Integration and Synthesis Summary for Plants, CONUS
Flowering Plants Assessment Group 4 – Monocots with Abiotic pollination vectors

The tables below contain summaries of the information and data we used to determine the ranking (high, medium, low) for vulnerability, risk and usage indicators. Information in most of the columns was used directly in the ranking determination (green fill). Where indicated, information in other columns was not used directly in the ranking calculation, but provided additional information about the species that fed into one of the ranking metrics or was used to make the draft determination when relevant. The summary for this assessment group also includes new conservation measures[1] that have been incorporated into the Action since the draft biological opinion was released. The measures and our related assumptions are incorporated into our analysis (immediately above Table 4), and also factor into the rationales for our conclusions for each species, as described below.

All species in this assessment groups are monocots, a class of angiosperm flowering plant defined by having only one cotyledon (embryonic seed leaves). There are a large variety of monocot species, though typical monocot plants include grasses, lilies and palms. The monocots in this assessment group utilize abiotic vectors to accomplish pollination, such as wind and water. Seed dispersal for the species in this group is achieved by biotic (dispersal by animals) and/or abiotic (dispersal by wind, water or gravity) means.

Table 1: Summarizing Data and Information for Vulnerability Ranking
Data Sources: Status of the Species (SOS) accounts updated as of November 2019 (Appendix C); NA = Not Applicable

Scientific Name	Common Name	Status	Population Level Trends	Species Level Trends	Number of Populations	Distribution	Number of Individuals*	Pesticides Listed as a Threat	Pollinator Loss Listed as a Threat	Vulnerability ranking
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	Endangered	Not Available	Not Available	6 (USFWS, 2011)	The plant occurs in freshwater marshes and swamps and riparian scrub within Marin and Sonoma Counties, California (California Natural Diversity Database (CNDDB) 2011) (USFWS, 2011).	200 (NatureServe, 2015)	No Mention	No Mention	High
Carex albida	White sedge	Endangered	Decreasing (USFWS, 2009)	Decreasing (NatureServe, 2015)	1 extant occurrence (USFWS, 2009)	Known only from a 10square km area in Sonoma County, California. (NatureServe, 2015).	~300 (USFWS, 2009)	No Mention	No Mention	High
Carex lutea	Golden sedge	Endangered	Unknown (NatureServe, 2015)	Stable (USFWS, 2015)	8 (USFWS, 2014)	Known occurrences are in Pender and Onslow Counties, NC. (NatureServe, 2015)	1000 - 2500 individuals (NatureServe, 2015)	No Mention	No Mention	High
Carex specuicola	Navajo sedge	Threatened	Undetermined	Undetermined	57	U.S.: Apache, Coconino, and Navajo counties, AZ; San Juan County, UT. Species is endemic to the Navajo Indian Reservation, Coconino, County, AZ.	>5,000	No Mention	No Mention	Low
Digitaria pauciflora	Florida Pineland crabgrass	Threatened	Unknown; inconsistently monitored	Not Available	3 sites, Long Pine Key of Everglades National Park (ENP)(~19,839 ac/8,029 ha); Big Cypress National Preserve (BCNP) ~(729,000 ac/295,000 ha); Lostmans Pines (~14,000 ac/5,666 ha)	In Miami-Dade and Monroe counties in Florida, in the Long Pine Key area of Everglades National Park and Big Cypress National Park (USFWS, 2017).	1,000 to 10,000 individuals at Long Pine Key; >10,000 individuals within the BCNP; ~2,400 individuals at Lostmans Pines.	No Mention	No Mention	High

[1] Additional information on these new conservation measures can be found in the Description of the Action section of this biological opinion.

Scientific Name	Common Name	Status	Population Level Trends	Species Level Trends	Number of Populations	Distribution	Number of Individuals*	Pesticides Listed as a Threat	Pollinator Loss Listed as a Threat	Vulnerability ranking
Festuca ligulata	Guadalupe fescue	Endangered	Long-term trends indicate a decline of <70% to relatively stable, whereas short-term trends indicate a relatively stable population (NatureServe, 2015)	Not Available	1 (NatureServe, 2015)	The only known extant population in the United States occurs on Federal land in Big Bend National Park (BIBE), where less than 200 individuals are scattered over 2 hectares (ha) (5 acres (ac)) (Gordon and Poole 2009, p. 2; BIBE and U.S. Fish and Wildlife Service (Service) 2008, p. 3; Sirotnak 2014). (USFWS, 2014)	~150 individuals (NatureServe, 2015)	No Mention	No Mention	High
Neostapfia colusana	Colusa grass	Threatened	Decline of 30 to 70% (NatureServe, 2015)	Not Available	43 (USFWS, 2008)	Currently, no more than 42 occurrences of *Neostapfia colusana* remain extant (Hogle 2002, California Natural Diversity Data Base 2005). At least one population remains in each of the vernal pool regions from which *N. colusana* was known historically. The majority of extant occurrences are in the Southern Sierra Foothills Vernal Pool Region, where they are concentrated northeast of the City of Merced in Merced County and east of Hickman in Stanislaus County. One or two occurrences remain in central Merced County, which is part of the San Joaquin Valley Vernal Pool Region. Four occurrences are extant in the Solano-Colusa Vernal Pool Region, with two each in southeastern Yolo and central Solano Counties (Stone et al. 1988, Keeler-Wolf et al. 1998, California Natural Diversity Data Base 2003). This species has apparently been extirpated from Colusa County (California Natural Diversity Data Base 2005). (USFWS, 2005)	>1,000,000 individuals (NatureServe, 2015)	No Mention	No Mention	Low
Orcuttia californica	California Orcutt grass	Endangered	Decreasing (NatureServe, 2015)	Not Available	6 – 20 (NatureServe, 2015)	California, Riverside Co. (Santa Rosa Plateau), San Diego Co. (Otay Mesa, Miramar Mesa), Los Angeles County, Mexico, Baja (near San Quintin). Range extent covers about 130 x 150 miles or about 20,000 sq miles, including Baja. (NatureServe, 2015)	10,000 - 100,000 individuals (NatureServe, 2015)	No Mention	Loss of Pollinators (USFWS, 2011)	High
Orcuttia inaequalis	San Joaquin Orcutt grass	Threatened	Not Available	Not Available		The current range of *O. inaequalis* includes portions of: Solano, Merced, Madera, Fresno, and Tulare Counties (USFWS, 2013).	Not Available	No Mention	No Mention	Medium
Orcuttia pilosa	Hairy Orcutt grass	Endangered	Not Available	Not Available	21 - 80 (NatureServe, 2015)	*O. pilosa* occurs over a 490-km stretch on the eastern margin of the San Joaquin and Sacramento Valleys from Tehama County south through Merced and Mariposa Counties. (NatureServe, 2015)	Not Available	No Mention	No Mention	Medium
Orcuttia tenuis	Slender Orcutt grass	Threatened	Not Available	Not Available	21 - 80 (NatureServe, 2015)	Sacramento Valley (north central valley) and surrounding areas. Shasta and Tehama counties	2500 - 10,000 individuals	No Mention	No Mention	Low

Scientific Name	Common Name	Status	Population Level Trends	Species Level Trends	Number of Populations	Distribution	Number of Individuals*	Pesticides Listed as a Threat	Pollinator Loss Listed as a Threat	Vulnerability ranking
						primarily; also in Sacramento and Lake counties, California. (NatureServe, 2015)	(NatureServe, 2015)			
Orcuttia viscida	Sacramento Orcutt grass	Endangered	Decreasing (NatureServe, 2015)	Not Available	6 - 20 (NatureServe, 2015)	Known only from Sacramento County, California in two main clumps. The two areas add up to about 22 sq mi of range extent. (NatureServe, 2015)	>1,000,000 individuals (NatureServe, 2015)	No Mention	No Mention	High
Poa atropurpurea	San Bernardino bluegrass	Endangered	Decreasing (USFWS, 2008)	Not Available	6 - 20 (NatureServe, 2015)	An unknown proportion of habitat for the species was initially lost in the 1880's via construction of the water impoundment that created Big Bear Lake. It is estimated that in addition to that initial habitat loss, 91 percent of the remaining historic habitat had been destroyed by 1998 (63 FR 49006-22), leaving just nine percent of its original range extant. Due to development, urbanization, and edge effects in Big Bear Valley since 1998, this remnant nine percent figure is probably an incorrect (high) estimate. In 1998, over 70 percent of the few remaining parcels of habitat for the species in Big Bear Valley were unprotected, and no populations in San Diego County were considered protected (63 FR 49006-49022). (USFWS, 2008)	250 - 10,000 individuals (NatureServe, 2015)	No Mention	No Mention	High
Poa napensis	Napa bluegrass	Endangered	Decreasing (NatureServe, 2015)	Not Available	1 - 5 (NatureServe, 2015)	Known only from a small area in Napa County, near Calistoga. The entire range encompasses no more than 3 sq miles. (NatureServe, 2015)	250 - 2500 individuals (NatureServe, 2015)	No Mention	No Mention	High
Potamogeton clystocarpus	Little Aguja (=Creek) Pondweed	Endangered	Not Available	Not Available	1 (USFWS, 1994)	*Potamogeton clystocarpu*s has a very restricted distribution in the Davis Mountains, Jeff Davis County, Texas. The species has never been reported to occur anywhere but in the drainage of Little Aguja Canyon, in pools in Little Aguja Creek. (USFWS, 1994)	Not Available	Chemical contaminants (USFWS, 1994)	No Mention	High
Rhynchospora knieskernii	Knieskern's Beaked-rush	Threatened	Declining (USFWS, 2008)	Not Available	73 occurrences (USFWS, 2008)	This species is now endemic to 5 counties within the New Jersey Pine Barrens, where fewer than 40 recent occurrences have been documented. (NatureServe, 2015)	Not Available	No Mention	No Mention	Low
Scirpus ancistrochaetus	Northeastern bulrush	Endangered	Declining (NatureServe, 2015)	Not Available	113 (USFWS, 2009)	Extant populations of S. *ancistrochaetus* are currently known from Maryland (1 population), Massachusetts (1), New Hampshire (1), Pennsylvania (22), Vermont (2), Virginia (4), and West Virginia (2). As of 2007, there were 113 extant populations range-wide, most of which were found in Pennsylvania and Vermont. (USFWS, 1993)	2500 - 100,000 individuals (NatureServe, 2015)	No Mention	No Mention	Medium
Swallenia alexandrae	Eureka Dune grass	Threatened	Decreasing (NatureServe, 2015)	Not Available	1-5 (NatureServe, 2015)	California endemic, known only from the desert dunes in Eureka Valley in Inyo County (Skinner, 1997). (NatureServe, 2015)	1-1,000 individuals	No Mention	No Mention	High

Scientific Name	Common Name	Status	Population Level Trends	Species Level Trends	Number of Populations	Distribution	Number of Individuals*	Pesticides Listed as a Threat	Pollinator Loss Listed as a Threat	Vulnerability ranking
							(NatureServe, 2015)			
Tuctoria greenei	Greene's tuctoria	Endangered	Not Available	Not Available	6 - 80 (NatureServe, 2015)	Endemic to the Central Valley of California. Occurs in three Vernal Pool Regions: the Northeastern Sacramento Valley Vernal Pool Region (Tehama Co. and Butte Co.), particularly in the Vina Plains; the Modoc Plateau Vernal Pool Region to the north (Shasta Co.); and the Southern Sierra Foothills Vernal Pool Region some distance to the south (eastern Merced Co., with one historical occurrence in Madera Co.). Considered historical in Tulare, Fresno, San Joaquin, and Stanislaus Cos., and extirpated from Glenn Co. Current range is estimated to be about 17,000 square km.	10,000 to >1,000,000 individuals (NatureServe, 2015)	No Mention	Poor Colonizing/ Recolonizing Ability (USFWS, 2007)	High
Tuctoria mucronata	Solano grass	Endangered	Decreasing (USFWS, 2009)	Not Available	NA	Endemic to California, known only from Olcott Lake and vicinity.	Not Available	No Mention	No Mention	High
Zizania texana	Texas wild-rice	Endangered	Long-term trends suggest a decline of >90% (NatureServe, 2015)	Not Available	1 (NatureServe, 2015)	The current distribution of wild rice extends from the uppermost part of the San Marcos River just below Spring Lake dam and throughout the critical habitat down to an area slightly below the wastewater treatment plant, except for the river portion between the Rio Vista railroad bridge and the dam above Cheatham Street (USFWS, 1995)	<500 individuals (NatureServe, 2015)	No Mention	No Mention	High

*Information in this column was used to inform the ranking metrics or the draft determination when relevant.

Table 2: Summarizing Data and Information for Risk Ranking
Data Sources: SOS accounts (Appendix C); R Plot Appendices; NA=Not Applicable

Risk to Individuals and Pollinators/Seed Dispersers if exposed: The individual plants in this assessment group are not expected to experience effects to growth or survival from exposure to malathion. The monocots in this assessment group do not rely on animal species for pollination, thus no effects are expected to these plants from loss in pollinator populations from malathion exposure across use sites within their ranges. Mortality is expected for insect seed dispersers exposed to malathion on use sites, via spray drift, and from mosquito control applications. Some avian seed dispersers exposed to malathion on use sites may experience mortality or sublethal effects, depending on the site of exposure and size of the bird. Smaller birds exposed on use sites with higher allowable use rates (e.g., developed, open space developed, orchards and vineyards) have a greater chance of being affected. Exposure to spray drift is not expected to result in effects to bird seed dispersers. No mortality or sublethal effects are expected for mammalian seed dispersers from malathion exposure either on use sites or from spray drift.

Scientific Name	Common Name	Direct Effects to Mortality or Growth Expected (yes or no; reduction in dry weight when exposed in use areas that may have effects)	Effects to Pollinators % insect pollinator mortality (% bird pollinator mortality)	Method of Reproduction (risk modifier)	Seed Dispersal Vector (risk modifier)	Obligate or Specific Pollinator (risk modifier)	Pollination Vector*	Risk Ranking
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Carex albida	White sedge	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Carex lutea	Golden sedge	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Carex specuicola	Navajo sedge	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Digitaria pauciflora	Florida Pineland crabgrass	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Festuca ligulata	Guadalupe fescue	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Neostapfia colusana	Colusa grass	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Orcuttia californica	California Orcutt grass	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Orcuttia inaequalis	San Joaquin Orcutt grass	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Orcuttia pilosa	Hairy Orcutt grass	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Orcuttia tenuis	Slender Orcutt grass	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Orcuttia viscida	Sacramento Orcutt grass	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Poa atropurpurea	San Bernardino bluegrass	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Poa napensis	Napa bluegrass	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Potamogeton clystocarpus	Little Aguja (=Creek) Pondweed	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Rhynchospora knieskernii	Knieskern's Beaked-rush	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Scirpus ancistrochaetus	Northeastern bulrush	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Swallenia alexandrae	Eureka Dune grass	No	NA	Abiotic – Pollinating Agent	Abiotic	NA	Abiotic	Low
Tuctoria greenei	Greene's tuctoria	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Tuctoria mucronata	Solano grass	No	NA	Abiotic - Pollinating Agent	Abiotic, Biotic	NA	Abiotic	Low
Zizania texana	Texas wild-rice	No	NA	Abiotic - Pollinating Agent	Abiotic	NA	Abiotic	Low

*Information in this column was used to inform the ranking metrics or the draft determination when relevant.

Volatilization: We do not expect transport from volatilization to be an appreciable source of exposure for most or all species in this assessment group. For species that occur at high elevations, we expect additional exposure to malathion that may vaporize from application sites. However, the magnitude of increased exposure is uncertain due to the unpredictability of weather events, along with variability of the geographical features across the landscapes that influence transport and deposition, though the information available does not allow us to conclude that concentrations from this route alone will rise to the level where effects are expected.

Table 3: Summarizing Data and Information for Usage Ranking

Data Sources: R Plot Appendices for individual plant species; Federal lands overlap analysis; California (CA); NA=Not Applicable

Scientific Name	Common Name	Acres in Species Range*	% Range overlap with federal lands*	% Range in CA*	Comments for % Range in CA*	Total overlap % (All Agricultural and Residential Uses)*	Total overlap % (Mosquito Adulticide)*	Anticipated Usage within Range (agricultural data based on SUUM): total % of range for all uses	Anticipated Usage within Range (agricultural data based on CalPUR): total % of range for all uses	Ranking: Confidence Level	Usage Ranking
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	349,953.95	19.17	100	None	1.69	8.59	0.58	0.073	CalPUR	Low
Carex albida	White sedge	74,851.41	0.00	100	None	55.74	100.23	16.35	2.157	CalPUR	Low
Carex lutea	Golden sedge	1,390,292.05	9.19	0	NA	12.85	78.67	1.03	NA	Standard	Low
Carex specuicola	Navajo sedge	3,798,275.16	14.62	0	NA	0.31	27.08	0.02	NA	Standard	Low
Digitaria pauciflora	Florida Pineland crabgrass	3,947,861.29	48.40	0	NA	8.16	25.22	0.72	NA	Standard	Low
Festuca ligulata	Guadalupe fescue	13,241,858.06	6.80	0	NA	0.90	0.01	0.16	NA	Standard	Low
Neostapfia colusana	Colusa grass	821,519.31	2.51	100	None	50.59	92.87	30.01	1.415	CalPUR	Low
Orcuttia californica	California Orcutt grass	1,991,560.54	49.66	100	None	18.48	50.59	1.95	1.564	CalPUR	Low
Orcuttia inaequalis	San Joaquin Orcutt grass	952,329.82	1.45	100	None	53.79	88.83	25.75	1.089	CalPUR	Low
Orcuttia pilosa	Hairy Orcutt grass	603,264.30	1.77	100	None	49.40	89.12	28.43	0.804	CalPUR	Low
Orcuttia tenuis	Slender Orcutt grass	11,610,295.40	62.49	90	Other portion of range occurs in OR	5.47	17.75	2.64	0.106	CalPUR	Low
Orcuttia viscida	Sacramento Orcutt grass	186,932.51	3.10	100	None	40.60	97.31	6.48	1.729	CalPUR	Low
Poa atropurpurea	San Bernardino bluegrass	168,876.34	99.97	99	100% range is in CA.	0	1.43E-05	0	0	CalPUR	Low
Poa napensis	Napa bluegrass	37,362.38	0.01	100	None	15.25	100.66	10.11	0.058	CalPUR	Low
Potamogeton clystocarpus	Little Aguja (=Creek) Pondweed	1,449,559.79	0.03	0	NA	0.30	0	0.02	NA	Standard	Low
Rhynchospora knieskernii	Knieskern's Beaked-rush	1,581,828.05	7.15	0	NA	22.00	93.05	1.36	NA	Standard	Low
Scirpus ancistrochaetus	Northeastern bulrush	11,910,168.57	10.45	0	NA	15.31	39.02	0.68	NA	Standard	Low
Swallenia alexandrae	Eureka Dune grass	26,785	100	100		0	0	0	0	CalPUR	Low
Tuctoria greenei	Greene's tuctoria	3878219.26	57.19	100	None	14.87	40.46	8.75	0.208	CalPUR	Low
Tuctoria mucronata	Solano grass	72,493.98	1.02	100	None	65.00	99.44	29.76	0.447	CalPUR	Low
Zizania texana	Texas wild-rice	4,331,618.67	1.05	0	NA	18.88	17.59	5.03	NA	Standard	Low

*Information in this column was used to inform the ranking metrics or the draft determination when relevant.

Cumulative Effects and Environmental Baseline: Please refer to the Status of the Species accounts (Appendix C) and overarching Environmental Baseline and Cumulative Effects sections of this Opinion.

Additional Conservation Measures:

Additional information on these new conservation measures can be found in the *Description of the Action* section and Appendix A-2 of this biological opinion, and further information on the anticipated impacts of each measure in the *Effects of the Action* section.

General Conservation Measures

Several additional conservation measures have been recently provided by EPA and will be implemented as part of the Action. These measures will apply to all species in this assessment group with corresponding use type overlap and usage (i.e., mosquito adulticide, agricultural and residential uses, see Table 3). All measures are anticipated to limit the exposure of seed dispersers to malathion in the described use area where it occurs in or around the range of the species, thus further reducing the risk of reproductive effects to the species. We summarize the new measures and our related assumptions below.

Mosquito adulticide timing restrictions: Conservation measures for mosquito adulticide use will prohibit application during most daylight hours (from two hours after dawn until two hours before sunset). This period is when many diurnal insect seed dispersers are most active and would most likely be exposed to malathion applications. This measure is anticipated to limit the exposure of seed dispersers present in and around the range of the species to malathion when used as a mosquito adulticide.

Bloom restrictions: New restrictions on orchards and vineyards, pasture, and other crops UDLs will prohibit application of malathion within three days prior to bloom, during bloom, and until petal fall is complete on certain crops. This measure is anticipated to limit the exposure of seed dispersers to malathion in this use area where it occurs in or around the range of the species, reducing the risk of impacts to reproduction where seed dispersers are active prior to the completion of petal fall for the crop.

Reduced application number and rate: New restrictions on corn, cotton, orchards and vineyards, pasture, other crops, and vegetables and groundfruit lower the maximum allowable number of applications (previously ranging from 3-13 applications per year, depending on the specific crop) to 2-4 per year, as described in the Description of the Action of this Opinion. This is anticipated to reduce the amount of malathion used and decrease exposure to seed dispersers, thus decreasing the risk of impacts to the reproduction of these plants.

Reduced citrus application rate: For citrus applications outside of California, label restrictions will include a reduction in the maximum application rate, which is anticipated to reduce potential environmental concentrations to one-third of modeled values, reducing the effects to species and their seed dispersers on and adjacent to these use areas. For citrus applications in California, instead of reducing application rates, users can only apply once per year, and by ground application only.

Residential use label changes: New restrictions to the method and frequency of application for residential use of malathion are anticipated to substantially reduce exposure to species and their pollinators/seed dispersers that overlap with developed and open space developed areas. Label changes will ensure that residential use is limited to spot treatments only (rendering spray drift offsite unlikely) and reducing the extent of area which can be treated in the developed and open space developed areas by as much as 75% or more from modeled values. In addition, we expect the frequency of exposure to decrease as the number of allowable applications is reduced from “repeat as necessary” to a maximum of 2–4 applications per year (depending on the specific residential use). Retreatment intervals of 7-10 days between any repeated applications are expected to reduce environmental concentrations by allowing initial residues to degrade prior to the next application. While these species have no biotic pollinators, we anticipate this measure will further reduce exposure to biotic seed dispersers, thus decreasing the risk of impacts to the reproduction of these plants.

Table 4: Summary of Conclusions

Scientific Name	Common Name	Vulnerability Ranking	Risk Ranking	Usage Ranking	Species Conclusion (J, NJ)*
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	High	Low	Low	NJ
Carex albida	White sedge	High	Low	Low	NJ
Carex lutea	Golden sedge	High	Low	Low	NJ
Carex specuicola	Navajo sedge	Low	Low	Low	NJ

Scientific Name	Common Name	Vulnerability Ranking	Risk Ranking	Usage Ranking	Species Conclusion (J, NJ)*
Digitaria pauciflora	Florida Pineland crabgrass	High	Low	Low	NJ
Festuca ligulata	Guadalupe fescue	High	Low	Low	NJ
Neostapfia colusana	Colusa grass	Low	Low	Low	NJ
Orcuttia californica	California Orcutt grass	High	Low	Low	NJ
Orcuttia inaequalis	San Joaquin Orcutt grass	Medium	Low	Low	NJ
Orcuttia pilosa	Hairy Orcutt grass	Medium	Low	Low	NJ
Orcuttia tenuis	Slender Orcutt grass	Low	Low	Low	NJ
Orcuttia viscida	Sacramento Orcutt grass	High	Low	Low	NJ
Poa atropurpurea	San Bernardino bluegrass	High	Low	Low	NJ
Poa napensis	Napa bluegrass	High	Low	Low	NJ
Potamogeton clystocarpus	Little Aguja (=Creek) Pondweed	High	Low	Low	NJ
Rhynchospora knieskernii	Knieskern's Beaked-rush	Low	Low	Low	NJ
Scirpus ancistrochaetus	Northeastern bulrush	Medium	Low	Low	NJ
Swallenia alexandrae	Eureka Dune grass	High	Low	Low	NJ
Tuctoria greenei	Greene's tuctoria	High	Low	Low	NJ
Tuctoria mucronata	Solano grass	High	Low	Low	NJ
Zizania texana	Texas wild-rice	High	Low	Low	NJ

*NJ = No Jeopardy; J = Jeopardy

Rationale for Species Conclusions

After reviewing the current status of the species, the environmental baseline for the action area, the effects of the proposed registration of malathion, and the cumulative effects, it is the Service's biological opinion that the registration of malathion, as proposed, is not likely to jeopardize the continued existence of the plant species in this assessment group.

While the species in this assessment group have a mixture of vulnerabilities (high, medium and low) based on their status, distribution, and trends, the risk to all species in this group posed by labeled uses across the range is anticipated to be low, as described above. In addition, the estimated usage within the range for all species in this group is low. Pollinating animals do not play a role in the life cycle of this group of monocot plants, instead they utilize wind or water to transport pollen between individuals and populations; thus, no effects to pollinators are expected. Furthermore, the individual plants in this assessment group are not expected to experience sub-lethal effects from exposure to malathion, as discussed in the General Effects section of this Opinion. However, these monocot species do rely on animals to disperse a portion of their seeds. Given the low estimated usage within the range for all species, and the fact that these species partially rely on abiotic seed dispersal mechanisms, we do not anticipate the level of seed disperser mortality would result in species-level effects. Implementation of label restrictions described in the conservation measures above, (e.g., reduction in seed disperser exposure due to spot treatments and reduction in annual allowed applications to two from as many as needed in developed and open spaced developed areas) are anticipated to further reduce the likelihood of exposure and effects to these species.
Therefore, we do not anticipate that the proposed action would appreciably reduce survival and recovery of these species in the wild.