potential overlap between mosquito control and other uses, as the extent to which these uses may occur on the same sites is unknown.

Factors	Indicator	Selection
Overall Rank: USAGE	Based on H, M or L in total percent above.	Choose an item.

INTEGRATION AND SYNTHESIS WORKSHEET: CONUS Plant species

Note to Service biologists: Use the following ranking indicators as a starting point for determining consequences of the action to listed species.

Factors	Indicator	Selection
VULNERABILITY		
Listing status, with 5-year status review recommendation (if recent, within last 5 years)	High = Endangered; Presumed Endangered; or Threatened with 5-yr review uplisting recommendation Medium = Candidate; Threatened; Presumed Threatened Low = 5-yr review delisting recommendation	Choose an item.
Vulnerability factor: # populations	High = Single population Medium = Multiple populations (few), Population size/location(s) unknown Low = Multiple populations (numerous)	Choose an item.
Vulnerability factor: species trends	High = Declining population(s) – one or more populations declining; Medium = All populations stable, with none known to be increasing or decreasing; Unknown population trends Low = Increasing population(s)	Choose an item.
Vulnerability factor: distribution	High = Small, endemic, constrained, and/or isolated population(s) Medium = Species/Populations neither constrained nor widespread; Population size/location unknown Low = Species/Populations widespread or wide-ranging	Choose an item.
Pesticides identified as a threat (in a listing rule, 5-year status review or recovery plan)	High = Pesticides, contaminants that may include pesticides or water quality are noted threats Medium = no mention No Low category	Choose an item.
Pollinator loss identified as a threat (in a listing rule, 5-year status review or recovery plan)	High = Pollinator loss, decline or similar noted in threats Medium = no mention No Low category	Choose an item.

Factors	Indicator	Selection
Overall Rank: VULNERABILITY	Determine combinations of the above that equate to overall High, Medium, Low: Mediums are neutral factors and don't get weighed If all others are Highs = High If all others are Lows = Low Mix of High/Low = Medium, unless: - Status is Low, then overall Low or, -Uplisting recommendation, then = High If all are Medium = Medium	Choose an item.
RISK		
Direct effects (sub-lethal)	Medium = direct effects expected (12% reduction in dry weight) Low = no direct effects expected No High category.	Choose an item.
Indirect effects (pollinator mortality)	High = >40% indirect effects (mortality of key prey items or loss of pollinators) Medium = 10-40% indirect effects Low = < 10% indirect effects or no indirect effects because no biotic pollinator or does not use pollinators for reproduction	Choose an item.
Method of Reproduction (risk modifier)	High = outcrosser Medium = asexual/self-pollination or unknown Low = non-flowering or abiotic pollination vector	Choose an item.
Seed dispersal vector (risk modifier)	High = insect Medium = bird, mammal, unknown, or mix of seed dispersal vectors Low = abiotic/NA	Choose an item.
Obligate/specific pollinator (risk modifier)	High = yes Medium = no, unknown or NA No Low category	Choose an item.
Overall Rank: RISK	Medium factors don't get weighed If all others are Highs = High If all others are Lows = Low Mix of Highs and Lows = Medium All Mediums = Medium	Choose an item.

Factors	Indicator	Selection
USAGE		
Total percent of the species range with anticipated usage for uses that may have effects to the species (direct or indirect)	High = >10% Medium = 5-10% Low = <5%	Choose an item.
Confidence level: Modifier based on confidence level in usage data	CalPUR data = 75-100% CalPUR data Standard data = <75% CalPUR data	Choose an item.
Overall Rank: USAGE	Based on High, Medium or Low above.	Choose an item.

INTEGRATION AND SYNTHESIS WORKSHEET: Island Plant Species

Note to Service biologists: Use the following ranking indicators as a starting point for determining consequences of the action to listed species.

Factors	Indicator	Selection
VULNERABILITY		
Listing status, with 5-year status review recommendation (if recent, within last 5 years)	High = Endangered; Presumed Endangered; or Threatened with 5-year review uplisting recommendation Medium = Candidate, Threatened, Presumed Threatened Low = 5-yr review delisting recommendation	Choose an item.
Vulnerability factor: # populations	High = Single population (some species in the Pacific islands with 2 populations were given high rankings due to their highly endemic nature or very few individuals in each population) Medium = Multiple populations (few), Population size/location(s) unknown Low = Multiple populations (numerous)	Choose an item.
Vulnerability factor: species trends	High = Declining population(s) – one or more populations declining Medium = All populations stable, with none known to be increasing or decreasing; Unknown population trends Low = Increasing population(s)	Choose an item.
Vulnerability factor: distribution	High = Small, endemic, constrained, and/or isolated population(s) Medium = Species/Populations neither constrained nor widespread; Population size/location unknown Low = Species/Populations widespread or wide-ranging	Choose an item.
Pesticides identified as a threat (in a listing rule, 5-year status review or recovery plan)	High = Pesticides, contaminants that may include pesticides or water quality are noted threats Medium = no mention No Low category	Choose an item.

Factors	Indicator	Selection
Pollinator loss identified as a threat (in a listing rule, 5-year status review or recovery plan)	High = Pollinator loss, decline or similar noted in threats Medium = no mention No L category	Choose an item.
Overall Rank: VULNERABILITY	Determine combinations of the above that equate to overall High, Medium, Low: Mediums are neutral factors and don't get weighed If all others are Highs = High If all others are Lows = Low Mix of High/Low = Medium, unless: Status is L, then overall Low or, Uplisting recommendation, then = High If all are Medium = Medium	Choose an item.
RISK		
Direct effects (sub-lethal)	Medium = direct effects expected (12% reduction in dry weight) Low = no direct effects expected No High category.	Choose an item.
Indirect effects (pollinator mortality)	High = effects to insect pollinators expected Medium = effects to avian pollinators expected or species uses a mix of pollinators (i.e., insect and mammal, insect and bird), or unknown Low = no effects to pollinators expected (abiotic or mammalian pollinators)	Choose an item.
Preferred habitat (risk modifier)	High = occurs in pasture, agricultural, cultivated, or other disturbed areas Medium = occurs in shrubland or grassland, or habitat descriptors not sufficiently described Low = occurs in forests, cliffs, sand dunes, or bogs.	
Method of Reproduction (risk modifier)	High = outcrosser Medium = asexual/self-pollination or unknown Low = non-flowering or abiotic pollination vector	Choose an item.
Seed dispersal vector (risk modifier)	High = insect Medium = bird, mammal, unknown, or mix of seed dispersal vectors Low = abiotic/NA	Choose an item.

Factors	Indicator	Selection
Obligate/specific pollinator (risk modifier)	High = yes Medium = no, unknown or NA No Low category	Choose an item.
Overall Rank: RISK	Medium factors don't get weighed If all others are Highs = High If all others are Lows = Low Mix of Highs and Lows = Medium All Mediums = Medium	Choose an item.
Potential Exposure		
Potential exposure based on preferred habitat	High = occurs in pasture, agricultural, cultivated, or other disturbed areas Medium = occurs in shrubland or grassland, or habitat descriptors not sufficiently described Low = occurs in forests, cliffs, sand dunes, or bogs.	Choose an item.
Overall Rank: Potential exposure	Based on High, Medium, or Low as indicated above	Choose an item.