Appendix A

Review of the EPA's "no effect" determinations and concurrence with the EPA's "not likely to adversely affect" determinations.

No effect determinations

In their biological evaluation (BE) for Enlist One and Enlist Duo, the EPA provided determinations of "no effect" for 230 listed species and 27 critical habitats (Table 1). The Service agrees with EPA's no-effect determination for these species and critical habitats as their ranges or designated areas fall completely out of the action area, will not experience any exposure (e.g., only occur in areas far from agriculture, herbicide residues will be so dilute that they will not cause any effects), or who otherwise will not experience any toxic effects based on basic physiology and will not experience any indirect effects as they are not reliant on any resources that will be adversely affected by Enlist herbicides.

Table 1. List of species with no effect determinations.

Taxa	Entity ID	Species	Scientific name	Status
Amphibians	189	Texas blind salamander	*Eurycea rathbuni*	Endangered
Amphibians	194	San Marcos salamander	*Eurycea nana*	Threatened
Amphibians	197	Barton Springs salamander	*Eurycea sosorum*	Endangered
Amphibians	198	Cheat Mountain salamander	*Plethodon nettingi*	Threatened
Amphibians	201	Sonora tiger Salamander	*Ambystoma mavortium stebbinsi*	Endangered
Amphibians	2932	Neuse River waterdog	*Necturus lewisi*	Designated Critical Habitat
Amphibians	3849	Jemez Mountains salamander	*Plethodon neomexicanus*	Endangered
Amphibians	5065	Black warrior (=Sipsey Fork) Waterdog	*Necturus alabamensis*	Endangered
Amphibians	5065	Black warrior (=Sipsey Fork) Waterdog	*Necturus alabamensis*	Designated Critical Habitat
Amphibians	5434	Georgetown Salamander	*Eurycea naufragia*	Threatened
Amphibians	6346	Austin blind Salamander	*Eurycea waterlooensis*	Endangered
Amphibians	7610	Salado Salamander	*Eurycea chisholmensis*	Threatened
Amphibians	7847	Ozark Hellbender	*Cryptobranchus alleganiensis bishopi*	Endangered
Amphibians	8231	Jollyville Plateau Salamander	*Eurycea tonkawae*	Threatened

Taxa	Entity ID	Species	Scientific name	Status
Birds	66	California condor	*Gymnogyps californianus*	Endangered
Birds	85	Cape Sable seaside sparrow	*Ammodramus maritimus mirabilis*	Endangered
Birds	89	Masked bobwhite (quail)	*Colinus virginianus ridgwayi*	Endangered
Birds	96	California least tern	*Sterna antillarum browni*	Endangered
Birds	125	Audubon's crested caracara	*Polyborus plancus audubonii*	Threatened
Birds	130	Piping Plover (Great Lakes population)	*Charadrius melodus*	Endangered
Birds	133	Florida grasshopper sparrow	*Ammodramus savannarum floridanus*	Endangered
Birds	134	Least tern	*Sterna antillarum*	Recovery
Birds	135	Roseate tern	*Sterna dougallii dougallii*	Endangered
Birds	136	Roseate tern	*Sterna dougallii dougallii*	Threatened
Bivalves	317	Cumberland bean (pearlymussel)	*Villosa trabalis*	Endangered
Bivalves	318	Purple bean	*Villosa perpurpurea*	Endangered
Bivalves	323	Purple Cat's paw (=Purple Cat's paw pearlymussel)	*Epioblasma obliquata obliquata*	Endangered
Bivalves	324	White catspaw (pearlymussel)	*Epioblasma obliquata perobliqua*	Endangered
Bivalves	325	Higgins eye (pearlymussel)	*Lampsilis higginsii*	Endangered
Bivalves	328	Winged Mapleleaf	*Quadrula fragosa*	Endangered
Bivalves	351	Tar River spinymussel	*Parvaspina steinstansana*	Endangered
Bivalves	366	Purple bankclimber (mussel)	*Elliptoideus sloatianus*	Threatened
Bivalves	377	Ovate clubshell	*Pleurobema perovatum*	Designated Critical Habitat
Bivalves	375	Fat threeridge (mussel)	*Amblema neislerii*	Endangered
Bivalves	385	Ochlockonee moccasinshell	*Medionidus simpsonianus*	Designated Critical Habitat
Bivalves	386	Chipola slabshell	*Elliptio chipolaensis*	Threatened

Taxa	Entity ID	Species	Scientific name	Status
Bivalves	1369	Fuzzy pigtoe	*Pleurobema strodeanum*	Threatened
Bivalves	1559	Fluted kidneyshell	*Ptychobranchus subtentus*	Endangered
Bivalves	3645	Rabbitsfoot	*Quadrula cylindrica cylindrica*	Threatened
Bivalves	3833	Georgia pigtoe	*Pleurobema hanleyianum*	Designated Critical Habitat
Bivalves	4042	Choctaw bean	*Obovaria choctawensis*	Designated Critical Habitat
Bivalves	4086	Neosho Mucket	*Lampsilis rafinesqueana*	Endangered
Bivalves	4210	Altamaha spinymussel	*Elliptio spinosa*	Designated Critical Habitat
Bivalves	4411	Alabama pearlshell	*Margaritifera marrianae*	Endangered
Bivalves	6534	Tapered pigtoe	*Fusconaia burkei*	Threatened
Bivalves	6841	Slabside Pearlymussel	*Pleuronaia dolabelloides*	Endangered
Bivalves	7048	Atlantic pigtoe	*Fusconaia masoni*	Designated Critical Habitat
Bivalves	7177	Narrow pigtoe	*Fusconaia escambia*	Threatened
Bivalves	7349	Southern sandshell	*Hamiota australis*	Threatened
Bivalves	7363	Round ebonyshell	*Reginaia rotulata*	Designated Critical Habitat
Bivalves	7372	Suwannee moccasinshell	*Medionidus walkeri*	Threatened
Bivalves	7949	Southern kidneyshell	*Ptychobranchus jonesi*	Endangered
Crustaceans	475	Hay's Spring amphipod	*Stygobromus hayi*	Endangered
Crustaceans	476	Madison Cave isopod	*Antrolana lira*	Threatened
Crustaceans	477	Peck's cave amphipod	*Stygobromus (=Stygonectes) pecki*	Endangered
Crustaceans	480	Alabama cave shrimp	*Palaemonias alabamae*	Endangered
Crustaceans	482	Kentucky cave shrimp	*Palaemonias ganteri*	Endangered
Crustaceans	483	Socorro isopod	*Thermosphaeroma thermophilus*	Endangered

Taxa	Entity ID	Species	Scientific name	Status
Crustaceans	484	Illinois cave amphipod	*Gammarus acherondytes*	Endangered
Crustaceans	486	Lee County cave isopod	*Lirceus usdagalun*	Endangered
Crustaceans	487	Squirrel Chimney Cave shrimp	*Palaemonetes cummingi*	Threatened
Crustaceans	488	Hell Creek Cave crayfish	*Cambarus zophonastes*	Endangered
Crustaceans	489	Benton County cave crayfish	*Cambarus aculabrum*	Endangered
Crustaceans	1261	Noel's amphipod	*Gammarus desperatus*	Designated Critical Habitat
Crustaceans	5153	Big Sandy crayfish	*Cambarus callainus*	Designated Critical Habitat
Crustaceans	8172	Diminutive amphipod	*Gammarus hyalleloides*	Designated Critical Habitat
Crustaceans	10757	Slenderclaw crayfish	*Cambarus cracens*	Designated Critical Habitat
Crustaceans	11201	Guyandotte River crayfish	*Cambarus veteranus*	Designated Critical Habitat
Ferns and Allies	1195	American hart's-tongue fern	*Asplenium scolopendrium var. americanum*	Threatened
Ferns and Allies	1203	Black spored quillwort	*Isoetes melanospora*	Endangered
Ferns and Allies	1204	Mat-forming quillwort	*Isoetes tegetiformans*	Endangered
Fishes	209	Humpback chub	*Gila cypha*	Threatened
Fishes	211	Moapa dace	*Moapa coriacea*	Endangered
Fishes	213	Big Bend gambusia	*Gambusia gaigei*	Endangered
Fishes	214	Clear Creek gambusia	*Gambusia heterochir*	Endangered
Fishes	215	Colorado pikeminnow (=squawfish)	*Ptychocheilus lucius*	Endangered
Fishes	220	Apache trout	*Oncorhynchus apache*	Threatened
Fishes	221	Gila trout	*Oncorhynchus gilae*	Threatened
Fishes	222	Greenback Cutthroat trout	*Oncorhynchus clarkii stomias*	Threatened

Taxa	Entity ID	Species	Scientific name	Status
Fishes	224	Okaloosa darter	*Etheostoma okaloosae*	Threatened
Fishes	230	Pecos gambusia	*Gambusia nobilis*	Endangered
Fishes	233	Lahontan cutthroat trout	*Oncorhynchus clarkii henshawi*	Threatened
Fishes	234	Woundfin	*Plagopterus argentissimus*	Endangered
Fishes	235	Snail darter	*Percina tanasi*	Threatened
Fishes	236	Alabama cavefish	*Speoplatyrhinus poulsoni*	Endangered
Fishes	237	Spotfin Chub	*Erimonax monachus*	Threatened
Fishes	237	Spotfin Chub	*Erimonax monachus*	Designated Critical Habitat
Fishes	238	Leopard darter	*Percina pantherina*	Threatened
Fishes	238	Leopard darter	*Percina pantherina*	Designated Critical Habitat
Fishes	239	Slackwater darter	*Etheostoma boschungi*	Threatened
Fishes	240	Roanoke logperch	*Percina rex*	Endangered
Fishes	243	Waccamaw silverside	*Menidia extensa*	Threatened
Fishes	244	Bayou darter	*Etheostoma rubrum*	Threatened
Fishes	246	Slender chub	*Erimystax cahni*	Threatened
Fishes	246	Slender chub	*Erimystax cahni*	Designated Critical Habitat
Fishes	247	Yellowfin madtom	*Noturus flavipinnis*	Threatened
Fishes	249	Bonytail	*Gila elegans*	Endangered
Fishes	249	Bonytail	*Gila elegans*	Designated Critical Habitat
Fishes	251	Leon Springs pupfish	*Cyprinodon bovinus*	Endangered
Fishes	252	Alabama sturgeon	*Scaphirhynchus suttkusi*	Endangered
Fishes	252	Alabama sturgeon	*Scaphirhynchus suttkusi*	Designated Critical Habitat
Fishes	259	Yaqui catfish	*Ictalurus pricei*	Threatened
Fishes	260	Ozark cavefish	*Amblyopsis rosae*	Threatened
Fishes	270	Neosho madtom	*Noturus placidus*	Threatened
Fishes	271	Pygmy madtom	*Noturus stanauli*	Endangered
Fishes	273	Loach minnow	*Tiaroga cobitis*	Endangered

Taxa	Entity ID	Species	Scientific name	Status
Fishes	275	Desert pupfish	*Cyprinodon macularius*	Endangered
Fishes	276	Beautiful shiner	*Cyprinella formosa*	Threatened
Fishes	277	Cahaba shiner	*Notropis cahabae*	Endangered
Fishes	278	Palezone shiner	*Notropis albizonatus*	Endangered
Fishes	279	Pecos bluntnose shiner	*Notropis simus pecosensis*	Threatened
Fishes	281	Little Colorado spinedace	*Lepidomeda vittata*	Threatened
Fishes	286	Atlantic sturgeon (Gulf subspecies)	*Acipenser oxyrinchus (=oxyrhynchus) desotoi*	Threatened
Fishes	293	Amber darter	*Percina antesella*	Endangered
Fishes	293	Amber darter	*Percina antesella*	Designated Critical Habitat
Fishes	294	Conasauga logperch	*Percina jenkinsi*	Endangered
Fishes	294	Conasauga logperch	*Percina jenkinsi*	Designated Critical Habitat
Fishes	295	Blackside dace	*Phoxinus cumberlandensis*	Threatened
Fishes	297	Boulder darter	*Etheostoma wapiti*	Endangered
Fishes	298	Goldline darter	*Percina aurolineata*	Threatened
Fishes	299	Arkansas River shiner	*Notropis girardi*	Threatened
Fishes	300	Blue shiner	*Cyprinella caerulea*	Threatened
Fishes	303	Pallid sturgeon	*Scaphirhynchus albus*	Endangered
Fishes	307	Bluemask darter	*Etheostoma akatulo*	Endangered
Fishes	308	Duskytail darter	*Etheostoma percnurum*	Endangered
Fishes	309	Rio Grande Silvery Minnow	*Hybognathus amarus*	Endangered
Fishes	309	Rio Grande Silvery Minnow	*Hybognathus amarus*	Designated Critical Habitat
Fishes	313	Relict darter	*Etheostoma chienense*	Endangered
Fishes	315	Etowah darter	*Etheostoma etowahae*	Endangered
Fishes	316	Vermilion darter	*Etheostoma chermocki*	Endangered
Fishes	3069	Trispot darter	*Etheostoma trisella*	Threatened

Taxa	Entity ID	Species	Scientific name	Status
Fishes	3280	Zuni bluehead Sucker	*Catostomus discobolus yarrowi*	Endangered
Fishes	3596	Sharpnose Shiner	*Notropis oxyrhynchus*	Endangered
Fishes	3596	Sharpnose Shiner	*Notropis oxyrhynchus*	Designated Critical Habitat
Fishes	4248	Grotto Sculpin	*Cottus specus*	Endangered
Fishes	4330	Shortnose sturgeon	*Acipenser brevirostrum*	Endangered
Fishes	4431	Pearl darter	*Percina aurora*	Threatened
Fishes	4881	Smalltooth sawfish	*Pristis pectinata*	Endangered
Fishes	5288	Carolina madtom	*Noturus furiosus*	Designated Critical Habitat
Fishes	6557	Diamond Darter	*Crystallaria cincotta*	Endangered
Fishes	6662	Yellowcheek Darter	*Etheostoma moorei*	Endangered
Fishes	7150	Chucky Madtom	*Noturus crypticus*	Endangered
Fishes	7670	Smalleye Shiner	*Notropis buccula*	Endangered
Fishes	7670	Smalleye Shiner	*Notropis buccula*	Designated Critical Habitat
Fishes	8352	Candy darter	*Etheostoma osburni*	Endangered
Fishes	8389	Pahrump poolfish	*Empetrichthys latos*	Endangered
Fishes	9220	Laurel dace	*Chrosomus saylori*	Endangered
Fishes	10297	Atlantic sturgeon	*Acipenser oxyrinchus oxyrinchus*	Threatened
Fishes	10298	Atlantic sturgeon	*Acipenser oxyrinchus oxyrinchus*	Endangered
Fishes	10299	Atlantic sturgeon	*Acipenser oxyrinchus oxyrinchus*	Endangered
Fishes	10300	Atlantic sturgeon	*Acipenser oxyrinchus oxyrinchus*	Endangered
Fishes	10301	Atlantic sturgeon	*Acipenser oxyrinchus oxyrinchus*	Endangered
Flowering Plants	513	Star cactus	*Astrophytum asterias*	Endangered
Flowering Plants	569	Zapata bladderpod	*Physaria thamnophila*	Endangered

Taxa	Entity ID	Species	Scientific name	Status
Flowering Plants	620	Northern wild monkshood	*Aconitum noveboracense*	Threatened
Flowering Plants	625	Little amphianthus	*Amphianthus pusillus*	Threatened
Flowering Plants	627	Tobusch fishhook cactus	*Sclerocactus brevihamatus ssp. tobuschii*	Threatened
Flowering Plants	630	Braun's rock-cress	*Arabis perstellata*	Endangered
Flowering Plants	644	Virginia round-leaf birch	*Betula uber*	Threatened
Flowering Plants	656	Navajo sedge	*Carex specuicola*	Threatened
Flowering Plants	661	Fragrant prickly-apple	*Cereus eriophorus var. fragrans*	Endangered
Flowering Plants	677	Cumberland rosemary	*Conradina verticillata*	Threatened
Flowering Plants	696	Lakela's mint	*Dicerandra immaculata*	Endangered
Flowering Plants	702	Black lace cactus	*Echinocereus reichenbachii var. albertii*	Endangered
Flowering Plants	718	Spreading avens	*Geum radiatum*	Endangered
Flowering Plants	723	Harper's beauty	*Harperocallis flava*	Endangered
Flowering Plants	739	Slender rush-pea	*Hoffmannseggia tenella*	Endangered
Flowering Plants	761	White birds-in-a-nest	*Macbridea alba*	Threatened
Flowering Plants	763	Walker's manioc	*Manihot walkerae*	Endangered
Flowering Plants	797	North Park phacelia	*Phacelia formosula*	Endangered
Flowering Plants	807	Little Aguja (=Creek) Pondweed	*Potamogeton clystocarpus*	Endangered
Flowering Plants	816	Chapman rhododendron	*Rhododendron chapmanii*	Endangered
Flowering Plants	817	Miccosukee gooseberry	*Ribes echinellum*	Threatened
Flowering Plants	818	Bunched arrowhead	*Sagittaria fasciculata*	Endangered
Flowering Plants	824	Colorado hookless Cactus	*Sclerocactus glaucus*	Threatened

Taxa	Entity ID	Species	Scientific name	Status
Flowering Plants	857	Persistent trillium	*Trillium persistens*	Endangered
Flowering Plants	872	Large-fruited sand-verbena	*Abronia macrocarpa*	Endangered
Flowering Plants	884	Welsh's milkweed	*Asclepias welshii*	Threatened
Flowering Plants	905	Pitcher's thistle	*Cirsium pitcheri*	Threatened
Flowering Plants	906	Sacramento Mountains thistle	*Cirsium vinaceum*	Threatened
Flowering Plants	924	Smooth coneflower	*Echinacea laevigata*	Endangered
Flowering Plants	925	Chisos Mountain hedgehog Cactus	*Echinocereus chisoensis var. chisoensis*	Threatened
Flowering Plants	930	Clay-Loving wild buckwheat	*Eriogonum pelinophilum*	Endangered
Flowering Plants	935	Minnesota dwarf trout lily	*Erythronium propullans*	Endangered
Flowering Plants	937	Telephus spurge	*Euphorbia telephioides*	Threatened
Flowering Plants	943	Roan Mountain bluet	*Hedyotis purpurea var. montana*	Endangered
Flowering Plants	949	Peter's Mountain mallow	*Iliamna corei*	Endangered
Flowering Plants	950	Dwarf lake iris	*Iris lacustris*	Threatened
Flowering Plants	959	Heller's blazingstar	*Liatris helleri*	Threatened
Flowering Plants	977	Fassett's locoweed	*Oxytropis campestris var. chartacea*	Threatened
Flowering Plants	991	Harperella	*Ptilimnium nodosum*	Endangered
Flowering Plants	992	Michaux's sumac	*Rhus michauxii*	Endangered
Flowering Plants	998	Large-flowered skullcap	*Scutellaria montana*	Threatened
Flowering Plants	1003	Houghton's goldenrod	*Solidago houghtonii*	Threatened
Flowering Plants	1004	Blue Ridge goldenrod	*Solidago spithamaea*	Threatened
Flowering Plants	1019	Seabeach amaranth	*Amaranthus pumilus*	Threatened

Taxa	Entity ID	Species	Scientific name	Status
Flowering Plants	1030	Huachuca water-umbel	*Lilaeopsis schaffneriana var. recurva*	Endangered
Flowering Plants	1036	Ruth's golden aster	*Pityopsis ruthii*	Endangered
Flowering Plants	1039	Virginia spiraea	*Spiraea virginiana*	Threatened
Flowering Plants	1058	Mountain golden heather	*Hudsonia montana*	Threatened
Flowering Plants	1059	Lakeside daisy	*Hymenoxys herbacea*	Threatened
Flowering Plants	1077	Texas ayenia	*Ayenia limitaris*	Endangered
Flowering Plants	1096	Morefield's leather flower	*Clematis morefieldii*	Endangered
Flowering Plants	1150	Leedy's roseroot	*Rhodiola integrifolia ssp. leedyi*	Threatened
Flowering Plants	1153	White irisette	*Sisyrinchium dichotomum*	Endangered
Flowering Plants	1172	Canelo Hills ladies'-tresses	*Spiranthes delitescens*	Endangered
Flowering Plants	1191	Florida torreya	*Torreya taxifolia*	Endangered
Flowering Plants	1400	Texas golden Gladecress	*Leavenworthia texana*	Endangered
Flowering Plants	1831	Short's bladderpod	*Physaria globosa*	Endangered
Insects	429	Schaus swallowtail butterfly	*Heraclides aristodemus ponceanus*	Endangered
Insects	434	Pawnee montane skipper	*Hesperia leonardus montana*	Threatened
Insects	437	Uncompahgre fritillary butterfly	*Boloria acrocnema*	Endangered
Insects	442	Northeastern beach tiger beetle	*Habroscelimorpha dorsalis dorsalis*	Threatened
Insects	453	Comal Springs riffle beetle	*Heterelmis comalensis*	Endangered
Insects	454	Comal Springs dryopid beetle	*Stygoparnus comalensis*	Endangered
Insects	4508	Miami Blue Butterfly	*Cyclargus (=Hemiargus) thomasi bethunebakeri*	Endangered

Taxa	Entity ID	Species	Scientific name	Status
Insects	5067	Bartram's hairstreak Butterfly	*Strymon acis bartrami*	Endangered
Insects	8083	Florida leafwing Butterfly	*Anaea troglodyta floridalis*	Endangered
Lichens	1219	Florida perforate cladonia	Cladonia perforata	Endangered
Lichens	1220	Rock gnome lichen	Gymnoderma lineare	Endangered
Mammals	8	Florida panther	*Puma (=Felis) concolor coryi*	Endangered
Mammals	18	Jaguar	*Panthera onca*	Endangered
Mammals	34	Choctawhatchee beach mouse	*Peromyscus polionotus allophrys*	Endangered
Mammals	35	Perdido Key beach mouse	*Peromyscus polionotus trissyllepsis*	Endangered
Mammals	41	Alabama beach mouse	*Peromyscus polionotus ammobates*	Endangered
Mammals	43	Mount Graham red squirrel	*Tamiasciurus fremonti grahamensis*	Endangered
Mammals	50	Anastasia Island beach mouse	*Peromyscus polionotus phasma*	Endangered
Mammals	53	Southeastern beach mouse	*Peromyscus polionotus niveiventris*	Threatened
Mammals	54	St. Andrew beach mouse	*Peromyscus polionotus peninsularis*	Endangered
Mammals	60	Florida salt marsh vole	*Microtus pennsylvanicus dukecampbelli*	Endangered
Mammals	9725	Florida bonneted bat	*Eumops floridanus*	Endangered
Mammals	10043	Northern Long-Eared Bat	*Myotis septentrionalis*	Threatened
Reptiles	166	New Mexican ridge-nosed rattlesnake	*Crotalus willardi obscurus*	Threatened
Reptiles	167	Atlantic salt marsh snake	*Nerodia clarkii taeniata*	Threatened
Reptiles	171	Ringed map turtle	*Graptemys oculifera*	Threatened
Reptiles	172	Yellow-blotched map turtle	*Graptemys flavimaculata*	Threatened
Reptiles	178	Bluetail mole skink	*Eumeces egregius lividus*	Threatened
Reptiles	179	Sand skink	*Neoseps reynoldsi*	Threatened

Taxa	Entity ID	Species	Scientific name	Status
Reptiles	185	Desert tortoise	*Gopherus agassizii*	Threatened
Snails	390	Flat-spired three-toothed Snail	*Triodopsis platysayoides*	Threatened
Snails	391	Iowa Pleistocene snail	*Discus macclintocki*	Endangered
Snails	393	Painted snake coiled forest snail	*Anguispira picta*	Threatened
Snails	394	Stock Island tree snail	*Orthalicus reses (not incl. nesodryas)*	Threatened
Snails	396	Anthony's riversnail	*Athearnia anthonyi*	Endangered
Snails	406	Tumbling Creek cavesnail	*Antrobia culveri*	Endangered
Snails	407	Tulotoma snail	*Tulotoma magnifica*	Threatened
Snails	411	Lacy elimia (snail)	*Elimia crenatella*	Threatened
Snails	412	Cylindrical lioplax (snail)	*Lioplax cyclostomaformis*	Endangered
Snails	413	Flat pebblesnail	*Lepyrium showalteri*	Endangered
Snails	414	Painted rocksnail	*Leptoxis taeniata*	Threatened
Snails	415	Plicate rocksnail	*Leptoxis plicata*	Endangered
Snails	416	Round rocksnail	*Leptoxis ampla*	Threatened
Snails	3364	Rough hornsnail	*Pleurocera foremani*	Endangered
Snails	3364	Rough hornsnail	*Pleurocera foremani*	Designated Critical Habitat
Snails	4162	Chupadera springsnail	*Pyrgulopsis chupaderae*	Endangered

Concurrence

The EPA also made "may affect, not likely to adversely affect" determinations for 216 threatened and endangered species and 52 critical habitats for Enlist One and Enlist Duo (see Tables 2-12).

For most of these species and critical habitats, NLAA determinations were based on conclusions of discountable exposure or insignificant effects that were supported by assumptions and analyses detailed in the evaluations and applicable appendices provided in the BE and included here by reference. During consultation, the Service worked closely with EPA to reach agreement on methodologies for arriving at their NLAA determinations based on insignificant or discountable effects. Insignificant effects relate to the size of the impact and should never reach the scale where take of a listed species or an impact to the conservation value of a physical or biological feature of critical habitat is expected. For some species and critical habitat elements, Enlist pesticide exposure is expected to be so small in magnitude that the effects would not be noticeable or measurable. For example, some species do not have measurable adverse reactions to direct or indirect herbicide exposure, nor would such an exposure cause a significant reduction in those species' food resources, shelter availability, or other species on which they depend (e.g.,

host species, pollinators). Discountable effects apply to those consequences that are extremely unlikely to occur to individuals of the listed species or the physical or biological features of critical habitat. For example, exposure to Enlist pesticides for some species within the action area is extremely unlikely based on their specific habitat requirements that would preclude exposure based on proximity to application areas or other considerations (e.g., species that only occur on mountain peaks, species that only grow on vertical cliff surfaces, or species with specific microhabitat conditions that do not occur near spray drift or runoff areas).

For species considered extinct or extirpated from the United States, in most cases, exposure was either not expected (if presumed extinct) or extremely unlikely to occur (if presumed extirpated). Thus, based on our previous coordination and our review of EPA's analysis, we concur with EPA's determinations as listed in Appendix B, Table 2 in their biological evaluation (USEPA 2022a) and described in the sections below.

EFFECTS BY TAXA GROUPS

In their BE, EPA determined that their proposed Action may affect, but is not likely to adversely affect any species of bivalves, ferns and allies, fishes, mammals, or snails. While EPA found that some species of amphibians, birds, crustaceans, flowering plants, insects, and reptiles will likely experience adverse effects where exposure occurs, they determined the species listed below within these taxa groups are not likely to be adversely affected by the proposed Action. Based on our review of the proposed Action, we concur with their analysis and determinations as described below.

Amphibians

The EPA made "not likely to adversely affect" determinations for six amphibian species (Table 2): the Houston toad (*Bufo houstonensis*), Red Hills salamander (*Phaeognathus hubrichti*), frosted flatwoods salamander (*Ambystoma cingulatum*), Shenandoah salamander (*Plethodon shenandoah*), Chiricahua leopard frog (*Rana chiricahuensis*), and reticulated flatwoods salamander (*Ambystoma bishopi*). We concur with EPA's determinations for these species. Aside from the Houston toad, we do not expect the species listed here will occur in agricultural areas and be directly exposed to Enlist pesticides, as agricultural areas do not represent preferred foraging areas or habitat; thus, we expect on-field exposure will be discountable for these species. While the Houston toad may occur in Enlist use sites, we do not expect individual toads will spend sufficient time on-field to be exposed to levels of Enlist herbicides that will cause measurable effects to growth, reproduction, or survival. Thus, we expect, at most, insignificant effects to the Houston toad as a result of direct exposure to Enlist pesticides. While all species listed above may experience offsite runoff exposure, we do not expect predicted concentrations of Enlist pesticides in runoff will cause any measurable direct toxic effects to individuals that would adversely affect their growth, reproduction, or survival. Similarly, laboratory studies indicate that adverse effects to habitat and food resources, including algae, aquatic vegetation, and invertebrate prey species are unlikely to occur, as adverse effects to these groups of organisms have only been observed at concentrations much higher than those predicted to occur with use of Enlist herbicides (see the *Effects of the Action* section for more detail). Thus, we also do not expect Enlist pesticide use will cause any measurable effects to food or habitat resources that these species rely on, indicating that indirect effects will be insignificant to all these species.

Table 2. Not likely to adversely affect determinations for listed amphibian species.

Entity ID	Species	Scientific name	Status	Effect determination
190	Houston toad	*Bufo houstonensis*	Endangered	NLAA
190	Houston toad	*Bufo houstonensis*	Designated Critical Habitat	NLAA
192	Red Hills salamander	*Phaeognathus hubrichti*	Threatened	NLAA
199	Frosted Flatwoods salamander	*Ambystoma cingulatum*	Threatened	NLAA
199	Frosted Flatwoods salamander	*Ambystoma cingulatum*	Designated Critical Habitat	NLAA
200	Shenandoah salamander	*Plethodon shenandoah*	Endangered	NLAA
206	Chiricahua leopard frog	*Rana chiricahuensis*	Threatened	NLAA
206	Chiricahua leopard frog	*Rana chiricahuensis*	Designated Critical Habitat	NLAA
208	Dusky gopher frog	*Rana sevosa*	Designated Critical Habitat	NLAA
9943	Reticulated flatwoods salamander	*Ambystoma bishopi*	Endangered	NLAA
9943	Reticulated flatwoods salamander	*Ambystoma bishopi*	Designated Critical habitat	NLAA

The EPA made six "not likely to adversely affect" determinations for critical habitat: the Houston toad, frosted flatwoods salamander, Chiricahua leopard frog, dusky gopher frog (*Rana sevosa*), Jemez Mountains salamander, and reticulated flatwoods salamander. We concur with these determinations. We do not anticipate the use of Enlist in any agricultural areas within designated critical habitat areas that are already undergoing agricultural practices would result in measurable reductions in the quality of the relevant physical or biological features (PBFs). Furthermore, such usage would be relatively short-term in nature, and would not result in long-lasting effects to any relevant PBFs present (e.g., those related to habitat quality or food base). While areas of critical habitat adjacent to agricultural fields may still experience offsite runoff exposure, we expect, at most, insignificant effects to relevant PBFs will occur, even at the highest predicted concentrations in runoff. For example, algae are a common component of food resource requirements for amphibian critical habitat (such as for the Houston toad and Chiricahua leopard frog). Data from laboratory studies indicate that only minor effects to algae growth are likely to occur at predicted runoff concentrations of Enlist pesticides, suggesting that effects to the PBF will be insignificant (see the *Effects of the Action* section for more detail).

Similarly, laboratory studies have shown that aquatic and emergent vegetation, which are common components of habitat PBFs for amphibian critical habitats, are also not likely to be sensitive to Enlist herbicides. As such, we expect any adverse effects to habitat availability PBFs will be, at most, insignificant. Thus, we expect, at most, insignificant effects to these species' critical habitats.

Birds

The EPA made 19 "not likely to adversely affect" determinations for bird species (Table 3): the Attwater's greater prairie-chicken (*Tympanuchus cupido attwateri*), Mississippi sandhill crane (*Grus canadensis pulla*), whooping crane (*Grus americana*), northern Aplomado falcon (*Falco femoralis septentrionalis*), piping plover (Northern Great Plain population) (*Charadrius melodus*), Yuma Ridgways rail (*Rallus obsoletus yumanensis*), red-cockaded woodpecker (*Picoides borealis*), wood stork (*Mycteria americana*), Mexican spotted owl (*Strix occidentalis lucida*), southwestern willow flycatcher (*Empidonax traillii extimus*), Everglade snail kite (*Rostrhamus sociabilis plumbeus*), golden-cheeked warbler (*Setophaga chrysoparia*), rufa red knot (*Calidris canutus rufa*), eastern black rail (*Laterallus jamaicensis ssp. jamaicensis*), Florida scrub-jay (*Aphelocoma coerulescens*), the Gunnison sage-grouse (*Centrocercus minimus*), yellow-billed cuckoo (*Coccyzus americanus*), Eskimo curlew (*Numenius borealis*), and Bachman's warbler (*Vermivora bachmanii*). We concur with EPA's determinations for almost all of the species listed above and in Table 3. We expect exposure and consequences related to direct toxic effects and effects to key food and habitat resources are great enough for the Attwater's greater prairie-chicken to warrant a "likely to adversely affect" determination and do not concur with EPA's determination for this species. We discussed these concerns with the EPA and the Enlist registrants and analyzed effects to this species further in our Opinion.

The whooping crane, northern Aplomado falcon, Mississippi sandhill crane, and piping plover (Northern Great Plains population) are all expected to occur on agricultural fields and may experience direct exposure to Enlist pesticides. However, we do not anticipate these four species will be exposed to or accumulate sufficient levels of Enlist pesticides to cause measurable effects to survival, growth, or reproduction for individuals of these species. Exposure may also occur offsite in areas adjacent to agricultural fields through runoff. We expect runoff concentrations will be far below levels where adverse effects have been observed in laboratory studies, suggesting that any direct toxic effects from runoff exposure will be insignificant (see the *Effects of the Action* section for more detail). Runoff in offsite areas may adversely affect food or habitat resources; however, we do not expect these effects will be measurable. These species primarily consume vertebrate and invertebrate animal prey, which are not likely to experience adverse effects from runoff exposure, as runoff concentrations will be much lower than concentrations where adverse effects were observed in laboratory studies for mammals and invertebrates. The herbaceous plant species most sensitive to Enlist pesticides are not a major component of their diet. Similarly, while these species rely on some form of vegetation as a component of habitat, we expect runoff mitigation measures required by Enlist product labels will effectively reduce environmental concentrations of Enlist herbicides to a level that will cause, at most, insignificant effects to plant communities. Thus, we expect, at most, insignificant indirect effects to food and habitat resources that these four species are dependent on from the proposed Action.

We do not anticipate the Yuma Ridgways rail, red-cockaded woodpecker, wood stork, Mexican spotted owl, southwestern willow flycatcher, Everglade snail kite, golden-cheeked warbler, red knot, eastern black rail, Florida scrub-jay, Gunnison sage-grouse, and yellow-billed cuckoo will occur on agricultural fields, as these areas do not represent preferred habitat or foraging areas. Thus, we do not expect direct exposure to spray application is likely for individuals of these species. Offsite exposure through runoff may occur, however, we anticipate exposure concentrations will be well below levels where any adverse effects were observed in laboratory toxicity studies, suggesting that any direct toxic effects from runoff exposure will be, at most, insignificant (see the *Effects of the Action* section for more detail). While these species may experience some consequences related to effects to exposed plant species used for food or habitat, we expect these consequences will be, at most, insignificant. Many of the species listed above are only reliant on animal prey or on vegetation types that are not sensitive to Enlist pesticide exposure (e.g., trees, woody shrubs, aquatic or emergent vegetation) (see the *Assumptions and Uncertainties* section in the main Opinion for more detail). Thus, for these species, consequences to plant resources will be insignificant at most. Furthermore, for species that rely on herbaceous vegetation for food or habitat (such as the Gunnison sage grouse), we anticipate runoff mitigation measures required by Enlist product labels will reduce exposure levels to a point where measurable effects to food and habitat are unlikely to occur and will be insignificant to the species. Thus, we anticipate insignificant consequences resulting from effects to food or habitat resources, even for bird species reliant on more sensitive vegetation types.

We also concur with EPA's determinations for the Bachman's warbler and Eskimo curlew. The Service proposed to delist the Bachman's warbler in, as the species is presumed extinct. Similarly, the Service considers the likelihood that the Eskimo curlew is still extant extremely low, per the 2021 5-year review (USFWS, 2021). Thus, we expect the likelihood of effects to these two species through either direct exposure or via food or habitat availability and quality to be extremely unlikely to occur (i.e., discountable).

Table 3. Not likely to adversely affect determinations for listed bird species.

Entity ID	Species	Scientific name	Status	Effect determination
67	Whooping crane	*Grus americana*	Endangered	NLAA
67	Whooping crane	*Grus americana*	Designated Critical Habitat	NLAA
83	Attwater's greater prairie-chicken	*Tympanuchus cupido attwateri*	Endangered	LAA
84	Yuma Ridgways (clapper) rail	*Rallus obsoletus yumanensis*	Endangered	NLAA
91	Eskimo curlew	*Numenius borealis*	Extinct	NLAA
93	Bachman's warbler (=wood)	*Vermivora bachmanii*	Extinct	NLAA

Entity ID	Species	Scientific name	Status	Effect determination
107	Red-cockaded woodpecker	*Picoides borealis*	Endangered	NLAA
110	Mississippi sandhill crane	*Grus canadensis pulla*	Endangered	NLAA
110	Mississippi sandhill crane	*Grus canadensis pulla*	Designated Critical Habitat	NLAA
124	Wood stork	*Mycteria americana*	Threatened	NLAA
126	Northern Aplomado falcon	*Falco femoralis septentrionalis*	Endangered	NLAA
129	Mexican spotted owl	*Strix occidentalis lucida*	Threatened	NLAA
131	Piping Plover (Northern Great Plains population)	*Charadrius melodus*	Threatened	NLAA
139	Golden-cheeked warbler (=wood)	*Setophaga chrysoparia*	Endangered	NLAA
140	Florida scrub-jay	*Aphelocoma coerulescens*	Threatened	NLAA
149	Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	NLAA
149	Southwestern willow flycatcher	*Empidonax traillii extimus*	Designated Critical Habitat	NLAA
1221	Everglade snail kite	*Rostrhamus sociabilis plumbeus*	Endangered	NLAA
4064	Gunnison sage-grouse	*Centrocercus minimus*	Threatened	NLAA
4064	Gunnison sage-grouse	*Centrocercus minimus*	Designated Critical Habitat	NLAA
6901	Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened	NLAA
8621	Rufa red knot	*Calidris canutus rufa*	Threatened	NLAA
11319	Eastern Black rail	*Laterallus jamaicensis ssp. jamaicensis*	Threatened	NLAA

The EPA made "not likely to adversely affect" determinations for four bird critical habitats: the whooping crane, southwestern willow flycatcher, Mississippi sandhill crane, and Gunnison sage-grouse. We concur with these determinations. We do not anticipate the use of Enlist herbicides in areas of critical habitat that have been converted to agriculture will further reduce the quality of

function of the relevant PBFs within these areas. Furthermore, such usage would be relatively short-term in nature, and would not result in long-lasting effects to any relevant PBFs present (e.g., those related to habitat quality or food base). While areas of critical habitat may still experience offsite runoff exposure and experience some level of adverse effects to plant species that provide food and habitat to birds, we expect, at most, insignificant effects to relevant PBFs will occur. For example, tree and woody shrub communities are a common habitat-related PBF required for bird critical habitat (e.g., southwestern willow flycatcher or Gunnison sage-grouse). We anticipate these plant types are not sensitive to Enlist herbicides based on a number of factors, such as their larger size (which would require much higher exposures to cause adverse effects), increased energy storage (which would facilitate recovery from any sublethal effects that may occur), or growth patterns (where dormant tissue is primarily exposed and more sensitive plant tissues are protected) (see the *Assumptions and Uncertainties* section in the main Opinion for more detail). Therefore, we expect these plant groups will be unlikely to experience adverse effects from exposure to Enlist pesticide runoff. Similarly, we expect adverse effects to food resources are unlikely to occur as plant species required for the function of these critical habitats are not likely sensitive to Enlist herbicides, indicating that adverse effects to food PBFs will be insignificant. We do not expect environmental concentrations of Enlist herbicides will be high enough to cause trophic cascades, indicating that any reductions in the availability in animal prey items that consume plants are discountable. Thus, we expect, at most, insignificant effects are likely to occur to these critical habitats PBFs.

Bivalves

EPA made not likely to adversely affect determinations for 65 species of bivalves (see Table 4). We concur with these determinations. Given the habitat requirements for listed bivalves, none of these species will occur on application sites, indicating that there is no risk of consequences resulting from direct exposure and subsequent direct toxic effects. While individual bivalves may be exposed through runoff, we expect predicted concentrations of Enlist pesticides in runoff will not be high enough to cause any measurable toxic effects to individuals (see the discussion of effects to aquatic animals in the *Effects of the Action* section in the main Opinion). Thus, we anticipate toxic effects to these species will be insignificant. Individuals may experience indirect effects of Enlist pesticides through exposure to food, fish host, and habitat resources. Laboratory studies show that vascular and non-vascular aquatic plants are not sensitive to Enlist herbicides, indicating that effects to food resources will be insignificant. Similarly, we do not expect environmental concentrations of Enlist herbicides will be high enough to cause measurable adverse effects to fish host species as predicted environmental concentrations of Enlist herbicides will be much lower than levels where laboratory investigations have observed adverse effects, suggesting that adverse effects to reproduction resources will also be insignificant. The bivalve species listed below are not known to rely on plant matter for habitat, indicating there will not be any adverse effects to habitat resources. Thus, we expect environmental concentrations of Enlist pesticides in runoff will cause, at most, insignificant effects to food and habitat resources.

The EPA did not make any may affect determinations for bivalve critical habitats; as such, the EPA did not make any not likely to adversely affect determinations for bivalve critical habitats. These critical habitat PBFs typically specify necessary water flow, temperature, substrate, and water chemistry necessary for the conservation of the species. While pesticides can alter water chemistry, toxicity data indicate that aquatic invertebrates are not likely to experience any toxic

effects from Enlist herbicides at concentrations predicted to occur in the environment. Similarly, predicted aquatic concentrations of Enlist herbicides are not likely to cause any toxic effects to algae and phytoplankton that these mussels use for food. Thus, the Service agrees with the EPA's no effect determinations for bivalve critical habitat.

Table 4. Not likely to adversely affect determinations for listed bivalve species.

Entity ID	Species	Scientific name	Status	Effect determination
326	Alabama lampmussel	*Lampsilis virescens*	Endangered	NLAA
327	Pale lilliput (pearlymussel)	*Toxolasma cylindrellus*	Endangered	NLAA
329	Appalachian monkeyface (pearlymussel)	*Theliderma sparsa*	Endangered	NLAA
330	Cumberland monkeyface (pearlymussel)	*Theliderma intermedia*	Endangered	NLAA
331	Pink mucket (pearlymussel)	*Lampsilis abrupta*	Endangered	NLAA
332	Birdwing pearlymussel	*Lemiox rimosus*	Endangered	NLAA
333	Curtis pearlymussel	*Epioblasma florentina curtisii*	Endangered	NLAA
334	Dromedary pearlymussel	*Dromus dromas*	Endangered	NLAA
335	Littlewing pearlymussel	*Pegias fabula*	Endangered	NLAA
336	White wartyback (pearlymussel)	*Plethobasus cicatricosus*	Endangered	NLAA
337	Finerayed pigtoe	*Fusconaia cuneolus*	Endangered	NLAA
338	Rough pigtoe	*Pleurobema plenum*	Endangered	NLAA
339	Shiny pigtoe	*Fusconaia cor*	Endangered	NLAA
340	Orangefoot pimpleback (pearlymussel)	*Plethobasus cooperianus*	Endangered	NLAA
341	Ring pink (mussel)	*Obovaria retusa*	Endangered	NLAA
342	Fat pocketbook	*Potamilus capax*	Endangered	NLAA
343	Ouachita rock pocketbook	*Arcidens wheeleri*	Endangered	NLAA
344	Rough rabbitsfoot	*Quadrula cylindrica strigillata*	Endangered	NLAA
345	Scaleshell mussel	*Leptodea leptodon*	Endangered	NLAA
346	Tan riffleshell	*Epioblasma florentina walkeri (=E. walkeri)*	Endangered	NLAA
347	Black clubshell	*Pleurobema curtum*	Endangered	NLAA

Entity ID	Species	Scientific name	Status	Effect determination
348	Southern combshell	*Epioblasma penita*	Endangered	NLAA
350	Heavy pigtoe	*Pleurobema taitianum*	Endangered	NLAA
352	Clubshell	*Pleurobema clava*	Endangered	NLAA
353	Cumberlandian combshell	*Epioblasma brevidens*	Endangered	NLAA
354	Appalachian elktoe	*Alasmidonta raveneliana*	Endangered	NLAA
355	Cumberland elktoe	*Alasmidonta atropurpurea*	Endangered	NLAA
356	Alabama (=inflated) heelsplitter	*Potamilus inflatus*	Threatened	NLAA
357	Orangenacre mucket	*Hamiota perovalis*	Threatened	NLAA
358	Oyster mussel	*Epioblasma capsaeformis*	Endangered	NLAA
359	Cracking pearlymussel	*Hemistena lata*	Endangered	NLAA
360	Speckled pocketbook	*Lampsilis streckeri*	Endangered	NLAA
361	James spinymussel	*Parvaspina collina*	Endangered	NLAA
363	Dwarf wedgemussel	*Alasmidonta heterodon*	Endangered	NLAA
364	Louisiana pearlshell	*Margaritifera hembeli*	Threatened	NLAA
368	Fanshell	*Cyprogenia stegaria*	Endangered	NLAA
369	Arkansas fatmucket	*Lampsilis powellii*	Threatened	NLAA
370	Carolina heelsplitter	*Lasmigona decorata*	Endangered	NLAA
371	Oval pigtoe	*Pleurobema pyriforme*	Endangered	NLAA
372	Finelined pocketbook	*Hamiota altilis*	Threatened	NLAA
373	Shinyrayed pocketbook	*Hamiota subangulata*	Endangered	NLAA
374	Northern riffleshell	*Epioblasma rangiana*	Endangered	NLAA
376	Cumberland pigtoe	*Pleuronaia gibber*	Endangered	NLAA
377	Ovate clubshell	*Pleurobema perovatum*	Endangered	NLAA
378	Southern clubshell	*Pleurobema decisum*	Endangered	NLAA
379	Triangular Kidneyshell	*Ptychobranchus greenii*	Endangered	NLAA
380	Alabama moccasinshell	*Medionidus acutissimus*	Threatened	NLAA
381	Coosa moccasinshell	*Medionidus parvulus*	Endangered	NLAA
382	Dark pigtoe	*Pleurobema furvum*	Endangered	NLAA
383	Southern pigtoe	*Pleurobema georgianum*	Endangered	NLAA
384	Gulf moccasinshell	*Medionidus penicillatus*	Endangered	NLAA

Entity ID	Species	Scientific name	Status	Effect determination
385	Ochlockonee moccasinshell	*Medionidus simpsonianus*	Endangered	NLAA
2917	Texas Hornshell	*Popenaias popeii*	Endangered	NLAA
3833	Georgia pigtoe	*Pleurobema hanleyianum*	Endangered	NLAA
4042	Choctaw bean	*Obovaria choctawensis*	Endangered	NLAA
4074	Yellow lance	*Elliptio lanceolata*	Threatened	NLAA
4210	Altamaha Spinymussel	*Elliptio spinosa*	Endangered	NLAA
4490	Spectaclecase (mussel)	*Cumberlandia monodonta*	Endangered	NLAA
5281	Snuffbox mussel	*Epioblasma triquetra*	Endangered	NLAA
6062	Rayed Bean	*Villosa fabalis*	Endangered	NLAA
7363	Round Ebonyshell	*Reginaia rotulata*	Endangered	NLAA
7816	Sheepnose Mussel	*Plethobasus cyphyus*	Endangered	NLAA
362	Stirrupshell	*Quadrula stapes*	Endangered	NLAA
365	Southern acornshell	*Epioblasma othcaloogensis*	Endangered	NLAA
367	Upland combshell	*Epioblasma metastriata*	Endangered	NLAA

Crustaceans

The EPA made "not likely to adversely affect" determinations for six crustacean species (Table 5): the Nashville crayfish (*Oronectes shoupi*), Noel's amphipod (*Gammarus desperatus*), Big Sandy crayfish (*Cambarus callainus*), Pecos amphipod (*Gammarus pecos*), diminutive amphipod (*Gammarus hyalleloides*), and Guyandotte River crayfish (*Cambarus veteranus*). We concur with EPA's determinations for these species. We do not expect any individuals of these species will occur on Enlist use sites and will therefore not experience direct exposure to Enlist pesticides or consequences resulting from direct toxic effects from exposure. While individuals may experience runoff exposure, we expect concentrations of Enlist pesticides in runoff will not be high enough to cause any measurable toxic effects to survival, growth, or reproduction of individual crustaceans, as environmental concentrations of Enlist herbicides will be well below levels where toxic effects have been previously observed in toxicity studies (see the *Effects of the Action* section in the main Opinion for more details). Similarly, food items contaminated by runoff exposure are unlikely to contain high enough concentrations of Enlist pesticide AIs to cause any toxic effects to individual crustaceans. Thus, we anticipate toxic effects from offsite runoff exposure to species will be, at most, insignificant. While the habitat of these species may be exposed to Enlist pesticide runoff, we expect concentrations of Enlist herbicides in these aquatic systems will not result in more than insignificant effects to food or habitat resources. Laboratory studies indicate that aquatic vegetation used for food and habitat are not likely to experience measurable adverse effects at the concentrations of Enlist herbicides expected to

occur in these habitats. Thus, we expect these species will experience, at most, insignificant indirect effects.

Table 5. Not likely to adversely affect determinations for listed crustacean species.

Entity ID	Species	Scientific name	Status	Effect determination
478	Nashville crayfish	*Orconectes shoupi*	Endangered	NLAA
1261	Noel's Amphipod	*Gammarus desperatus*	Endangered	NLAA
5153	Big Sandy crayfish	*Cambarus callainus*	Threatened	NLAA
6596	Pecos amphipod	*Gammarus pecos*	Endangered	NLAA
6596	Pecos amphipod	*Gammarus pecos*	Designated critical habitat	NLAA
8172	Diminutive Amphipod	*Gammarus hyalleloides*	Endangered	NLAA
11201	Guyandotte River crayfish	*Cambarus veteranus*	Endangered	NLAA

The EPA determined the proposed Action is not likely to adversely affect the Pecos amphipod's critical habitat. We concur with this determination. Since the amphipod relies on aquatic vegetation for shelter and food, we anticipate the habitat and food availability PBFs may be vulnerable to herbicide use. However, we expect effects to these PBFs will be, at most, insignificant. Laboratory studies show that vascular and non-vascular aquatic plants are not sensitive to Enlist herbicides and only show measurable sublethal effects at concentrations much higher than what is expected to occur in critical habitat (see the *Effects of the Action* section in the main Opinion for more details). Thus, predicted environmental concentrations of Enlist pesticide AIs will not be high enough to cause more than insignificant effects to this species' critical habitat.

Ferns and Allies

The EPA made two "not likely to adversely affect" determinations for ferns and allied species (Table 6): the Louisiana quillwort (*Isoetes louisianensis*), and Alabama streak-sorus fern (*Thelypteris pilosa var. alabamensis*). We concur with these determinations. We do not expect that individuals of these two species will occur on Enlist use sites, and thus will not be directly exposed to Enlist pesticide spray application. While runoff exposure may occur offsite, we anticipate this exposure will cause, at most, insignificant effects to these species. Runoff mitigation measures required on Enlist product labels will effectively reduce runoff concentrations to a level that would cause, at most, minor reductions in growth that would not result in measurable effects to individual survival or reproduction, or otherwise reduce the fitness of individuals. In addition, because degradation of Enlist pesticides is considered rapid, we expect environmental concentrations will decline quickly after application, and as such, not persist long enough to have measurable effects over time and that individuals will recover before

additional minor effects will occur. Thus, we consider any effects that may occur to individuals of these species to be insignificant.

There are no critical habitats for ferns and allies in this consultation. As such, the EPA did not make any may affect determinations for ferns and allies critical habitats.

Table 6. Not likely to adversely affect determinations for listed fern and allied species.

Entity ID	Species	Scientific name	Status	Effect determination
1199	Louisiana quillwort	*Isoetes louisianensis*	Endangered	NLAA
1209	Alabama streak-sorus fern	*Thelypteris pilosa var. alabamensis*	Threatened	NLAA

Fishes

EPA made "not likely to adversely affect" determinations for 24 species of fish (see Table 7). We concur with these determinations. Given the aquatic habitat requirements for listed fish, none of these species will occur on application sites, which suggests there is no risk of consequences resulting from direct exposure and subsequent direct toxic effects. Indirect exposure to listed fish may occur through runoff; however, we do not expect more than insignificant levels of effects will occur, as predicted environmental concentrations of Enlist pesticides in runoff will be far below levels at which any effects have been previously observed in fish toxicity studies (see the *Effects of the Action* section in the main Opinion for more details). Similarly, we do not expect runoff will result in any measurable effects to food items will occur, as predicted runoff concentrations will be far below concentrations where previous studies have observed measurable adverse effects to aquatic invertebrates, submerged vegetation, or phytoplankton. Thus, we expect any direct or indirect adverse effects to fish will be, at most, insignificant.

Table 7. Not likely to adversely affect determinations for listed fish species.

Entity ID	Species	Scientific name	Status	Effect determination
212	Maryland darter	*Etheostoma sellare*	Endangered	NLAA
212	Maryland darter	*Etheostoma sellare*	Designated Critical Habitat	NLAA
216	Comanche Springs pupfish	*Cyprinodon elegans*	Endangered	NLAA
219	Gila topminnow (incl. Yaqui)	*Poeciliopsis occidentalis*	Endangered	NLAA
228	Fountain darter	*Etheostoma fonticola*	Endangered	NLAA
229	Watercress darter	*Etheostoma nuchale*	Endangered	NLAA

Entity ID	Species	Scientific name	Status	Effect determination
241	Pygmy Sculpin	*Cottus paulus (=pygmaeus)*	Threatened	NLAA
242	Cape Fear shiner	*Notropis mekistocholas*	Endangered	NLAA
250	San Marcos gambusia	*Gambusia georgei*	Endangered	NLAA
254	Chihuahua chub	*Gila nigrescens*	Threatened	NLAA
255	Sonora chub	*Gila ditaenia*	Threatened	NLAA
256	Virgin River Chub	*Gila seminuda (=robusta)*	Endangered	NLAA
257	Niangua darter	*Etheostoma nianguae*	Threatened	NLAA
258	Smoky madtom	*Noturus baileyi*	Endangered	NLAA
263	Yaqui chub	*Gila purpurea*	Endangered	NLAA
263	Yaqui chub	*Gila purpurea*	Designated Critical Habitat	NLAA
269	Cherokee darter	*Etheostoma scotti*	Threatened	NLAA
272	Devils River minnow	*Dionda diaboli*	Threatened	NLAA
272	Devils River minnow	*Dionda diaboli*	Designated Critical Habitat	NLAA
290	Razorback sucker	*Xyrauchen texanus*	Endangered	NLAA
290	Razorback sucker	*Xyrauchen texanus*	Designated Critical Habitat	NLAA
296	Spikedace	*Meda fulgida*	Endangered	NLAA
311	Topeka shiner	*Notropis topeka (=tristis)*	Endangered	NLAA
311	Topeka shiner	*Notropis topeka (=tristis)*	Designated Critical Habitat	NLAA
3525	Rush Darter	*Etheostoma phytophilum*	Endangered	NLAA
3525	Rush Darter	*Etheostoma phytophilum*	Designated Critical Habitat	NLAA
5719	Cumberland darter	*Etheostoma susanae*	Endangered	NLAA
6297	Gila chub	*Gila intermedia*	Endangered	NLAA
6297	Gila chub	*Gila intermedia*	Designated Critical Habitat	NLAA

Entity ID	Species	Scientific name	Status	Effect determination
7332	Spring pygmy sunfish	*Elassoma alabamae*	Threatened	NLAA
7332	Spring pygmy sunfish	*Elassoma alabamae*	Designated Critical Habitat	NLAA
10060	Kentucky arrow darter	*Etheostoma spilotum*	Threatened	NLAA

The EPA made eight "not likely to adversely affect" determinations for fish critical habitats: the Maryland darter (*Etheostoma sellare*), Yaqui chub (*Gila purpurea*), Devils River minnow (*Dionda diaboli*), razorback sucker (*Xyrauchen texanus*), Topeka shiner (*Notropis topeka*), rush darter (*Etheostoma phytophilum*), Gila chub (*Gila intermedia*), and spring pygmy sunfish (*Elassoma alabamae*). We concur with EPA's determinations, as we expect predicted environmental concentrations of Enlist pesticide AIs will not be high enough to cause measurable effects to these species' critical habitat. For example, aquatic vegetation is often listed as a relevant PBF since many fish species feed on aquatic vegetation (such as algae, periphyton, and phytoplankton) or use vegetation as habitat and shelter (such submerged aquatic vegetation). Laboratory studies show that algae, periphyton, phytoplankton, and emergent aquatic vegetation are not sensitive to Enlist pesticide AIs and are not likely to experience any adverse effects at predicted runoff concentrations (see the *Effects of the Action* section in the main Opinion for more details). These studies thus suggest no measurable effects to the availability or quality of food- or habitat-related PBFs will occur.

Flowering Plants

The EPA made 45 "not likely to adversely affect" determinations for flowering plant species (see Table 8). We concur with these determinations. We do not expect these species will occur on Enlist pesticide use sites as agricultural areas do not represent suitable habitat for these species. Thus, we do not anticipate they are likely to be exposed to direct spray application. While runoff exposure may occur offsite, we anticipate this exposure will cause, at most, insignificant effects to these species. We expect required runoff mitigation measures included on Enlist product labels will effectively reduce runoff concentrations to a level that would cause, at most, minor reductions in growth that would not result in measurable effects to individual survival, reproduction, or otherwise reduce the fitness of individuals. In addition, because degradation of Enlist pesticides is rapid, we expect environmental concentrations will decline quickly after application, and as such, will not persist long enough to have measurable effects over time and that individuals will recover before additional minor effects will occur. Similarly, we do not anticipate offsite runoff exposure will cause any measurable effects to necessary pollinator or seed disperser species, as expected environmental concentrations in offsite areas are likely much lower than concentrations where laboratory studies have observed adverse effects to pollinators (see the *Effects of the Action* section in the main Opinion for more details). Thus, we expect, at most, only insignificant direct and indirect effects to these plant species will occur.

Table 8. Not likely to adversely affect determinations for listed flowering plant species.

Entity ID	Species	Scientific name	Status	Effect determination
624	South Texas ambrosia	*Ambrosia cheiranthifolia*	Endangered	NLAA
628	Price's potato-bean	*Apios priceana*	Threatened	NLAA
636	Mead's milkweed	*Asclepias meadii*	Threatened	NLAA
643	Hairy rattleweed	*Baptisia arachnifera*	Endangered	NLAA
651	Texas poppy-mallow	*Callirhoe scabriuscula*	Endangered	NLAA
655	Small-anthered bittercress	*Cardamine micranthera*	Endangered	NLAA
682	Lee pincushion cactus	*Coryphantha sneedii var. leei*	Threatened	NLAA
683	Sneed pincushion cactus	*Coryphantha sneedii var. sneedii*	Endangered	NLAA
709	Gypsum wild-buckwheat	*Eriogonum gypsophilum*	Designated Critical Habitat	NLAA
716	No common name	*Geocarpon minimum*	Threatened	NLAA
734	Dwarf-flowered heartleaf	*Hexastylis naniflora*	Threatened	NLAA
742	Small whorled pogonia	*Isotria medeoloides*	Threatened	NLAA
750	Lyrate bladderpod	*Lesquerella lyrata*	Threatened	NLAA
823	Northeastern bulrush	*Scirpus ancistrochaetus*	Endangered	NLAA
831	Fringed campion	*Silene polypetala*	Endangered	NLAA
835	Short's goldenrod	*Solidago shortii*	Endangered	NLAA
836	Gentian pinkroot	*Spigelia gentianoides*	Endangered	NLAA
837	Navasota ladies'-tresses	*Spiranthes parksii*	Endangered	NLAA

Entity ID	Species	Scientific name	Status	Effect determination
870	Texas wild-rice	*Zizania texana*	Endangered	NLAA
870	Texas wild-rice	*Zizania texana*	Designated Critical Habitat	NLAA
914	Okeechobee gourd	*Cucurbita okeechobeensis ssp. okeechobeensis*	Endangered	NLAA
920	Leafy prairie-clover	*Dalea foliosa*	Endangered	NLAA
945	Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered	NLAA
946	Swamp pink	*Helonias bullata*	Threatened	NLAA
957	Prairie bush-clover	*Lespedeza leptostachya*	Threatened	NLAA
969	Michigan monkey-flower	*Mimulus michiganensis*	Endangered	NLAA
978	Blowout penstemon	*Penstemon haydenii*	Endangered	NLAA
984	Eastern prairie fringed orchid	*Platanthera leucophaea*	Threatened	NLAA
997	Florida skullcap	*Scutellaria floridana*	Threatened	NLAA
1017	Tennessee yellow-eyed grass	*Xyris tennesseensis*	Endangered	NLAA
1020	Holmgren milk-vetch	*Astragalus holmgreniorum*	Designated Critical Habitat	NLAA
1030	Huachuca water-umbel	*Lilaeopsis schaffneriana var. recurva*	Designated Critical Habitat	NLAA
1042	Relict trillium	*Trillium reliquum*	Endangered	NLAA
1045	Texas prairie dawn-flower	*Hymenoxys texana*	Endangered	NLAA
1048	Alabama leather flower	*Clematis socialis*	Endangered	NLAA

Entity ID	Species	Scientific name	Status	Effect determination
1058	Mountain golden heather	*Hudsonia montana*	Designated Critical Habitat	NLAA
1064	Kral's water-plantain	*Sagittaria secundifolia*	Threatened	NLAA
1073	Ute ladies'-tresses	*Spiranthes diluvialis*	Threatened	NLAA
1076	Shale barren rock cress	*Boechera serotina*	Endangered	NLAA
1080	Western prairie fringed Orchid	*Platanthera praeclara*	Threatened	NLAA
1087	Guthrie's (=Pyne's) ground-plum	*Astragalus bibullatus*	Endangered	NLAA
1189	Golden sedge	*Carex lutea*	Endangered	NLAA
1189	Golden sedge	*Carex lutea*	Designated Critical Habitat	NLAA
1228	Knieskern's Beaked-rush	*Rhynchospora knieskernii*	Threatened	NLAA
1283	Parachute beardtongue	*Penstemon debilis*	Designated Critical Habitat	NLAA
1400	Texas golden Gladecress	*Leavenworthia texana*	Designated Critical Habitat	NLAA
1415	White fringeless orchid	*Platanthera integrilabia*	Threatened	NLAA
1710	Fleshy-fruit gladecress	*Leavenworthia crassa*	Endangered	NLAA
1710	Fleshy-fruit gladecress	*Leavenworthia crassa*	Designated Critical Habitat	NLAA
2884	Beardless chinchweed	*Pectis imberbis*	Designated Critical Habitat	NLAA
4724	Pagosa skyrocket	*Ipomopsis polyantha*	Designated Critical Habitat	NLAA

Entity ID	Species	Scientific name	Status	Effect determination
6617	Neches River rose-mallow	*Hibiscus dasycalyx*	Designated Critical Habitat	NLAA
6672	Georgia rockcress	*Arabis georgiana*	Threatened	NLAA
6672	Georgia rockcress	*Arabis georgiana*	Designated Critical Habitat	NLAA
7054	Acuna cactus	*Echinomastus erectocentrus var. acunensis*	Designated Critical Habitat	NLAA
7167	Kentucky glade cress	*Leavenworthia exigua laciniata*	Threatened	NLAA
7167	Kentucky glade cress	*Leavenworthia exigua laciniata*	Designated Critical Habitat	NLAA
7220	DeBeque phacelia	*Phacelia submutica*	Designated Critical Habitat	NLAA
8392	Missouri bladderpod	*Physaria filiformis*	Threatened	NLAA
9929	Gierisch mallow	*Sphaeralcea gierischii*	Designated Critical Habitat	NLAA
880	Cumberland sandwort	*Arenaria cumberlandensis*	Recovered	NLAA
1041	Running buffalo clover	*Trifolium stoloniferum*	Recovered	NLAA

The EPA made 18 “not likely to adversely affect” determinations for flowering plant critical habitats. We concur with these determinations. We do not anticipate the use of Enlist herbicides in any agricultural areas within designated critical habitat areas that have been converted to agricultural fields will result in measurable reductions in the function of the relevant PBFs within these areas. Furthermore, such usage would be relatively short-term in nature, and would not result in long-lasting effects to any relevant PBFs present. While areas of critical habitat adjacent to Enlist pesticide use sites may experience offsite runoff exposure, we expect required runoff mitigation measures included on Enlist product labels will greatly reduce environmental concentrations of Enlist pesticide AIs, resulting in only insignificant effects to critical habitat PBFs. For example, listed plant species critical habitats may require the presence of other plants that are identified as PBFs, such as native grasslands that support necessary pollinators and seed dispersers or riparian vegetative communities that provide sufficient shading, physical structure and support, or other habitat requirements for optimal growth. While we expect runoff may cause minor effects to other, non-listed plant species, we do not expect runoff concentrations of Enlist

pesticides will be high enough to cause measurable adverse effects to entire communities of plants, particularly as we expect many plant groups are tolerant to Enlist pesticides, such as trees, woody shrubs, and native grasses or other monocots (see the *Assumptions and Uncertainties* section in the main Opinion for more details). Thus, while we anticipate some minor effects to individual species within a specific vegetative community listed as a PBF, we do not expect exposure will cause more than insignificant effects to the community's function of supporting the listed plant species. Similarly, we expect adverse effects to necessary pollinator or seed disperser species will be, at most, insignificant, as predicted concentrations of Enlist herbicide AIs in runoff are well below levels that are associated with adverse effects for insect or animal species. Thus, we expect, at most, insignificant effects to these PBFs.

Insects

The EPA made "not likely to adversely affect" determinations for 11 insect species (Table 9): the Karner blue butterfly (*Lycaeides melissa samuelis*), Mitchell's satyr butterfly (*Neonympha mitchellii mitchellii*), American burying beetle (*Nicrophorus americanus*), Hungerford's crawling water beetle (*Brychius hungerfordi*), Puritan tiger beetle (*Cicindela puritana*), Hine's emerald dragonfly (*Somatochlora hineana*), Saint Francis' satyr butterfly (*Neonympha mitchellii francisci*), Dakota skipper (*Hesperia dacotae*), Salt Creek tiger beetle (*Cicindela nevadica lincolniana*), rusty patched bumble bee (*Bombus affinis*), and Miami tiger beetle (*Cicindelidia foridana*). Except for the Dakota skipper (discussed below), we concur with EPA's determinations for these species. We do not expect these species will occur on Enlist pesticide use sites as agricultural areas do not represent suitable habitat for these species. Thus, we do not expect any individuals to be exposed by direct spray. However, individuals occurring in areas adjacent to application sites may be exposed to Enlist herbicides through runoff. We anticipate runoff exposure will not result in measurable levels of adverse effects to exposed individuals as experimental studies have only observed adverse effects at exposures much higher than what is expected to occur with Enlist herbicide usage (see the *Effects of the Action* section in the main Opinion for more details). Thus, we do not expect any individuals of the above species are at risk of more than insignificant direct toxic effects.

We do not expect any measurable effects to the American burying beetle, Hungerford's crawling water beetle, Puritan tiger beetle, Salt Creek tiger beetle, Miami tiger beetle, and Hine's emerald dragonfly resulting from exposure of their food resources. These species of insects are carnivorous and do not feed on plant matter, and we do not anticipate prey items are likely to be measurably impacted from direct exposure to applications of Enlist. While runoff exposure may cause minor growth effects to plant species that support prey species, we do not expect environmental concentrations of Enlist pesticide AIs will be high enough to cause trophic cascades that would adversely affect the availability of food items for these species. Thus, we expect any adverse effects to food resource availability for these species are insignificant.

The Karner blue butterfly, Mitchell's satyr butterfly, Saint Francis' satyr butterfly, and rusty patched bumblebee may experience some loss of food and habitat resources, as they rely on plant species that are expected to be sensitive to Enlist pesticide AIs (e.g., herbaceous forbs). However, we expect this reduction in available food and habitat resources will be, at most, insignificant, as we anticipate required runoff mitigation measures included on Enlist product

labels will effectively reduce environmental concentrations of Enlist pesticide AIs to the point where any adverse effects to food resources are not measurable.

Alternatively, we expect the likelihood of exposure and associated consequences related to effects to key food and habitat resources are likely to be great enough for the Dakota skipper to warrant a "likely to adversely affect" determination. Thus, we do not concur with EPA's determination for this species. We have discussed these concerns with the EPA and the Enlist registrants since submission of the BE, and we analyze the effects to this species further in our Opinion.

Table 9. Not likely to adversely affect determinations for listed insect species.

Entity ID	Species	Scientific name	Status	Effect determination
420	Karner blue butterfly	*Lycaeides melissa samuelis*	Endangered	NLAA
424	Mitchell's satyr Butterfly	*Neonympha mitchellii mitchellii*	Endangered	NLAA
440	American burying beetle	*Nicrophorus americanus*	Threatened	NLAA
441	Hungerford's crawling water Beetle	*Brychius hungerfordi*	Endangered	NLAA
443	Puritan tiger beetle	*Ellipsoptera puritana*	Threatened	NLAA
445	Hine's emerald dragonfly	*Somatochlora hineana*	Endangered	NLAA
445	Hine's emerald dragonfly	*Somatochlora hineana*	Designated Critical Habitat	NLAA
455	Saint Francis' satyr butterfly	*Neonympha mitchellii francisci*	Endangered	NLAA
3412	Dakota Skipper	*Hesperia dacotae*	Threatened	LAA
4910	Salt Creek Tiger beetle	*Cicindela nevadica lincolniana*	Endangered	NLAA
10383	Rusty patched bumble bee	*Bombus affinis*	Endangered	NLAA
10909	Miami tiger beetle	*Cicindelidia floridana*	Endangered	NLAA

The EPA determined the proposed Action may affect but is not likely to adversely affect the Hine's emerald dragonfly's critical habitat. We concur with this determination. We do not expect the use of Enlist herbicides in any agricultural areas within designated critical habitat areas that have been converted to agricultural fields will result in measurable reductions in the function of the relevant PBFs within these areas. While offsite runoff exposure to critical habitat adjacent to use sites may occur, we expect predicted environmental concentrations of Enlist pesticide AIs

will not be high enough to cause more than insignificant effects to this species' critical habitat. Laboratory studies indicate that aquatic vegetation is not likely sensitive to Enlist pesticide AIs and only observe adverse effects occurring at concentrations much higher than what is anticipated to occur in the environment with Enlist herbicide usage (see the *Effects of the Action* section in the main Opinion for more details).

Mammals

The EPA made "not likely to adversely affect" determinations for 18 species of mammals (Table 10): the Indiana bat (*Myotis sodalis*), black-footed ferret (*Mustela nigripes*), Sonoran pronghorn (*Antilocapra americana sonoriensis*), gray wolf (*Canis lupus*), Mexican wolf (*Canis lupus baileyi*), red wolf (*Canis rufus*), gray bat (*Myotis grisescens*), Gulf Coast jaguarundi (*Puma yagouaroundi cacomitli*), Canada lynx (*Lynx canadensis*), Ozark big-eared bat (*Corynorhinus townsendii ingens*), Virginia big-eared bat (*Corynorhinus townsendii virginianus*), ocelot (*Leopardus pardalis*), Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*), Mexican long-nosed bat (*Leptonycteris nivalis*), Preble's meadow jumping mouse (*Zapus hudsonius preblei*), New Mexico meadow jumping mouse (*Zapus hudsonius luteus*), and northern long-eared bat (*Myotis septentrionalis*). We concur with these determinations.

The Indiana bat, black-footed ferret, gray wolf, gray bat, Gulf coast jaguarundi, Virginia big-eared bat, ocelot, and northern long-eared bat all may occur on, adjacent to, or above Enlist pesticide use sites and forage on contaminated dietary items, resulting in occasional exposure to Enlist. However, none of these species are expected to be exposed to Enlist pesticides at levels that will cause measurable adverse effects to individuals. Individuals of these species are not likely to occur in fields while active spray is occurring, indicating direct exposure to spray application is unlikely to occur. Additionally, their prey species (e.g., small vertebrates, insects) are not likely to accumulate substantial levels of Enlist herbicides and consumption of these contaminated prey items will not likely result in substantial exposure to these mammal species (see the *Exposure* section in the main Opinion for more details). We do not expect any direct toxic effects resulting from exposure to runoff in areas adjacent to application sites as concentrations of Enlist herbicides in runoff are not high enough to cause more than discountable levels of exposure. Additionally, these species are primarily carnivorous and are not reliant on plant matter as a primary food resource. While runoff exposure off-field may cause sublethal effects to plant species that support prey animals, we do not expect concentrations will be high enough to cause trophic cascades that would reduce prey species availability. Thus, we expect direct toxic effects and indirect effects to food resources will be insignificant.

We do not anticipate the Carolina northern flying squirrel, Mexican long-nosed bat, and New Mexico meadow jumping mouse are at risk of direct toxic effects as they do not occur in Enlist pesticide use sites. While there may be some level of adverse effects to plant species that provide habitat or food resources to these species off-field, we anticipate the required mitigation measures included on Enlist product labels will substantially reduce runoff concentrations to a level where adverse effects to food and habitat resources are not measurable. Thus, we expect only insignificant effects are likely to occur to these species.

We do not expect the Sonoran pronghorn and Preble's meadow jumping mouse will be exposed to direct spray application or consume contaminated food items as agricultural fields do not

represent preferred habitat. Both species may experience exposure to Enlist herbicide runoff in areas adjacent to application sites. However, we consider this exposure discountable as runoff concentrations of Enlist herbicides are expected to be far below the level that may cause any level of toxic effect to these species (see the *Effects of the Action* section in the main Opinion for more details). Offsite runoff may result in some level of adverse effects to the pronghorn and jumping mouse's food and habitat resources as both species rely on plant species. However, we anticipate the required runoff mitigation measures included on Enlist product labels will reduce exposure to levels where there will be very little impact to the plants that provide food or habitat to these species. Thus, we expect, at most, insignificant effects to these species.

Table 10. Not likely to adversely affect determinations for listed mammal species.

Entity ID	Species	Scientific name	Status	Effect determination
1	Indiana bat	*Myotis sodalis*	Endangered	NLAA
5	Black-footed ferret	*Mustela nigripes*	Endangered	NLAA
9	Sonoran pronghorn	*Antilocapra americana sonoriensis*	Endangered	NLAA
11	Gray wolf	*Canis lupus*	Endangered	NLAA
12	Gray wolf	*Canis lupus*	Threatened	NLAA
13	Mexican wolf	*Canis lupus baileyi*	Endangered	NLAA
14	Red wolf	*Canis rufus*	Endangered	NLAA
21	Gray bat	*Myotis grisescens*	Endangered	NLAA
22	Gulf Coast jaguarundi	*Puma yagouaroundi cacomitli*	Endangered	NLAA
24	Canada Lynx	*Lynx canadensis*	Threatened	NLAA
24	Canada Lynx	*Lynx canadensis*	Designated Critical Habitat	NLAA
25	Ozark big-eared bat	*Corynorhinus (=Plecotus) townsendii ingens*	Endangered	NLAA
27	Virginia big-eared bat	*Corynorhinus (=Plecotus) townsendii virginianus*	Endangered	NLAA
30	Ocelot	*Leopardus (=Felis) pardalis*	Endangered	NLAA
42	Carolina northern flying squirrel	*Glaucomys sabrinus coloratus*	Endangered	NLAA
48	Mexican long-nosed bat	*Leptonycteris nivalis*	Endangered	NLAA
52	Preble's meadow jumping mouse	*Zapus hudsonius preblei*	Threatened	NLAA

Entity ID	Species	Scientific name	Status	Effect determination
52	Preble's meadow jumping mouse	*Zapus hudsonius preblei*	Designated Critical Habitat	NLAA
5210	New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	Endangered	NLAA
5210	New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	Designated Critical Habitat	NLAA

The EPA determined the proposed Action may affect, but is not likely to adversely affect Canada lynx, Preble's meadow jumping mouse, and New Mexico meadow jumping mouse critical habitat. We concur with these determinations as we expect required runoff mitigation measures included on Enlist product labels will reduce environmental concentrations of Enlist pesticides to levels that will result in unmeasurable effects to these species' critical habitat PBFs. For instance, the Canada lynx is not reliant on plants as a food resource, and we do not expect environmental concentrations of Enlist herbicides will be high enough to cause trophic cascades that will measurably reduce prey availability. Although the two jumping mouse species consume plant matter and all three species require some sort of vegetation for habitat, we anticipate that the runoff measures will effectively reduce environmental concentrations of Enlist herbicides to a level where there will be very little impact to terrestrial plant communities. Thus, we do not expect more than insignificant effects to these critical habitats.

Reptiles

The EPA made "not likely to adversely affect" determinations for 11 reptile species (Table 11): the flattened musk turtle (*Sternotherus depressus*), Alabama red-belly turtle (*Pseudemys alabamensis*), American crocodile (*Crocodylus acutus*), gopher tortoise (*Gopherus polyphemus*), Northern Mexican gartersnake (*Thamnophis eques megalops*), narrow-headed gartersnake (*Thamnophis rufipunctatus*), black pine snake (*Pituophis melanoleucus lodingi*), Eastern Massasauga (*Sistrurus catenatus*), eastern indigo snake (*Drymarchon couperi*), copperbelly water snake (*Nerodia erythrogaster neglecta*), and Louisiana pine snake (*Pituophis ruthveni*). We concur with EPA's determinations for these species.

With the exception of the eastern indigo snake and the Louisiana pine snake, we do not expect any of these reptile species will occur on agricultural fields, indicating direct exposure to Enlist pesticides is unlikely to occur. While the eastern indigo snake and Louisiana pine snake may occur on Enlist pesticide use sites, we expect both species will only be exposed to levels of Enlist pesticides that will not cause more than insignificant effects. Thus, while direct exposure may occur in these two species, we do not expect any risk of measurable consequences resulting from direct toxic effects.

While off-field exposure through runoff is possible for all the species listed above, we expect runoff concentrations of Enlist pesticides will be well below levels that would cause measurable adverse effects in reptiles (see the *Effects of the Action* section in the main Opinion for more

details). Similarly, concentrations of Enlist pesticides in runoff will not be high enough to cause trophic cascades that would reduce the availability of animal prey species. Furthermore, we anticipate that required mitigation measures included on Enlist product labels will effectively reduce environmental concentrations of Enlist pesticide AIs to a level where measurable effects to plant food resources will not occur. Thus, we expect, at most, insignificant indirect effects to these species.

Table 11. Not likely to adversely affect determinations for listed reptile species.

Entity ID	Species	Scientific name	Status	Effect determination
166	New Mexican ridge-nosed rattlesnake	*Crotalus willardi obscurus*	Designated Critical Habitat	NLAA
168	Alabama red-belly turtle	*Pseudemys alabamensis*	Endangered	NLAA
169	Flattened musk turtle	*Sternotherus depressus*	Threatened	NLAA
173	Eastern indigo snake	*Drymarchon couperi*	Threatened	NLAA
176	American crocodile	*Crocodylus acutus*	Threatened	NLAA
180	Copperbelly water snake	*Nerodia erythrogaster neglecta*	Threatened	NLAA
181	Gopher tortoise	*Gopherus polyphemus*	Threatened	NLAA
1783	Northern Mexican gartersnake	*Thamnophis eques megalops*	Threatened	NLAA
1783	Northern Mexican gartersnake	*Thamnophis eques megalops*	Designated Critical Habitat	NLAA
3271	Narrow-headed gartersnake	*Thamnophis rufipunctatus*	Threatened	NLAA
3271	Narrow-headed gartersnake	*Thamnophis rufipunctatus*	Designated Critical Habitat	NLAA
3722	Louisiana pine snake	*Pituophis ruthveni*	Threatened	NLAA
6097	Black pine snake	*Pituophis melanoleucus lodingi*	Threatened	NLAA
6620	Sonoyta mud turtle	*Kinosternon sonoriense longifemorale*	Designated Critical Habitat	NLAA
7800	Eastern Massasauga (=rattlesnake)	*Sistrurus catenatus*	Threatened	NLAA

The EPA also determined the proposed Action may affect but is not likely to adversely affect New Mexican ridge-nosed rattlesnake, Northern Mexican gartersnake, narrow-headed gartersnake, and Sonoyta mud turtle critical habitat. We concur with these determinations as we expect required mitigation measures will reduce environmental concentrations of Enlist pesticide AIs to a level that will not be high enough to cause measurable effects to these species' critical habitat PBFs. Given the range of sensitivities different plant species and types of plants (e.g., trees, woody shrubs, grasses, forbs), we do not expect concentrations of Enlist herbicides in runoff will be high enough to cause sufficient levels of effects to an entire community or ecosystem of plants that would result in measurable decreases in habitat quality or availability to these species (see the *Assumptions and Uncertainties* section in the main Opinion for more details). Furthermore, these species of reptiles are not reliant on sensitive plant species for food, indicating that effects to food resource are likely discountable. Thus, we do not expect more than insignificant effects to these species' critical habitats.

Snails

The EPA made "not likely to adversely affect" determinations for 17 snail species (see Table 12). We concur with these determinations. We do not expect any of these snails will occur on agricultural fields, indicating no direct exposure to Enlist pesticides will occur. While off-field exposure through runoff may occur, predicted runoff concentrations are not high enough to cause any measurable toxic effects to individuals, indicating that direct toxic effects to these species are insignificant. Runoff exposure may cause adverse effects to food resource availability. However, we expect these effects will be, at most, insignificant, as we do not anticipate detritus and other plant material that these species rely on are vulnerable to Enlist herbicides. Additionally, we anticipate that required mitigation measures included on Enlist product labels will effectively reduce runoff concentrations, further reducing the likelihood of adverse effects to individuals as well as to food resources. Thus, effects to food resources will be, at most, insignificant.

Table 12. Not likely to adversely affect determinations for listed snail species.

Entity ID	Species	Scientific name	Status	Effect determination
392	Noonday snail	*Mesodon clarki nantahala*	Threatened	NLAA
395	Virginia fringed mountain snail	*Polygyriscus virginianus*	Endangered	NLAA
401	Royal marstonia (snail)	*Marstonia ogmorhaphe*	Endangered	NLAA
402	Armored snail	*Marstonia pachyta*	Endangered	NLAA
403	Alamosa springsnail	*Tryonia alamosae*	Endangered	NLAA
408	Socorro springsnail	*Pyrgulopsis neomexicana*	Endangered	NLAA
417	Slender campeloma	*Campeloma decampi*	Endangered	NLAA

Entity ID	Species	Scientific name	Status	Effect determination
1245	Pecos assiminea snail	*Assiminea pecos*	Endangered	NLAA
1245	Pecos assiminea snail	*Assiminea pecos*	Designated Critical Habitat	NLAA
1246	Roswell springsnail	*Pyrgulopsis roswellensis*	Endangered	NLAA
1246	Roswell springsnail	*Pyrgulopsis roswellensis*	Designated Critical Habitat	NLAA
1247	Koster's springsnail	*Juturnia kosteri*	Endangered	NLAA
1247	Koster's springsnail	*Juturnia kosteri*	Designated Critical Habitat	NLAA
1380	San Bernardino springsnail	*Pyrgulopsis bernardina*	Threatened	NLAA
1380	San Bernardino springsnail	*Pyrgulopsis bernardina*	Designated Critical Habitat	NLAA
2561	Interrupted (=Georgia) Rocksnail	*Leptoxis foremani*	Endangered	NLAA
4437	Diamond Tryonia	*Pseudotryonia adamantina*	Endangered	NLAA
4437	Diamond Tryonia	*Pseudotryonia adamantina*	Designated Critical Habitat	NLAA
4479	Phantom Springsnail	*Pyrgulopsis texana*	Endangered	NLAA
4479	Phantom Springsnail	*Pyrgulopsis texana*	Designated Critical Habitat	NLAA
4766	Three Forks Springsnail	*Pyrgulopsis trivialis*	Endangered	NLAA
5362	Gonzales tryonia	*Tryonia circumstriata (=stocktonensis)*	Endangered	NLAA
5362	Gonzales tryonia	*Tryonia circumstriata (=stocktonensis)*	Designated Critical Habitat	NLAA
6138	Phantom Tryonia	*Tryonia cheatumi*	Endangered	NLAA
6138	Phantom Tryonia	*Tryonia cheatumi*	Designated Critical Habitat	NLAA

The EPA also determined the proposed Action may affect but is not likely to adversely affect Pecos assiminea snail (*Assiminea pecos*), Roswell springsnail (*Pyrgulopsis roswellensis*), Koster's springsnail (*Juturnia kosteri*), San Bernardino springsnail (*Pyrgulopsis bernardina*), diamond tryonia (*Pseudotryonia adamantina*), phantom springsnail (*Pyrgulopsis texana*), Gonzales tryonia (*Tryonia circumstriata*), and phantom tryonia (*Tryonia cheatumi*) critical habitat. We concur with these determinations as we do not expect any predicted environmental concentration of Enlist pesticide AIs will be high enough to cause measurable levels of effects to

these species' critical habitat PBFs. Laboratory studies show that aquatic plants that many of these snail species feed on (e.g., algae), as well as submerged vegetation that may provide shelter for some of these species, are not likely sensitive to Enlist herbicides (see the *Effects of the Action* section in the main Opinion for more details). Adverse effects to aquatic plants are only observed at concentrations of Enlist pesticides that are orders of magnitude higher than what is expected to occur with use of Enlist herbicides. Thus, we do not anticipate more than insignificant levels of adverse effects to these species' critical habitats.

This concludes consultation for these species and critical habitats pursuant to the regulations implementing the ESA. They will not be addressed further in this document or appendices.