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PREVENTION, PESTICIDES AND
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MEMORANDUM

SUBJECT: Ecological Risk Assessment for the Prothioconazole Section 3 New Use on Soybeans and Sugar Beets

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The Environmental Fate and Effects Division (EFED) has reviewed the proposed label for the use of prothioconazole (JAU64746; 2-(2-(1-chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxy-propyl)-2,4-dihydro(1,2,4)-triazol-3-thion; CAS#: 178928-70-6; PC Code: 113961), and its end-use product PROLINE® 480SC (41.0 % a.i.) fungicide on soybeans and sugar beets.

The results of this screening-level risk assessment indicate that the proposed new uses of prothioconazole on soybeans and sugar beets have the potential for direct adverse effects on listed and non-listed estuarine/marine non-molluscan invertebrates, listed freshwater vascular plants, listed and non-listed freshwater and saltwater non-vascular plants, listed and non-listed mammals (chronic), and listed semi-aquatic dicot plants.

1. Executive Summary

EFED has completed a review of the Section 3 new use request for the use of prothioconazole (JAU64746; 2-(2-(1-chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl)-2,4-dihydro(1,2,4)-triazol-3-thion; CAS#: 178928-70-6; PC Code: 113961), and its end-use product PROLINE[®] 480SC (41.0 % a.i.) fungicide on soybeans and sugar beets. Prothioconazole is a broad-spectrum, systemic fungicide. The compound is in the conazole (triazolinthione) class of fungicides and acts through disruption of normal fungal cell membrane structure and function via interaction or inhibition of ergosterol synthesis. Prothioconazole is currently registered for use on barley, canola, chickpea, dried shell peas and beans, lentils, oilseed crop, peanut, and numerous varieties of wheat. An ecological risk assessment of these registered uses was completed in June of 2006 (U.S. EPA, 2006; DP 324660).

The proposed maximum application rates for prothioconazole use on soybeans and sugar beets range from 0.09375 to 0.1781 lbs a.i./A. Prothioconazole may be applied via ground and/or aerial spray, up to three times per year, for both of the proposed new uses. The minimum application intervals for soybeans and sugar beets are 10 and 14 days, respectively. Application rates for the proposed new uses are lower than the maximum seasonal rate currently registered for prothioconazole of 0.71 lbs a.i./A (for peanuts). In addition, the proposed application rate and number of applications for sugar beets (0.1781 lbs a.i./A; 3 applications/year) are the same as currently registered application rates for chickpeas, dried shell peas and beans, and lentils.

Prothioconazole appears to degrade relatively quickly in the environment; however, its degradates, primarily prothioconazole-desthio and prothioconazole-S-methyl, are persistent and of similar toxicity as the parent. Based on uncertainties associated with biotic degradation rates for prothioconazole alone, due to ineffective extraction methods in soil and sediment metabolism studies, a total toxic residues approach was used for aquatic exposure modeling. Combined residues of concern include prothioconazole, prothioconazole-desthio, and prothioconazole-S-methyl.

Although a total toxic residues approach is used for estimation of prothioconazole for aquatic species, the total mass of applied material is used to estimate exposure to terrestrial organisms. Tools are not currently available that would allow terrestrial exposure to be compartmentalized into the contributions of parent and degradates.

The toxicity of prothioconazole is based on registrant-submitted data on the parent, prothioconazole, and its major degradates (-desthio and -S-methyl), as well as open literature data from the ECOTOX database. Given the uncertainties associated with

accurately predicting the concentrations of parent prothioconazole and its degradates, the lowest available toxicity endpoint, regardless of the exposure chemical, is used in this assessment. The acute toxicological profile indicates that prothioconazole and its degradates are practically non-toxic to mammals, birds, and non-target insects, and moderately toxic to freshwater animals. The degradate, prothioconazole-desthio, is highly toxic to some taxa; the most sensitive taxa appear to be aquatic plants followed by estuarine/marine non-molluskan invertebrates. In addition, prothioconazole-desthio may cause growth and reproductive effects in mammals when chronically exposed.

The results of this screening-level risk assessment indicate that the proposed new uses of prothioconazole on sugar beets and soybeans have the potential for direct adverse effects on listed and non-listed estuarine/marine non-molluskan invertebrates, listed freshwater vascular plants, listed and non-listed freshwater and saltwater non-vascular plants, listed and non-listed mammals (chronic), and listed semi-aquatic dicot plants.

Potential effects to federally-listed endangered and threatened species (listed species) based on LOC exceedances require an in-depth listed species evaluation determining the potential co-occurrence of listed species and the areas in which sugar beets and soybeans are grown. Identified potential risks to listed species are summarized in **Table 1.1**.

Table 1.1. Listed Species Risks Associated with Potential Direct or Indirect Effects Due to the Proposed Applications of Prothioconazole on Sugar Beets and Soybeans		
Listed Species Taxonomic Group of Concern	Direct Effects	Indirect Effects¹
Aquatic vascular plants	Acute: growth	YES
Non-vascular plants	Acute: cell density	YES
Estuarine/marine non-vascular plants	Acute: biomass	YES
Dicot terrestrial plants ²	Acute: plant growth	YES
Monocot terrestrial plants	None	YES
Freshwater fish	None	YES
Saltwater fish	None	YES
Freshwater invertebrates	None	YES
Estuarine/marine invertebrates	Acute: mortality Chronic: reproduction	YES

Table 1.1. Listed Species Risks Associated with Potential Direct or Indirect Effects Due to the Proposed Applications of Prothioconazole on Sugar Beets and Soybeans

Listed Species Taxonomic Group of Concern	Direct Effects	Indirect Effects ¹
Mollusks	None	YES
Mammals	Chronic: reproduction, growth	YES
Birds	None	YES
Terrestrial invertebrates	None	YES

¹ The potential for adverse effects to those species that rely on a specific plant or animal species (specifically aquatic plants, terrestrial dicots, mammals, or estuarine/marine invertebrates) or multiple plant or animal species (specifically aquatic plants, terrestrial dicots, mammals, or estuarine/marine invertebrates) cannot be precluded. Indirect effects may include general habitat modification, host plant loss, and food supply disruption.

² Direct effects to listed dicot plants are relevant for only semi-aquatic plant species. Direct effects to listed terrestrial upland plants are not expected.

2. Problem Formulation

This assessment evaluates the potential risks to non-target species associated with the proposed use of prothioconazole (JAU64746; 2-(2-(1-chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxy-propyl)-2,4-dihydro(1,2,4)-triazol-3-thion; CAS#: 178928-70-6; PC Code: 113961), and its end-use product PROLINE[®] 480SC (41.0 % a.i.) fungicide on soybeans and sugar beets. The proposed maximum application rate for soybeans is 0.09375 lbs a.i./acre/application with a minimum interval of 10 days between applications. The maximum proposed single application rate to sugar beets is 0.1781 lbs a.i./acre with a minimum interval of 14 days between applications. The proposed methods of application are ground and aerial sprays, and the maximum number of applications allowed per year for both soybeans and sugar beets is three. Prothioconazole is already labeled as a pre- or post-infection fungicide for barley, canola, chickpea, dried shell peas and beans, lentils, oilseed crop, peanut, and numerous varieties of wheat (USEPA, 2006).

This assessment utilizes environmental fate and toxicity data for prothioconazole and two primary degradates, prothioconazole-desthio and prothioconazole-S-methyl. A total toxics residue approach was used to estimate exposure levels for aquatic organisms. Given the uncertainties associated with accurately predicting the concentrations of parent prothioconazole or its degradates, the lowest available toxicity endpoint, regardless of the exposure chemical (i.e., parent or degrade), is used in this assessment.

2.1. Mode of Action

Prothioconazole is a broad-spectrum, systemic fungicide belonging to the conazole (triazolinthione) class of fungicides. Conazole fungicides act through disruption of normal fungal cell membrane structure and function primarily through interactions or inhibitions of ergosterol synthesis, the predominant membrane sterol component. Specifically, fungicidal activity occurs through inhibiting the action of cytochrome P450 (CYP)-51 (lanosterol 14 α -demethylase), which converts squalene to ergosterol. In mammals, the CYP51 reaction is part of the pathway leading to the biosynthesis of cholesterol (White et al., 1998). Cholesterol is the primary sterol in the cell membrane of mammalian cells, and is also required to make sex steroid hormones (Payne and Hales, 2004).

2.2. Use Characterization

Prothioconazole is currently used as a pre- or post-infection fungicide on barley, canola, chickpea, dried shell peas and beans, lentils, oilseed crop, peanut, and numerous varieties of wheat. Application rates for the proposed new uses are presented below in **Table 2.1**. Application rates for the previously registered uses assessed in the June 2006 ecological risk assessment (U.S. EPA, 2006; DP 324660) are presented in **Table 2.2**.

Crop Type	Maximum Rate per Application (lbs a.i./A) and Max. Number of Applications	Maximum Seasonal Application Rate (lbs a.i./A/season)	Application Interval (days)	Pre-Harvest Interval (days)	Application Methods(s)
Soybeans	0.09375 (3)	0.2813	10-21	21	Aerial and ground spray
Sugar beets	0.1781 (3)	0.5343	14-30	7	Aerial and ground spray

Crop Type	Max. Application Rate (lbs. a.i./A)	Max. No. of Applic.	Max. Seasonal Applic. Rate (lbs. a.i./A)	Applic. Interval (days)	Application Method(s)
Peanut	0.1781	4	0.7124	14	Aerial and ground spray
Chickpea	0.1781	3	0.5343	10 to 14	Aerial and ground spray

Dried shell pea & bean	0.1781	3	0.5343	5 to 14	Aerial and ground spray
Lentil	0.1781	3	0.5343	10 to 14	Aerial and ground spray
Barley	0.1781	2	0.2928	7 to 14	Aerial and ground spray
Canola	0.1781	2	0.3563	5 to 7	Aerial and ground spray
Oilseed crop subgroup	0.1781	2	0.3563	5 to 7	Aerial and ground spray
Wheat	0.1781	2	0.2928	7 to 14	Aerial and ground spray

2.3. Conceptual Model

The conceptual model used to depict the potential ecological risk associated with the proposed use of prothioconazole on soybeans and sugar beets assumes that, as a fungicide, prothioconazole is capable of adversely affecting terrestrial and aquatic animals, provided environmental concentrations are sufficiently elevated as a result of proposed label uses. Based on the preliminary risk screening and past ecological risk assessment, the degradate prothioconazole-desthio is highly toxic to aquatic non-vascular plants and to estuarine/marine invertebrates on an acute exposure basis and causes potential growth and reproductive effects in mammals when chronically exposed.

The hypothesis for the risks of prothioconazole to non-target animals (depicted in **Figure 2.1**) focuses on both aquatic and terrestrial environments via potential exposure to the parent and/or its degradate from direct spray, spray drift, and runoff. Risk to terrestrial plants is also considered in this screening-level assessment. For terrestrial organisms, the major route of exposure is consumption of food items, such as plant leaves or insects, which contain prothioconazole residues as a result of direct application and/or spray drift. For aquatic animal species, the major routes of exposure are direct contact via the respiratory surface (gills) or the integument. Aquatic vascular and non-vascular plants may also be exposed via direct uptake and adsorption. Estimated exposure concentrations for all organisms are obtained through the use of several Agency exposure models.

The following risk hypothesis is presumed for this screening level assessment:

Based on the application method, mode of action, and the sensitivity of non-target aquatic and terrestrial species, the proposed prothioconazole use on soybeans and sugar beets has the potential to reduce survival, reproduction, and/or growth in terrestrial and aquatic organisms.

In order for a chemical to pose an ecological risk, it must reach non-target organisms at concentrations found to cause adverse effects. The exposure pathway is the means by which a pesticide moves in the environment from the application site to non-target organisms. The assessment of ecological exposure pathways in this assessment includes an examination of the source and routes of transport and dissipation for prothioconazole,

and the determination of potential exposure routes to non-target species, as depicted in Figure 2.1.

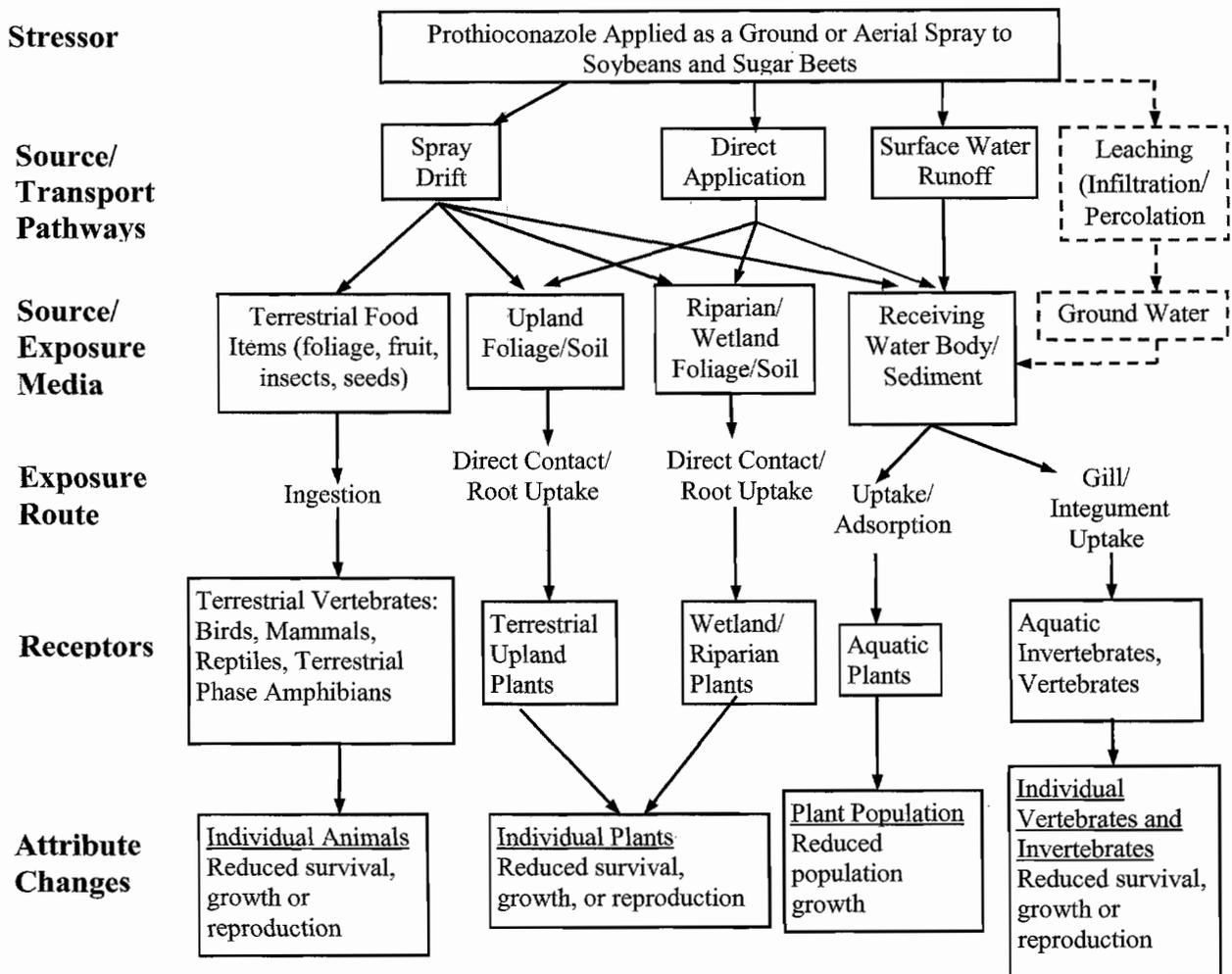


Figure 2.1. Conceptual Model of the Transport and Effects of Prothioconazole in the Environment

*Dotted lines indicate that, although this exposure route/media was considered, its contribution to the fate and transport of prothioconazole is expected to be negligible

2.4. Analysis Plan

2.4.1. Integration of Exposure and Effects

Available exposure and toxicity data are used to evaluate the risks of adverse ecological effects on non-target species. For this screening-level assessment, the risk quotient (RQ) method is used to compare exposure and toxicity values. The RQ method involves dividing estimated environmental concentrations (EECs) by acute and chronic toxicity values. The resulting RQs are then compared to the Agency’s levels of concern LOCs (U.S. EPA, 2004; **Table 2.3**). These criteria are used to determine whether new uses for

prothioconazole, as directed on the proposed label, have the potential to cause adverse effects to non-target organisms.

TABLE 2.3. Agency Risk Quotient (RQ) Metrics and Levels of Concern (LOC) Per Risk Class			
RISK CLASS	RISK DESCRIPTION	RQ	LOC
Aquatic Animals (fish and invertebrates)			
Acute	Potential for effects to non-listed animals from acute exposures	Peak EEC/LC ₅₀ ¹	0.5
Acute Restricted Use	Potential for effects to animals from acute exposures Risks may be mitigated through restricted use classification	Peak EEC/LC ₅₀ ¹	0.1
Acute Listed Species	Listed species may be potentially affected by acute exposures	Peak EEC/LC ₅₀ ¹	0.05
Chronic	Potential for effects to non-listed and listed animals from chronic exposures	60-day EEC/NOAEC (fish)	1
		21-day EEC/NOAEC (invertebrates)	
Aquatic Plants			
Non-Listed	Potential for effects to non-listed plants from exposures	Peak EEC/LC ₅₀ ¹	1
Listed	Potential for effects to listed plants from exposures	Peak EEC/NOAEL	1
Terrestrial Animals (mammals and birds)			
Acute	Potential for effects to non-listed animals from acute exposures	EEC ² /LC ₅₀ (Dietary)	0.5
		EEC/LD ₅₀ (Dose)	
Acute Restricted Use	Potential for effects to animals from acute exposures Risks may be mitigated through restricted use classification	EEC ² /LC ₅₀ (Dietary)	0.2
		EEC/LD ₅₀ (Dose)	
Acute Listed Species	Listed species may be potentially affected by acute exposures	EEC ² /LC ₅₀ (Dietary)	0.1
		EEC/LD ₅₀ (Dose)	
Chronic	Potential for effects to non-listed and listed animals from chronic exposures	EEC ² /NOAEC	1
Terrestrial and Semi-Aquatic Plants			
Non-Listed	Potential for effects to non-target, non-listed plants from exposures	EEC/ EC ₂₅	1
Listed Plant	Potential for effects to non-target, listed plants from exposures	EEC/ NOEC	1
		EEC/ EC ₀₅	

¹ LC₅₀ or EC₅₀.

² Based on upper bound Kenaga values.

3. Analysis

3.1. Exposure Characterization

3.1.1. Environmental Fate and Transport Characterization

Prothioconazole is stable to hydrolysis and degrades by aqueous photolysis ($t_{1/2} = 9$ d) to prothioconazole-desthio, which appears to resist further photolytic degradation (combined $t_{1/2} = 101$ d). Prothioconazole and its degradates are not expected to volatilize (vapor pressure $< 4 \times 10^{-7}$ Pa). Based on available data, prothioconazole together with its major degradates appear to be persistent to microbial degradation in soil ($t_{1/2} = 462 - 1386$ d) and water ($t_{1/2} = 67 - 433$ d). Prothioconazole degrades relatively quickly to two major persistent degradates, prothioconazole-desthio and prothioconazole-S-methyl, which are of similar toxicity to that of the parent. Prothioconazole's mobility is unable to be characterized due to quick degradation in mobility studies, but one major degradate formed in large amounts (prothioconazole-desthio) is moderately mobile ($K_{oc} = 523 - 625$ ml/g_{oc}). The other major degradate formed in smaller amounts (prothioconazole-S-methyl) is slightly mobile ($K_{oc} = 1973 - 2993$ ml/g_{oc}). Because these two major degradates are considered to be of similar toxicity to the parent, they are included in the aquatic exposure estimates. Also, ineffective extraction methods in soil and aquatic metabolism studies resulted in large amounts of unextracted material, leading to uncertainties in the composition and bioavailability of such and precluding accurate determinations of the biotic degradation rate for parent prothioconazole. Therefore, a total toxic residues method, including unextracted material, was utilized for environmental exposure modeling. This adds considerable uncertainty to the assessment regarding the bioavailability and the biotic degradation rates for prothioconazole residues. If additional data regarding the persistence of the degradates and the nature of the unextracted residues become available, the exposure estimates may be refined. Additional details regarding the environmental fate and transport of prothioconazole and its degradates can be found in the June 1, 2006 Ecological Risk Assessment (U.S. EPA, 2006; DP 324660). **Table 3.1** provides a detailed summary table of physical/chemical and environmental fate/transport properties of prothioconazole combined residues of concern. **Tables 3.2** summarizes the major degradation products formed by each degradation process in the studies reviewed.

Table 3.1. Summary of Physical/Chemical and Environmental Fate and Transport Properties of Prothioconazole Combined Residues of Concern			
PARAMETER	VALUE(S) (units)	SOURCE MRID	COMMENT
Chemical Name	Prothioconazole: 2-[2-(1-Chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole-3-thione;	46246003 46477401	Prothioconazole-desthio: 2-[2-(1-Chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxy-propyl]-1,2-dihydro-3H-1,2,4-triazole Prothioconazole-S-methyl: alpha-1(1-chlorocyclopropyl)-alpha-[(2-chlorophenyl)methyl]-3-(methylthio)-1H-1,2,4-triazole-1-ethanol

Table 3.1. Summary of Physical/Chemical and Environmental Fate and Transport Properties of Prothioconazole Combined Residues of Concern			
PARAMETER	VALUE(S) (units)	SOURCE MRID	COMMENT
Molecular Weight	Prothioconazole: 344.264	46246003 46477401	Prothioconazole-desthio: 312.2 Prothioconazole-S-methyl: 358.3
Solubility (pH 4 (20 °C)) (pH 8 (20 °C)) (pH 9 (20 °C))	Prothioconazole: 5 mg/L or ppm 300 mg/L or ppm 2000 mg/L or ppm	46246003	
Vapor Pressure (20 °C and 25 °C)	Prothioconazole: $<<4 \times 10^{-7}$ Pa	46246003	Relatively non-volatile under field conditions.
Henry's Law constant (20 °C)	Prothioconazole: $<2.96 \times 10^{-10}$ atm-m ³ /mol	46246003	Estimated from vapor pressure and water solubility.
pKa (20 °C)	Prothioconazole: 6.9	46246003	Weak acid, anion at neutral and alkaline pHs.
Octanol-Water Partition Coefficient (log K _{ow} , at 20 °C) Unbuffered pH 4 pH7 pH9	Prothioconazole: 4.05 4.16 3.82 2.00	46246003	Potential for bioaccumulation at neutral and acidic pH.
Hydrolysis Half-life (pH 4, 7, 9; (25 °C))	Prothioconazole and Prothioconazole-desthio: stable (Prothioconazole-S-methyl is not formed from prothioconazole hydrolysis.)	46246505 46246506	
Aqueous Photolysis Half-life (pH 7, at 25 °C)	Prothioconazole: $t_{1/2} = 9.7$ days Prothioconazole-desthio: Increasing at study termination Prothioconazole and Prothioconazole-desthio: $t_{1/2} = 101.9$ days (Prothioconazole-S-methyl is not formed from prothioconazole aqueous photolysis.)	46246507	Value corrected to represent natural sunlight at 40°N latitude;
Soil Photolysis Half-life	Prothioconazole and Prothioconazole-desthio: stable (Prothioconazole-S-methyl is not formed from prothioconazole soil photolysis.)	46246510	Half-life could not be calculated as parent degraded faster in dark samples than in irradiated samples.
Aerobic Soil Metabolism Half-life	Prothioconazole combined residues of concern: $t_{1/2} = 533.2$ days (silt; phenyl), 866.4 days (silt; triazole), 990.2 days (loamy sand; phenyl), 1386.3 days (loamy sand; triazole), 866.4 days (sandy loam; phenyl), 462.1 days (silty clay loam; phenyl).	46246511 46246512	Half-lives are calculated combining amounts of prothioconazole, prothioconazole-desthio, and prothioconazole-S-methyl per sampling interval. Non-extractable residues included.

Table 3.1. Summary of Physical/Chemical and Environmental Fate and Transport Properties of Prothioconazole Combined Residues of Concern

PARAMETER	VALUE(S) (units)					SOURCE MRID	COMMENT
Anaerobic Aquatic Metabolism Half-life	Prothioconazole combined residues of concern: $t_{1/2}$ = stable (total system); 56.8 days (water layer).					46246516	Half-lives are combining amounts of prothioconazole, prothioconazole-desthio, and prothioconazole-S-methyl per sampling interval. Non-extractable residues included.
Aerobic Aquatic Metabolism Half-life	Prothioconazole combined residues of concern: $t_{1/2}$ = 433.2 days (H, total system, p), 346.6 days (H, total system, t), 106.6 days (A, total system, p), 67.3 days (A, total system, t).					46246515	Two systems tested: (H) Honniger Weiher pond (loam/water) and (A) Anglerweiher lake (loamy sand/water). Both phenyl (p) and triazole (t) labels in each system. Half-lives are calculated combining amounts of prothioconazole, prothioconazole-desthio, and prothioconazole-S-methyl per sampling interval. Non-extractable residues included.
Organic Carbon Partition Coefficient (K_{oc})	(mL/g _{oc})	LS	SCL	SL	S		
	Prothioconazole	--	--	--	--	46246539 46246504	Parent mobility cannot be determined due to instability
	Prothioconazole -desthio	523	536	617	625	46246450	Conducted on prothioconazole-desthio Used four soils: loamy sand (LS) at 0.79%OC, silty clay loam (SCL) at 1.66%OC, sandy loam (SL) at 2.02%OC, silt (S) at 2.14%OC.
	Prothioconazole -S-methyl	1973	2484	2772	2995	46246501	Conducted on prothioconazole-S-methyl Used same soils as MRID: 46246450.
Soil Partition Coefficient (K_d)	(mL/g)	LS	SCL	SL	S		
	Prothioconazole	--	--	--	--	46246539 46246504	Same as for K_{oc} .
	Prothioconazole -desthio	4.13	8.90	12.46	13.38	46246450	Same as for K_{oc} .
	Prothioconazole -S-methyl	15.6	41.2	56.0	64.1	46246501	Same as for K_{oc} .

Table 3.1. Summary of Physical/Chemical and Environmental Fate and Transport Properties of Prothioconazole Combined Residues of Concern

PARAMETER	VALUE(S) (units)	SOURCE MRID	COMMENT
Terrestrial Field Dissipation Half-life ¹	<p>California (sandy loam/loam): Prothioconazole: $t_{1/2}$ (in surface soil)= 2.2 days; Not detected above LOD below a depth of 15 cm nor after 7DAT. Prothioconazole-desthio: $t_{1/2}$ (in surface soil)= 84.5 days; Detected above LOD to a depth of 45 cm and through 307DAT.</p> <p>Georgia (sand/sandy loam): Prothioconazole: $t_{1/2}$ (in surface soil)= 4.7 days; Not detected above LOD below a depth of 15 cm nor after 14DAT. Prothioconazole-desthio: $t_{1/2}$ (in surface soil)= 96.3 days; Detected above LOD to a depth of 30 cm through 7DAT.</p> <p>New York (loamy sand): Prothioconazole: $t_{1/2}$ (in surface soil)= 96.3 days; Not detected above LOD below a depth of 15 cm nor after 211DAT. Prothioconazole-desthio: $t_{1/2}$ (in surface soil)= 315.1 days; Not detected above LOD below a depth of 15 cm (except for one sampling interval (211DAT) where detected above LOD to 30 cm); detected above LOD through study completion (567DAT).</p>	46246517 46246518 46246519	Studies conducted on prothioconazole as parent. For half-lives calculated for degradates from parent dissipation studies, day of max concentration of degradate is used as day zero in regression.
Aquatic Field Dissipation Half-life ¹	<p>California (clay): Prothioconazole: $t_{1/2}$ (in sediment)= 203.9 days; $t_{1/2}$ (in paddy water)= 1.7 days. Prothioconazole-desthio: $t_{1/2}$ (in sediment)= 122 days.</p> <p>Arkansas (loam): Prothioconazole: $t_{1/2}$ (in sediment)= too few detections; $t_{1/2}$ (in paddy water)= 0.9 days. Prothioconazole-desthio: $t_{1/2}$ (in sediment)= 121.6 days.</p> <p>Arkansas-cropped (loam): Prothioconazole: $t_{1/2}$ (in sediment)= too few detections; $t_{1/2}$ (in paddy water)= 0.6 days. Prothioconazole-desthio: $t_{1/2}$ (in sediment)= 90.0 days.</p>	46246522 46246523 46246524	Studies conducted on prothioconazole as parent. For half-lives calculated for degradates from parent dissipation studies, day of max concentration of degradate is used as day zero in regression.
Bioconcentration Factor (BCF)	Prothioconazole and prothioconazole-desthio do not appear to bioaccumulate.	46246034 46246035	BCF cannot be calculated due to lack of a clear accumulation plateau.

¹DAT= days after treatment.

Table 3.2. Summary of Major Degradate Formation from Degradation of Prothioconazole

STUDY TYPE	MAJOR DEGRADATE and MAXIMUM CONCENTRATION				SOURCE
	Prothioconazole-desthio (SXX0665) (% applied)	Prothioconazole-S-methyl (WAK7861) (% applied)	Prothioconazole-thiazocine (% applied)	1,2,4-triazole (% applied)	
Hydrolysis	5.7% at 168 days	–	–	Not able to be detected.	MRID: 46246505.
Aqueous Photolysis	55.7% at 11 days (triazole label)	–	14.1% at 5 days (phenyl label)	11.9% at 18 days (triazole label)	MRID: 46246507.
Soil Photolysis	39.0 % at 15 days (29.4% max at 15 days in dark control)	–	–	Not able to be detected.	MRID: 46246510.
Aerobic Soil Metabolism	49.4% at 7 days (triazole label)	14.6% at 7 days (triazole label)	–	<2.0% at 120, 272, & 365 days (triazole label)	MRID: 46246511, 46246512.
Aerobic Aquatic Metabolism	26.9% at 14 days in sediment (both labels) 32.3% at 7 days in water (phenyl label) 54.6% at 7 days in total system (phenyl label)	9.6% at 7 days in sediment (triazole label) 3.1% at 7 days in water (triazole label) 12.7 % at 7 days in total system (triazole label)	–	6.1% at 121 days in sediment (triazole label) 37.2% at 121 days in water (triazole label) 41.8 % at 121 days in total system (triazole label)	MRID: 46246515.
Anaerobic Aquatic Metabolism	Not determined; - desthio formation determined to be artifact of storage and, therefore, added to parent (parent+desthio at 95.2% in total system at 0 days)	78.2% at 240 days in sediment 9.9% at 30 days in water 78.2% at 240 days in total system	–	Not able to be detected.	MRID: 46246516.
Terrestrial Field Dissipation	223.9 ug/kg soil at 3 days, 0-15 cm soil depth (CA) 84.9 ug/kg soil at 3 days, 0-15 cm soil depth (GA) 273.0 ug/kg soil at 28 days, 0-15 cm soil depth (NY)	15.9 ug/kg soil at 3 days, 0-15cm soil depth (CA) 12.3 ug/kg soil at 7 days, 0-15 cm soil depth (GA) 58.9 ug/kg soil at 28 days, 0-15 cm soil depth (NY)	–	7.3 ug/kg soil at 29 days, 0-15cm soil depth (CA) 5.3 ug/kg soil at 120 days, 0-15cm soil depth (GA) 3.5 ug/kg soil at 422 days, 0-15 cm soil depth (NY)	MRID: 46246517, 46246518, 46246519.
Aquatic Field Dissipation	32.7 ug/kg sediment at 14 days, 0-3 in.; 50.3 ug/L paddy water at 3 days (CA)	10.2 ug/kg sediment at 122 days, 0-3 in.; 1.04 ug/L paddy water at 3 days (CA)	–	3.3 ug/kg sediment at 364 days, 0-3 in.; 0.13 ug/L paddy water at 7 days (CA)	MRID: 46246522, 46246523, 46246524.

Data are reported in single replicates.

Studies conducted with both phenyl and triazole radiolabels include: aerobic soil metabolism (MRID: 46246511 only), aerobic aquatic metabolism, and aqueous photolysis. All other studies are conducted with phenyl radiolabel only (ie., hydrolysis, soil photolysis, other aerobic soil metabolism (MRID: 46246512 only), anaerobic aquatic metabolism). The 1,2,4-triazole degradate is not able to be detected in studies using the phenyl radiolabel. (The 1,2,4-triazole degradate column for studies which did not use the triazole label are designated "Not able to be detected.")

Field studies not radiolabelled. The only degradates tracked in field studies are: prothioconazole-desthio, prothioconazole-S-methyl, prothioconazole-thiazocine, and 1,2,4-triazole. Maximum concentrations in the field studies are determined after the 6th (CA, NY) or 2nd (GA) application. (DAT= days after 6th or 2nd treatment); 800 ug/kg, 400 ug/kg, and 1000 ug/kg total prothioconazole applied in CA, GA, and NY, respectively. Blank boxes represent degradates which are not detected above MDL.

3.1.2. Measures of Aquatic Exposure

Tier II modeling for scenarios representing all proposed uses was used to generate EECs. For Tier II, two models are used in tandem: the Pesticide Root Zone Model, (PRZM, Carsel *et al.*, 2005) and the Exposure Analysis Modeling System (EXAMS, Burns, 2004). PRZM (version 3.12.2 dated May 12, 2005) simulates fate and transport on the agricultural field, and EXAMS (version 2.98.04.06 dated April 25, 2005) simulates the fate and resulting daily concentrations in a standard model water body. Simulations are carried out with the linkage program shell, PE 5.0 (November 15, 2006), which incorporates the standard crop and orchard scenarios developed by EFED. Simulations are run for multiple (usually 30) years, and the EECs represent peak values that are expected once every ten years, based on the thirty years of daily values generated during the simulation. Additional information on these models can be found at: <http://www.epa.gov/oppefed1/models/water/index.htm>.

For aquatic endpoints, the exposure is estimated for the maximum application pattern to a 10-ha field bordering a 1-ha pond, 2-m deep (20,000 m³) with no outlet. Exposure estimates generated using this standard pond are intended to represent a wide variety of vulnerable water bodies that occur at the top of watersheds including prairie pot holes, playa lakes, wetlands, vernal pools, man-made and natural ponds, and intermittent and first-order streams. As a group, there are factors that make these water bodies more or less vulnerable than the standard surrogate pond. Static water bodies that have larger ratios of pesticide-treated drainage area to water body volume would be expected to have higher peak EECs than the standard pond. These water bodies will be either smaller in size or have large drainage areas. Smaller water bodies have limited storage capacity and thus may overflow and carry pesticide in the discharge, whereas the standard pond has no discharge. As watershed size increases beyond 10-ha, it becomes increasingly unlikely that the entire watershed is planted with a non-major single crop that is all treated simultaneously with the pesticide. Headwater streams can also have peak concentrations higher than the standard pond, but they likely persist for only short periods of time and are then carried and dissipated downstream.

Input Parameters

Input parameters for the PRZM/EXAMS models are listed in **Table 3.3**. Explanations of various model input parameters are discussed below.

Table 3.3. Input Values Used for Prothioconazole Tier II Surface Water Modeling with PRZM/EXAMS			
Parameter (units)	Value (s)	Source	Comments
PRZM Scenario	MN Sugar beets MS soybeans	--	Standard PRZM crop scenarios
Application Rate (kg a.i./ha)	Sugar beets: 0.2 Soybeans: 0.105	Proposed label.	Represents the maximum single application rate per crop season (year).

Table 3.3. Input Values Used for Prothioconazole Tier II Surface Water Modeling with PRZM/EXAMS			
Parameter (units)	Value (s)	Source	Comments
Number of Applications	Sugar beets: 3 Soybeans: 3	Proposed label.	Represents the maximum applications per crop season (year).
Interval between Applications (days)	Sugar beets: 14 Soybeans: 10	Proposed label.	Represents the minimum interval between applications per crop season (year).
Molecular weight (g/mol)	344.3	MRID: 46246003, 46477401.	For parent prothioconazole only.
Henry's Law Constant (atm-m ³ /mol)	2.96 x 10 ⁻¹⁰	MRID: 46246003.	For parent prothioconazole only.
Vapor Pressure (Torr)	3 x 10 ⁻⁹	MRID: 46246003.	For parent prothioconazole only.
Solubility in Water @ 20 °C, pH 8 (mg/L or ppm)	300	MRID: 46246003.	–
Soil Partition Coefficient (K _{OC} (mL/g _{OC}))	523.0	MRID: 46246450.	Represents the lowest non-sand K _{OC} value among four values ranging from 523.0 to 625.3 mL/ g _{OC} for prothioconazole-desthio.
CAM (Chemical Application Method)	2	Proposed label.	Linear foliar based on crop canopy; proposed label allows aerial spray and ground spray.
Depth of Incorporation (inches)	0	Proposed label.	–
Application efficiency (decimal)	Aerial spray: 0.95 Ground spray: 0.99	Input Guidance.	–
Spray drift fraction (decimal)	Aerial spray: 0.05 Ground spray: 0.01	Input Guidance.	–
Application date (day/month)	Sugar beets: 24/August Soybeans: 15/May	Proposed label and PRZM scenarios.	–
Hydrolysis Half-life @ pH 4, 7, 9 (days)	0	MRIDs: 46246505, 46246506.	Two studies show that both prothioconazole and prothioconazole-desthio are stable to hydrolysis.

Table 3.3. Input Values Used for Prothioconazole Tier II Surface Water Modeling with PRZM/EXAMS			
Parameter (units)	Value (s)	Source	Comments
Aqueous Photolysis Half-life @ pH 7 (days)	101.9	MRID: 46246507.	Maximum, dark-controlled, value for prothioconazole total toxic residues, corrected to represent natural sunlight at 40°N latitude.
Aerobic Aquatic Metabolism Half-life (days)	385.2	MRID: 46246515.	Represents the 90 th percentile confidence bound on the mean of four total system half-life values (238.4; range: 67.3-346.6) calculated using prothioconazole total toxic residues.
Anaerobic Aquatic Metabolism Half-life (days)	0	MRID: 46246516.	Represents one total system half-life value (stable) or three times one total system half-life value (1386.3) calculated using prothioconazole total toxic residues.
Aerobic Soil Metabolism Half-life (days)	1052.2	MRIDs: 46246511, 46246512.	Represents the 90 th percentile confidence bound on the mean of six values for the aerobic soil metabolism of prothioconazole total toxic residues.

Currently approved standard PRZM crop scenarios were used in modeling. The MN sugar beets and MS soybean scenarios were used to simulate applications to sugar beets and soybeans. In cases when multiple scenarios from various geographic areas were available, east coast scenarios were chosen, if available, because they generally have greater rainfall which drives off-site transport.

Application methods and rates were obtained from the proposed supplemental labels. Application timing of prothioconazole is related to various fungal pressures. For the purposes of this assessment, it was assumed that applications are made two weeks after crop emergence (as specified in the standard scenarios). Applications were modeled with aerial and ground application input values as specified on the label.

Chemical property input values were chosen in accordance with current input parameter guidance (USEPA, 2002b). The upper 90% confidence bound on the mean of the total residues of concern was selected for the aerobic soil metabolism half-life (1052 d) and aerobic aquatic metabolism half-life (385 d), as per current input parameter guidance. The hydrolysis and anaerobic aquatic metabolism were modeled as stable, and photolysis was modeled at 102 d (total residues of concern). The lowest non-sand K_{oc} (523mL/g_{OC}) for prothioconazole-dethio was used for PRZM/EXAMS.

Modeling Results

Proposed use patterns were modeled for surface water exposure estimates, as described above. The maximum use patterns for sugar beets yielded the maximum surface water EECs listed below in **Table 3.4**. Model input/output data for these estimates are attached in **Appendix A**.

Uses (modeled rate)	PRZM Scenario	Application	Peak (ppb)	21-d (ppb)	60-d (ppb)
Sugar beets (0.53 lb/A/yr)	MN sugar beets	Aerial	25.0	24.8	24.4
		Ground	21.5	21.2	20.7
Soybeans (0.28 lb/A/yr)	MS soybeans	Aerial	11.4	11.1	10.6
		Ground	10.3	9.89	9.42

3.1.3. Measures of Terrestrial Exposure

3.1.3.1. Terrestrial Animals

T-REX (version 1.2.3) is used to calculate dietary and dose-based EECs of prothioconazole for mammals and birds. Input values for T-REX are located in **Table 3.5**. Upper-bound Kenaga nomogram values are used to derive EECs for prothioconazole exposures to terrestrial mammals and birds (**Table 3.6**). An example output from the T-REX model is provided in **Appendix B**. As discussed in the June 2006 ecological risk assessment (U.S. EPA, 2006), a 90th percentile foliar dissipation half-life of 6.44 days from the combined parent and prothioconazole-desthio was used in order to be consistent with the approach used for fate input data. Label-specified minimum application intervals of 10 and 14 days were modeled for soybeans and sugar beets, respectively. A 1-year time period is simulated. Consideration is given to different types of feeding strategies for mammals and birds, including herbivores, insectivores and granivores. For dose-based exposures, three weight classes of mammals (15, 35 and 1000 g) and birds (20, 100, and 1000 g) are considered.

Parameter Description	Values	
	Soybeans	Sugar Beets
Prothioconazole Application Rate (lbs a.i./A)	0.09375	0.1781
Foliar Dissipation Half-life (days)	6.44	6.44
Minimum Application Interval (days)	10	14
Number of Applications	3	3

Table 3.6. T-REX Calculated EECs of Prothioconazole on Food Residues		
Food Type	Maximum EEC (mg/kg)	
	Soybeans	Sugar Beets
Short Grass	32.75	54.32
Tall Grass	15.03	24.89
Broadleaf plants/sm insects	18.44	30.55
Fruits/pods/lg insects	2.05	3.39

3.1.3.2. Terrestrial Plants

Prothioconazole exposure to terrestrial and semi-aquatic plants is estimated using the TerrPlant (version 1.2.2) model. The model generates EECs for plants residing near a use area that may be exposed via runoff and/or spray drift. The EECs are generated from one application at the maximum rate for a particular use and compound-specific solubility information. Only a single application is considered because it is assumed that for plants, toxic effects are likely to manifest shortly after the initial exposure and that subsequent exposures do not contribute to the response. Hence, the model estimates EECs based on application rate, the solubility factor, and default assumptions of drift. The EECs for terrestrial and semi-aquatic plants for a single application of prothioconazole at the maximum label rate for the proposed uses on soybeans and sugar beets are presented in **Table 3.7**. An example output from the TerrPlant model is provided in **Appendix C**.

Table 3.7. EECs for Terrestrial and Semi-Aquatic Plants Near New Prothioconazole Use Areas							
Crop	Single Max. Application Rate (lbs a.i./A)	EECs (lbs a.i./A)					
		(Ground Spray, Aerial Spray)		(Ground Spray, Aerial Spray)		Drift EEC	
		Total Loading to Adjacent Areas (sheet runoff + drift)	Total Loading to Semi-Aquatic Areas (channeled runoff + drift)	Ground spray	Aerial spray	Ground spray	Aerial spray
Soybeans	0.09375	0.0056	0.0094	0.0478	0.0516	0.0009	0.0516
Sugar Beets	0.1781	0.0107	0.0178	0.0908	0.0979	0.0018	0.0089

3.2. Ecological Effects Characterization

The ecological effects characterization for prothioconazole is based on registrant-submitted toxicity data on the parent, prothioconazole, and its major degradates (-desthio and -S-methyl). In addition to the registrant-submitted data, the ECOTOX database (<http://www.epa.gov/ecotox>) was used to identify additional toxicity data from the open literature. Given the complexities associated with the fate, transport, and toxicity of prothioconazole in the environment, a total toxics residue approach is used to evaluate the potential risks of both parent and metabolites. Therefore, the lowest available toxicity

value for a taxon and duration (e.g., acute freshwater fish) is used to calculate RQs. Generally, prothioconazole-desthio was the most toxic chemical tested, and toxicity resulting from exposure to this degradate was predominantly used for RQ calculations. Results from submitted toxicity studies are not likely to capture the toxicity of prothioconazole and metabolites to all species of birds, mammals, plants, or aquatic organisms. Only a few surrogate species are used to represent all fish, birds, mammals, invertebrates, and plants. Furthermore, there are no currently required toxicity tests for amphibians or reptiles; therefore, birds are used as surrogates for reptiles and terrestrial-phase amphibians, and freshwater fish are used as surrogates for aquatic-phase amphibians. In general, the representation of numerous species by a few commonly used laboratory species, which are often chosen for amenability to laboratory study, is a source of uncertainty.

A brief description of available aquatic and terrestrial toxicity data used to calculate RQs is provided below in Sections 3.2.1 and 3.2.2. All toxicity data used to derive RQs is based on registrant-submitted studies. Further details on all of the available toxicity studies for prothioconazole and its degradates, including registrant-submitted studies and open literature data from ECOTOX, are provided in the June 2006 ecological risk assessment (U.S., EPA, 2006).

3.2.1. Aquatic Effects Characterization

Aquatic toxicity data for animals and plants are summarized in **Tables 3.8** and **3.9**, respectively.

For aquatic freshwater animals, prothioconazole and its degradates are moderately toxic. For estuarine/marine fish and invertebrates, the toxicity ranges from slightly to very highly toxic under acute exposure conditions. However, there is uncertainty associated with the very highly toxic designation for estuarine/marine invertebrates because the chronic NOAEC for mysid shrimp is actually higher than the concentration that killed 50% of mysid shrimp following a 96-hr acute exposure, suggesting that the lethal (LC₅₀) and sub-lethal (NOAEC) effects occur at similar concentrations for the same chemical. The available acute toxicity data suggest that there is considerable variation in the response of mysids to prothioconazole-desthio, and it is possible that the life cycle test may not have adequately captured the potential sensitivity of mysids. To address this uncertainty, an acute-to-chronic ratio was used to estimate the chronic toxicity endpoint from the lowest available mysid LC₅₀. The acute-to-chronic ratio from freshwater daphnids is 11.7 (EC₅₀/NOAEC: 1200 ppb/103 ppb). Using this factor and adjusting the mysid LC₅₀ of 60 ppb yields an estimated NOAEC of 5.2 ppb.

On a chronic basis, prothioconazole-desthio results in reduced larval/juvenile survival, spawning frequency, and growth of fathead minnow (*Pimephales promelas*) and reduced offspring production in water fleas (*Daphnia magna*) at LOAEC concentrations ranging from 206 to 297 ppb; the corresponding NOAEC values for freshwater fish and invertebrates are 148 ppb and 103 ppb, respectively.

Aquatic plants appear particularly sensitive to both the parent, and especially prothioconazole-desthio. With respect to freshwater aquatic plants, duckweed (*Lemna gibba*) and green algae (*Scenedesmus subspicatus*) are most sensitive to prothioconazole-desthio with respective EC₅₀ values of 35 ppb and 0.07 ppb. Non-vascular estuarine/marine diatoms (*Skeletonema costatum*) are most sensitive to prothioconazole with a 96-h EC₅₀ of 21 ppb.

Table 3.8. Summary of Acute and Chronic Toxicity Data for Aquatic Animals Exposed to Prothioconazole and Prothioconazole-Metabolites

Species/ Chemical	Acute Toxicity			Chronic Toxicity	
	96-hr LC ₅₀ /EC ₅₀ (µg a.i./L)	48-hr EC ₅₀ (µg a.i./L)	Toxicity Classification (MRID)	NOAEC/ LOAEC (µg a.i./L)	Endpoints (MRID)
Rainbow trout <i>Oncorhynchus mykiss</i> Prothioconazole	1690	--	Moderately Toxic (462460-19)	--	--
Fathead Minnow <i>Pimephales promelas</i> prothioconazole-desthio	--	--	--	148 / 296	Survival, spawn freq., growth (462460-33)
Waterflea <i>Daphnia magna</i> Prothioconazole (parent)	--	1200	Moderately Toxic (462460-09)	--	--
Water flea <i>Daphnia magna</i> Prothioconazole-desthio	--	--	--	103 / 206	Reproductive output (462460-29)
Sheepshead minnow <i>Cyprinidon variegates</i> Prothioconazole (parent)	>10300	--	Slightly Toxic (462460-27)	--	--
Eastern Oyster <i>Crassostrea virginica</i> Prothioconazole (parent)	3000	--	Moderately Toxic (462460-14)	--	--
Mysid shrimp <i>Americamysis bahia</i> Prothioconazole-desthio	60	--	Very Highly Toxic (462460-17)	--	--
Mysid shrimp <i>Americamysis bahia</i> Prothioconazole-desthio	--	--	--	64	Reproductive output (462460-30)
Mysid shrimp <i>Americamysis bahia</i>	--	--	--	5.2	Derived using acute-to- chronic ratio

Table 3.9. Summary of Aquatic Plant Toxicity Data for Prothioconazole and Prothioconazole Metabolites

Species/ Chemical	Acute Toxicity			
	96-hr LC ₅₀ (µg a.i./L)	7-day EC ₅₀ (µg a.i./L)	NOAEC/ EC ₀₅ (µg a.i./L)	Endpoints (MRID)
Duckweed <i>Lemna gibba</i> Prothioconazole-desthio	--	35	5.8/3.9	FronD Number (462461-04)
Green algae <i>Scenedesmus subspicatus</i> Prothioconazole-desthio	0.074	--	<0.01/0.011	Cell Density (462461-08)

Diatom <i>Skeletonema costatum</i> Prothioconazole	21	--	7.3/7.7	Biomass (462461-10)
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3.2.2. Terrestrial Effects Characterization

Toxicity values for terrestrial animals and plants are summarized in **Tables 3.10** and **3.11**, respectively.

Prothioconazole and its degradates (-desthio, and -S-methyl) are, for the most part, practically non-toxic to mammals, birds, and honeybees under acute exposure conditions. However, it should be noted that 70% mortality was observed in bobwhite quail in the acute dietary study involving exposure to prothioconazole-desthio at the highest exposure level of 5,215 mg/kg-diet; the LC₅₀ is 4,252 mg/kg-diet, and the compound is classified as slightly toxic. Sub-lethal effects including decreased food consumption and/or body weight were observed in both the acute avian oral and dietary studies. In chronic avian studies, no significant effects of the parent or degradates were reported at concentrations up to 449 mg/kg. In chronic mammalian tests on prothioconazole-desthio, reproductive effects including decreased pup viability and decreased pup weight were observed at a LOAEL of 640 mg/kg-diet with a corresponding NOAEL of 160 mg/kg-diet. The NOAEL is equivalent to a dose of 9.5 mg/kg bw/day in female rats.

Tier I plant studies were conducted with 10 species of plants exposed to 0.272 lbs a.i./A, which is greater than the highest proposed single application rate of 0.178 lbs a.i./A. With the exception of cucumbers, effects did not exceed a 25% inhibition for any other species. For cucumber plants, there was a greater than 25% effect on shoot length and dry weight in the seedling emergence study. Although effects in cucumbers did not exceed 25% in the vegetative vigor study, the percent inhibition for this species was generally among the highest. Based on the results of the Tier I study, a Tier II study for cucumber was required.

In the Tier II study, no effects exceeded a 25% inhibition compared to control for cucumbers for the highest test concentration of 0.272 lbs ai/A. However, there were significant effects on both shoot height and dry weight with the lowest NOAEC associated with shoot height. The NOAEC and EC₀₅ for shoot height are equivalent to application rates of 0.03 and 0.08 lbs ai/A, respectively; the NOAEC is used to calculate RQs.

Species/ Chemical	Acute Toxicity				Chronic Toxicity	
	48-hr LD ₅₀ µg/bee	14-day LD ₅₀ (mg/kg bw)	8-day LC ₅₀ (mg/kg feed (ppm))	Toxicity Classification (MRID)	NOAEC/LOAEC (mg/kg feed (ppm))	Endpoints (MRID)
Bobwhite quail <i>Colinus virginianus</i> Prothioconazole	--	> 2000	--	Practically Non-toxic (462460-19)	--	--
Bobwhite quail <i>Colinus virginianus</i>	--	--	4252	Slightly Toxic (462460-39)	--	--

Prothioconazole-desthio						
Mallard Duck <i>Anas platyrhynchos</i> Prothioconazole-desthio	--	--	--	--	449/ >449	No Effects (462460-45)
Laboratory Rat <i>Rattus norvegicus</i> (Sprague-Dawley) Prothioconazole-desthio	--	2506	--	Practically Non-toxic (462462-31)	--	--
Laboratory Rat <i>Rattus norvegicus</i> (Sprague-Dawley) Prothioconazole-desthio	--	--	--	--	160/640 (9.5 mg/kg bw/d)	Offspring (462463-33)
Honeybee <i>Apis mellifera</i> Prothioconazole	>71	--	--	Practically Non-toxic (462460-48)	--	--

Table 3.11. Summary of the Effects of Prothioconazole and Metabolites on Terrestrial Plants						
Plant Type	Study Species	% Reduction Compared to Controls				
		Seedling Emergence			Vegetative Vigor	
		Seedling Emergence	Shoot Length	Dry Weight	Shoot Length	Dry Weight
Tier I Results (0.272 lbs a.i./A)						
Monocots	Buckwheat	--	5.2	20.9	--	--
	Corn	5.0	1.1	4.7	0.2	6.3
	Onion	2.1	--	--	--	--
	Ryegrass	8.0	4.5	--	--	--
	Wheat	2.0	5.1	--	1.9	7.1
Dicots	Cucumber	--	25.6	31.1	22.0	10.3
	Soybean	--	9.2	11.1	1.2	6.6
	Sunflower	7.0	1.8	8.1	--	5.3
	Tomato	--	12.7	16.1	--	11.2
	Turnip	--	8.1	7.1	8.1	4.8
Tier II Results						
Plant Type	Study Species	Shoot Length NOAEC / EC ₀₅ (lbs a.i./A)		Dry Weight NOAEC / EC ₀₅ (lbs ai/A)		
Dicot	Cucumber	0.03	0.08	0.272	0.03	

4. Risk Characterization

4.1. Risk Estimation

4.1.1. Aquatic Organisms

The peak EECs in surface water generated from the PRZM/EXAMS model represents acute exposure to fish, aquatic invertebrates, and aquatic plants, and the highest 21-day and 60-day average EECs represents chronic exposure to aquatic invertebrates and fish, respectively. Scenarios are evaluated for prothioconazole to sugar beets and soybeans via aerial applications, and also for ground applications when RQs derived using aerial EECs

exceed LOCs. Acute and chronic RQs for freshwater and estuarine/marine organisms are summarized in **Tables 4.1** and **4.2**, respectively. RQs for fresh- and saltwater aquatic plants are presented in **Table 4.3**.

4.1.1.1. Freshwater Fish and Invertebrates

As shown in **Table 4.1**, acute and chronic RQs are well below LOCs (**Table 2.3**) for freshwater fish and invertebrates; therefore, risks associated with exposure to the proposed prothioconazole uses on sugar beets and soybeans are not expected to occur for freshwater fish and invertebrates.

Use (App. Method)	Application Rate lbs a.i./A (#app/interval)	EECs (ppb)			Fish and Amphibian RQs LC ₅₀ = 1690 ppb NOAEC = 148 ppb		Invertebrate RQs LC ₅₀ = 1200 ppb NOAEC = 103 ppb	
		Peak	21-day	60-day	Acute	Chronic	Acute	Chronic
Sugar beets (aerial)	0.1781 (3/14)	25.0	24.8	24.4	0.01	0.16	0.02	0.24
Soybeans (aerial)	0.09375 (3/10)	11.4	11.1	10.6	<0.01	0.07	0.01	0.11

4.1.1.2. Estuarine/Marine Fish and Invertebrates

As shown in **Table 4.2**, acute RQs for estuarine/marine fish and mollusks are well below the listed species LOC of 0.05. Chronic toxicity data were not available for estuarine/marine fish; therefore, chronic RQs could not be calculated. Based on the mysid shrimp toxicity data, the listed species LOC (RQ \geq 0.05) is exceeded for ground and aerial applications of prothioconazole on sugar beets and soybeans; the non-listed species acute restricted use LOC (RQ \geq 0.2) is also exceeded for ground and aerial applications on sugar beets. In addition, the chronic LOC (RQ \geq 1) is exceeded for non-molluskan estuarine/marine invertebrates, with RQ values ranging from 1.90 to 4.76.

Use	Application Rate lbs ai/A (#app/interval)	EECs (ppb)		Fish RQs LC ₅₀ = >10300 ppb NOAEC = N/A	Invertebrate RQs LC ₅₀ = 60 ppb NOAEC = 5.2 ppb		Mollusk RQs EC ₅₀ = 3000 ppb
		Peak	21-day	Acute	Acute	Chronic	Acute
Sugar beets (aerial)	0.1781 (3/14)	25.0	24.8	<0.01	0.41**	4.76	<0.01

Sugar beets (ground)		21.5	21.2	<0.01	0.36**	4.08	<0.01
Soybeans (aerial)	0.09375 (3/10)	11.4	11.1	<0.01	0.19*	2.13	<0.01
Soybeans (ground)		10.3	9.89	<0.01	0.17*	1.90	<0.01

*Exceeds the acute listed species LOC (RQ \geq 0.05)

**Exceeds the acute listed species LOC (RQ \geq 0.05) and the non-listed species acute restricted use LOC (RQ \geq 0.2)

Bolded chronic RQs exceed the listed and non-listed species chronic risk LOC (RQ \geq 1.0)

4.1.1.3. Aquatic Plants

As shown in **Table 4.3**, RQs for all freshwater and saltwater plants exceed the acute listed species LOC for ground and aerial applications of prothioconazole to sugar beets and soybeans. In addition, non-listed species LOCs are also exceeded for freshwater non-vascular plants for proposed uses of sugar beets and soybeans, and for saltwater non-vascular plants for prothioconazole use on sugar beets.

Use	Application Rate lbs (ai/A (#app/interval)	Peak EECs (ppb)	Freshwater Vascular Plant RQs		Freshwater Non-vascular Plant RQs		Saltwater Non-vascular Plant RQs	
			EC ₅₀ = 35 ppb NOAEC = 5.8		EC ₅₀ = 0.074 ppb EC ₀₅ = 0.011 ppb		EC ₅₀ = 21 ppb NOAEC = 7.3 ppb	
			Acute Non-listed Species	Acute Listed Species	Acute Non-listed Species	Acute Listed Species	Acute Non-listed Species	Acute Listed Species
Sugar beets (aerial)	0.1781 (3/14)	25.0	0.71	4.31*	338*	2273*	1.19*	3.42*
Sugar beets (ground)		21.5	0.61	3.71	291	1955	1.02	2.95
Soybeans (aerial)	0.09375 (3/10)	11.4	0.33	1.97*	154*	1036*	0.54	1.56*
Soybeans (ground)		10.3	0.29	1.78*	139*	936*	0.49	1.41*

*Exceeds the acute listed species or non-listed species LOC (RQ \geq 1.0)

4.1.2. Terrestrial Organisms

4.1.2.1. Birds

Prothioconazole is classified as ‘practically nontoxic’ to birds on an acute oral basis, and ‘slightly toxic’ on a sub-acute dietary exposure basis. However, in the submitted avian acute and sub-acute toxicity studies, sublethal effects including decreased food consumption and reduction in body weight were observed. Acute dose- and dietary-based and chronic dietary-based RQs were calculated for prothioconazole use on sugar beets (0.1781 lb a.i.A; 3 applications; minimum application interval of 14 days), which

has the higher application rate and EECs (Table 3.6) of the two proposed uses evaluated as part of this assessment. As shown in **Table 4.4**, the acute and chronic RQs are well below LOCs for avian receptors; therefore, the proposed uses of prothioconazole are not expected to adversely affect birds. An example output of avian RQs from the T-REX model is provided in **Appendix B**.

Dietary Category	Acute RQs				Chronic Dietary-based RQs
	Dose-based RQs			Dietary-based RQs	
	20 g	100 g	1000 g		
Short Grass	0.04	0.02	0.01	0.01	0.12
Tall Grass	0.02	0.01	<0.01	0.01	0.06
Broadleaf plants/sm insects	0.02	0.01	<0.01	0.01	0.07
Fruits/pods/seeds/lg insects	<0.01	<0.01	<0.01	<0.01	0.01

The acute LOC for listed avian species is $RQ \geq 0.1$.

The chronic LOC for non-listed and listed avian species is $RQ \geq 1.0$

4.1.2.2. Mammals

Table 4.5 lists dose-based acute mammalian RQs for the proposed use of prothioconazole on sugarbeets because this use pattern results in the highest EECs on food residues (Table 3.6). No acute LOCs are exceeded with RQs ranging from <0.01 to 0.01.

Use	Application Rate lbs ai/A #app/interval(d)	Body Weight (g)	Avian Acute RQs for Specified Food Items				
			Short Grass	Tall Grass	Broadleaf Plants/Small Insects	Fruits/Pods/Lg Insects	Seeds
Sugar beets	0.1781 (3/14)	15	0.01	<0.01	0.01	<0.01	<0.01
		35	0.01	<0.01	<0.01	<0.01	<0.01
		1000	<0.01	<0.01	<0.01	<0.01	<0.01

The acute listed species LOC for mammalian species is $RQ \geq 0.1$

Table 4.6 lists the dose-based chronic mammalian RQs for the proposed uses of prothioconazole. The chronic LOC ($RQ \geq 1.0$) is exceeded for both proposed new uses of prothioconazole on sugar beets and soybeans. However, LOC exceedances are specific to food items including shortgrass (for both uses) and tall grass and broadleaf plants/small insects for the sugar beet use only. RQs are higher for smaller mammals due to an increased food ingestion rate associated with the higher metabolic rate of smaller mammals.

Use	Application Rate lbs ai/A #app/interval(d)	Body Weight (g)	Dose-based Chronic Mammalian RQs for Specified Food Items				
			Short Grass	Tall Grass	Broadleaf Plants/Small Insects	Fruits/Pods/Lg Insects	Seeds
Sugar beets	0.1781 (3/14)	15	2.48	1.14	1.40	0.16	0.03
		35	2.12	0.97	1.19	0.13	0.03
		1000	1.14	0.52	0.64	0.07	0.02
Soybeans	0.09375 (3/10)	15	1.50	0.69	0.84	0.09	0.02
		35	1.28	0.59	0.72	0.08	0.02
		1000	0.69	0.31	0.39	0.04	0.01

Bolded values exceed the chronic risk LOC (RQ \geq 1.0) for non-listed and listed mammalian species

Table 4.7 summarizes chronic dietary-based mammalian RQs for proposed uses of prothioconazole. These RQs are based on effects associated with chemical concentrations in feed. The chronic dietary-based RQs do not exceed LOCs for any of the proposed new uses of prothioconazole.

Use	Application Rate lbs ai/A #app/interval(d)	Food Items	EEC (mg/kg)	Chronic Dietary RQ
Sugar beets	0.1781 (3/14)	Short Grass	54.32	0.34
		Tall Grass	24.89	0.16
		Broadleaf plants / small insects	30.55	0.19
		Fruits, pods, seeds, large insects	3.39	0.02
Soybeans	0.09375 (3/10)	Short Grass	32.78	0.20
		Tall Grass	15.03	0.09
		Broadleaf plants / small insects	18.44	0.12
		Fruits, pods, seeds, large insects	2.05	0.01

The chronic risk LOC for non-listed and listed mammalian species is RQ \geq 1.0

An example output of mammalian acute and chronic RQs derived from the T-REX model is provided in **Appendix B**.

4.1.2.3. Terrestrial Invertebrates

Prothioconazole is classified as ‘practically nontoxic’ to non-target terrestrial insects including honey bees on an acute exposure basis. Screening-level risk assessments do not typically evaluate risks to terrestrial invertebrates; however, toxicity information for beneficial insects is used to develop precautionary label language where necessary. Based on the available data, precautionary label language for bees does not appear necessary.

4.1.2.4. Plants

Table 4.8 summarizes the terrestrial and semi-aquatic plant RQs for the proposed new uses of prothioconazole. RQs exceed the listed species LOC (RQ \geq 1.0) for semi-aquatic listed plants. RQs for non-listed terrestrial and semi-aquatic plant species are not calculated because an EC₂₅ (> 0.272 lbs a.i./A; highest test concentration) could not be

estimated from the Tier II study. An example output terrestrial and semi-aquatic plant RQs derived from the TerrPlant model is provided in **Appendix C**.

Table 4.8 RQ Values for Listed Terrestrial and Semi-Aquatic Plants Exposed to Prothioconazole					
Use(s)	Single Application Rate (lbs a.i./A)	RQs Based on Tier II Seedling Emergence Study on Cucumber (EC ₂₅ >0.272 lbs a.i./A; NOAEC = 0.03 lbs a.i./A)			
		Adjacent		Semi-Aquatic	
		Ground spray	Aerial spray	Ground spray	Aerial spray
Sugar beets	0.178	0.36	0.59	3.03	3.26
Soy beans	0.09375	0.19	0.31	1.59	1.72

Bolded values exceed listed plant acute risk LOC (RQ_≥1.0)

4.2. Risk Description

The results of this screening-level risk assessment indicate that the proposed new use of prothioconazole on sugar beets and soybeans has the potential for direct adverse effects to listed and non-listed estuarine/marine non-molluskan invertebrates, listed freshwater vascular plants, listed and non-listed freshwater and saltwater non-vascular plants, listed and non-listed mammals (chronic), and listed semi-aquatic dicot plants. Therefore, the risk hypothesis [*...the proposed prothioconazole uses on sugar beets and soybeans has the potential to reduce survival, reproduction, and/or growth in terrestrial and aquatic organisms*] is supported. These results are based on the maximum application rate for these proposed uses. Although direct adverse effects to freshwater and saltwater fish, freshwater invertebrates, mollusks, birds, and non-target insects from prothioconazole uses are not expected, indirect effects to all animals are possible, given the potential for effects on semi-aquatic and aquatic plant species.

4.2.1. Risks to Aquatic Organisms

Acute and chronic RQs for freshwater fish and invertebrates, and acute RQs for estuarine/marine fish and mollusks are well below the listed species LOC of 0.05; therefore, direct effects to these taxonomic groups from the proposed new uses of prothioconazole are not expected. Although no chronic estuarine/marine fish data are available for prothioconazole or its degradates, the likelihood of chronic effects in saltwater fish is expected to be low, given the low potential for acute adverse effects and low potential for chronic effects to freshwater species.

Based on this screening-level analysis, the estuarine/marine non-molluskan invertebrate acute and chronic RQ values exceed their respective LOCs, with acute RQs ranging from 0.17 to 0.41 and chronic RQs ranging from 1.9 to 4.76. Peak EECs would have to be reduced from estimated modeling concentrations of 25 ppb to < 3 ppb (8.3-fold) to result in an acute RQ that is less than the listed species acute LOC of 0.05. The chronic endpoint for mysids is based on an acute-to-chronic ratio, given uncertainties associated

with the acute LC₅₀ and NOAEC data for the mysid (i.e., the acute LC₅₀ for the mysid is lower than the chronic NOAEC). Although repeating the mysid life cycle may reduce uncertainty associated with the NOAEC, any new data would not negate the results of the original mysid acute test, which serves as the basis for risk conclusions regarding saltwater non-molluskan invertebrates. Therefore, the proposed new uses of prothioconazole may cause direct effects to estuarine/marine non-molluskan invertebrates in areas where sugar beets and soybeans are grown near estuarine/marine environments.

Based on predicted prothioconazole total toxic residue EECs for the modeled new uses and available toxicity data, acute listed species LOCs are exceeded for all freshwater and saltwater aquatic plants. In addition acute non-listed species LOCs are also exceeded for freshwater and saltwater non-vascular plants. The relatively high RQs (ranging from 0.29 to 2273) are largely due to the high toxicity of prothioconazole-desthio, which is more toxic to freshwater non-vascular aquatic plants than vascular plants and saltwater non-vascular plants.

Modeled aquatic EECs included combined residues of prothioconazole, and two primary degradates, prothioconazole-desthio and prothioconazole-S-methyl. EECs were then compared to the lowest toxicity value for any given endpoint regardless of the exposure chemical (i.e., parent or degrade). This approach is particularly conservative in cases where one compound is appreciably more toxic than the others. Additionally, because of the considerable uncertainty surrounding soil extraction procedures, the unextracted material in the aerobic soil, aerobic aquatic, and anaerobic aquatic metabolism studies was added to parent in calculation of half-lives used in environmental fate modeling and fate characterization. Therefore, the persistence and bioavailability of prothioconazole is likely overestimated in this assessment; resulting in conservative estimated aquatic exposure.

4.2.2. Risks to Terrestrial Organisms

No avian acute or chronic LOCs are exceeded for the proposed new uses of prothioconazole on sugar beets and soybeans; therefore, direct effects to birds are not expected.

Similarly, no acute LOCs are exceeded for mammals, indicating that acute direct effects of the proposed new uses on mammals are unlikely. However, chronic dose-based RQs exceed LOCs for both proposed new uses for a number of combinations of mammalian body size and food item type. Generally, RQs are higher for smaller mammals that consume short grass, followed by consumers of broadleaf plants/small insects, and tall grass. No chronic risk LOCs are exceeded for mammals (35g-1000g) that consume tall grass, fruits, pods, large insects, and/or seeds. In order to reduce dose-based chronic RQs below the LOC for chronic mammalian risk for all new uses of prothioconazole, the application rate would have to be reduced from 0.1781 lb a.i./A to below 0.07 lb a.i./A (assuming 3 applications with an interval of 14 days) and below 0.09 lb a.i./A (assuming one application). Although the chronic dietary-based RQs did not exceed chronic mammalian LOCs, the basis of the risk conclusion is the dose-based chronic RQs because

these values address differential food consumption and are body-weight specific. Adverse chronic effects to mammals are based on reduced pup viability and body weight and increased developmental defects in offspring.

EFED does not currently estimate RQs for terrestrial non-target invertebrates. However, a label statement is required to protect foraging honeybees when the LD₅₀ is < 11 µg/bee. Based on the acute oral toxicity study to honeybees, the LD₅₀ for prothioconazole is >71 µg/bee. In addition, available open literature data on the effects of prothioconazole on terrestrial invertebrates were addressed in the June 2006 ecological risk assessment (U.S. EPA, 2006); the results of this analysis show that predicted concentrations of prothioconazole in the soil are approximately 100 times lower than any acute toxicity value. Therefore, direct adverse effects to terrestrial invertebrates are not expected.

Based on the results summarized for terrestrial plants in **Table 4.8**, risks are predicted only for listed semi-aquatic dicot plants. The results of the Tier I plant studies showed no effect greater than 25% in any monocot plant species. In addition, Tier II testing with the only dicot plant species that showed >25% effect (cucumber) in the Tier I study did not show effects >25% up to the highest concentration tested; therefore, an EC₂₅ could not be calculated. Only RQs for listed species using the NOAEC were presented because there were no effects greater than 25% in the Tier II study on cucumber. Assuming an EC₂₅ of 0.272 lb a.i./A (the highest test concentration from the Tier I study) for dicots would result in RQs ranging from <0.1 to 0.36, well below the LOC for non-listed species (RQ ≥ 1.0). Therefore, adverse effects associated with the new uses of prothioconazole are unlikely for non-listed terrestrial plants and listed monocot semi-aquatic plants. However, listed semi-aquatic dicot plants may be affected.

4.2.3. Review of Incident Data

No incidents involving prothioconazole or its degradates were identified in the EIIS (Environmental Incident Information System) database for ecological incidents, based on a search conducted on November 30, 2007.

4.2.4. Federally Threatened and Endangered (Listed) Species Concerns

The results of this screening-level risk assessment indicate that the proposed new uses of prothioconazole on sugar beets and soybeans have the potential for direct adverse effects on listed and non-listed estuarine/marine non-molluscan invertebrates, listed freshwater vascular plants, listed and non-listed freshwater and saltwater non-vascular plants, listed and non-listed mammals (chronic), and listed semi-aquatic dicot plants.

Because of the potential risk from direct effects to the listed and non-listed taxa described above, listed species in all taxa may potentially be affected indirectly due to alteration of habitat (*e.g.*, food sources, shelter, and areas to reproduce) should exposure occur.

4.2.4.1. Co-occurrence Analysis

The goal of the analysis for co-location is to determine whether sites of pesticide use are geographically associated with known locations of listed species [following the convention of the Services, the word 'species' in this assessment may actually apply to a 'species', 'subspecies', or an Evolutionary Significant Unit (ESU)]. At the screening level, this analysis is accomplished using the LOCATES (version 2.10.3) database. The database uses location information for listed species at the county level and compares it to agricultural census data (from 2002) for crop production at the same county level of resolution. The product is a listing of federally-listed species that are located within counties known to produce the crops upon which the pesticide will be used, in this case sugar beets and soybeans. For direct effects, only listed terrestrial plants, aquatic vascular and non-vascular plants, estuarine/marine invertebrates, and mammals are considered, because they were the only taxa to have RQs above the listed species LOC. However, all other taxa are considered for indirect effects, given that there is a potential for indirect effects to taxa that might rely on plants and/or mammals for some stage of their life-cycle.

LOCATES identified a total of 583 listed species that co-occur with areas where sugar beets and soybeans are grown. A total of 47 states have listed species associated with sugar beet and soybean crops on which prothioconazole is proposed for use. Hawaii has the highest number of listed species (108) that may co-occur with the proposed prothioconazole use areas. Alabama and California are second highest with 88 total species each, followed by Tennessee (83). A tabulation of the number of unique listed species in each state associated with the proposed new uses of prothioconazole is provided in **Table 4.9**. A summary of all listed species by state is provided in **Appendix D**.

Table 4.9. Tabulation by State and Taxonomic Group of Listed Species that Occur in Prothioconazole Use Areas for Sugar Beets and Soybeans

State	Amphibians	Arachnid	Birds	Bivalve	Conifer/cycads	Crustacean	Dicot	Ferns & allies	Fish	Gastropod	Insect	Lichen	Mammal	Marine	Monocot	Reptiles	Total
Alabama	2	0	3	29	0	1	9	2	15	10	0	0	4	2	3	8	88
Arkansas	0	0	2	5	0	1	3	0	3	1	1	0	1	0	0	0	17
California	4	0	9	0	1	4	29	0	13	0	4	0	8	5	4	7	88
Colorado	0	0	2	0	0	0	1	0	5	0	0	0	2	0	1	0	11
Connecticut	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	6	9
Delaware	0	0	1	0	0	0	0	0	1	0	0	0	1	3	2	6	14
Florida	1	0	7	7	1	0	23	0	2	0	0	1	4	5	1	8	60
Georgia	1	0	4	15	1	0	9	2	11	0	0	0	2	4	4	6	59
Hawaii	0	1	13	0	0	1	72	2	0	1	0	0	1	2	11	4	108
Idaho	0	0	0	0	0	0	0	0	3	6	0	0	0	0	0	0	9
Illinois	0	0	2	7	0	1	7	0	1	1	2	0	2	0	2	0	25
Indiana	0	0	2	11	0	0	4	0	0	0	2	0	2	0	1	1	23
Iowa	0	0	2	2	0	0	3	1	2	1	0	0	1	0	2	0	14
Kansas	0	0	3	0	0	0	1	0	4	0	1	0	2	0	1	0	12
Kentucky	0	0	6	22	0	1	10	0	5	0	1	0	3	0	0	0	48
Louisiana	0	0	5	3	0	0	2	0	2	0	0	0	1	3	0	6	22
Maine	0	0	2	0	0	0	1	0	1	0	0	0	1	3	2	1	11
Maryland	0	0	1	1	0	0	4	0	2	0	2	0	2	3	2	5	22
Massachusetts	0	0	2	0	0	0	0	0	1	0	1	0	1	2	1	5	13
Michigan	0	0	2	2	0	0	3	0	0	0	4	0	3	0	3	1	18
Minnesota	0	0	1	2	0	0	2	0	1	0	1	0	2	0	2	0	11
Mississippi	0	0	5	9	0	0	2	1	3	0	0	0	3	2	0	9	34
Missouri	0	0	2	6	0	1	7	0	7	1	2	0	2	0	1	0	29
Montana	0	0	3	0	0	0	0	0	1	0	0	0	3	0	0	0	7
Nebraska	0	0	3	0	0	0	2	0	2	0	1	0	1	0	1	0	10
New Hampshire	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
New Jersey	0	0	2	0	0	0	2	0	1	0	0	0	1	3	3	5	17
New Mexico	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
New York	0	0	2	1	0	0	4	1	1	1	1	0	1	3	1	6	22
North Carolina	0	1	4	8	0	0	20	0	3	0	1	1	2	4	5	5	54
North Dakota	0	0	3	0	0	0	0	0	1	0	0	0	0	0	1	0	5
Ohio	0	0	1	6	0	0	4	0	1	0	4	0	2	0	2	2	22
Oklahoma	0	0	6	2	0	0	0	0	4	0	1	0	3	0	2	0	18
Oregon	0	0	4	0	0	1	8	0	17	0	2	0	1	2	1	3	39
Pennsylvania	0	0	1	2	0	0	0	0	0	0	0	0	2	0	2	1	8
Rhode Island	0	0	1	0	0	0	1	0	1	0	1	0	0	3	0	4	11
South Carolina	1	0	3	1	0	0	12	1	1	0	0	1	1	4	6	6	37
South Dakota	0	0	3	0	0	0	0	0	2	0	1	0	1	0	1	0	8
Tennessee	0	1	3	37	0	1	16	1	15	3	0	1	3	0	2	0	83
Texas	3	7	12	0	0	1	14	0	3	0	6	0	4	2	2	6	60
Utah	0	0	0	0	0	0	3	0	1	0	0	0	1	0	0	0	5
Vermont	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	3
Virginia	1	0	2	16	0	2	12	0	06	1	2	0	5	3	4	5	59
Washington	0	0	0	0	0	0	0	0	11	0	0	0	1	2	0	2	16
West Virginia	1	0	0	1	0	0	3	0	0	1	0	0	4	0	1	0	11
Wisconsin	0	0	3	2	0	0	4	0	0	0	2	0	2	0	2	0	15
Wyoming	0	0	0	0	0	0	2	0	0	0	0	0	4	0	0	0	6
Total Unique Species	11	9	44	68	2	13	211	6	77	25	20	2	31	9	34	21	583

This preliminary analysis indicates that there is a potential for prothioconazole use on sugar beets and soybeans to overlap with listed species (and their designated critical habitat, if applicable) and that a more refined assessment is warranted. The more refined

assessment should involve clear delineation of the action area associated with fenarimol uses and best available information on the temporal and spatial co-location of listed species with respect to the action area. This analysis has not been conducted for this assessment.

5. Literature Cited

Burns, Lawrence (2004). Exposure Analysis Modeling System (EXAMS): User Manual and System Documentation. Ecosystem Research Division, National Exposure Research Laboratory. U. S. Environmental Protection Agency, Athens, GA.

Carsel, R.F., J.C. Imhoff, P.R. Humel, J.M. Cheplick, and A.S. Donigian, Jr. (2005). PRZM-3, A Model for Predicting Pesticide and Nitrogen Fate in the Crop Root and Unsaturated Zones: User's Manual for Release 3.12.2. National Exposure Research Laboratory, Office of Research and Development, U. S. Environmental Protection Agency, Athens, GA.

U.S. EPA. 2004. Overview of the Ecological Risk Assessment Process in the Office of Pesticide Programs, U.S. Environmental Protection Agency. Endangered and Threatened Species Effects Determinations. Office of Prevention, Pesticides and Toxic Substances, Office of Pesticide Programs, Washington, D.C. January 23, 2004. Online at: <http://www.epa.gov/oppfead1/endanger/consultation/ecorisk-overview.pdf>

U.S. EPA. 2006. Environmental Fate and Ecological Risk Assessment for the Registration of Prothioconazole. DP Barcode: 324660. Office of Pesticide Programs, Environmental Fate and Effects Division. June 2006.

Appendix A. Modeling Input and Output

stored as MNsugarbeets.out

Chemical: prothioconazole

PRZM environment: MNsugarbeetSTD.txt modified Tuesday, 29 May 2007 at 12:57:22

EXAMS environment: ir298.exv modified Thuday, 29 August 2002 at 16:34:12

Metfile: w14914.dvf modified Wedday, 3 July 2002 at 10:05:52

Water segment concentrations (ppb)

Year	Peak	96 hr	21 Day	60 Day	90 Day	Yearly
1961	5.178	5.1	4.825	4.535	4.31	1.345
1962	7.911	7.831	7.538	7.127	6.852	4.969
1963	9.076	8.989	8.649	8.215	7.952	6.405
1964	12.14	12.06	11.67	11.25	10.98	8.941
1965	16.91	16.74	16.06	15.04	14.36	11.97
1966	12.37	12.32	12.08	11.74	11.47	10.83
1967	12.18	12.09	11.8	11.25	10.82	9.754
1968	11.98	11.88	11.63	11.09	10.7	9.709
1969	15.54	15.43	14.85	13.78	13.62	11.87
1970	21.45	21.22	20.37	18.9	18.03	13.44
1971	20.95	20.76	20.31	19.55	18.74	14.47
1972	17.11	17.02	16.64	15.88	15.66	14.06
1973	19.44	19.23	18.61	17.44	16.61	11.98
1974	18.08	17.94	17.45	16.43	15.78	13.96
1975	16.03	15.94	15.4	15.08	14.9	14
1976	13.16	13.11	12.88	12.48	12.44	10.66
1977	22.64	22.36	21.31	20.87	20.49	16.24
1978	19.07	18.98	18.58	17.77	17.3	15.84
1979	20.6	20.43	19.79	18.59	17.36	15.38
1980	17.88	17.72	17.26	16.59	16	14.29
1981	13.57	13.51	13.27	12.77	12.42	11.76
1982	25.07	24.78	23.64	21.64	20.19	12.48
1983	17.7	17.59	17.16	16.31	15.99	13.82
1984	22.51	22.26	21.37	19.8	18.21	12.59
1985	16.7	16.6	16.2	15.43	15.04	13.96
1986	15.99	15.87	15.49	14.84	14.52	13.08
1987	12.23	12.18	11.97	11.53	11.25	10.19
1988	13.48	13.34	12.81	11.93	11.37	8.941
1989	14.71	14.58	14.1	13.61	13.12	10.79
1990	11.3	11.21	10.86	10.7	10.48	9.765

Sorted results

Prob.	Peak	96 hr	21 Day	60 Day	90 Day	Yearly		
0.032258064516129			25.07	24.78	23.64	21.64	20.49	16.24
0.0645161290322581			22.64	22.36	21.37	20.87	20.19	15.84
0.0967741935483871			22.51	22.26	21.31	19.8	18.74	15.38
0.129032258064516			21.45	21.22	20.37	19.55	18.21	14.47
0.161290322580645			20.95	20.76	20.31	18.9	18.03	14.29
0.193548387096774			20.6	20.43	19.79	18.59	17.36	14.06
0.225806451612903			19.44	19.23	18.61	17.77	17.3	14
0.258064516129032			19.07	18.98	18.58	17.44	16.61	13.96
0.290322580645161			18.08	17.94	17.45	16.59	16	13.96
0.32258064516129	17.88		17.72	17.26	16.43	15.99	13.82	
0.354838709677419			17.7	17.59	17.16	16.31	15.78	13.44
0.387096774193548			17.11	17.02	16.64	15.88	15.66	13.08
0.419354838709677			16.91	16.74	16.2	15.43	15.04	12.59
0.451612903225806			16.7	16.6	16.06	15.08	14.9	12.48
0.483870967741936			16.03	15.94	15.49	15.04	14.52	11.98
0.516129032258065			15.99	15.87	15.4	14.84	14.36	11.97
0.548387096774194			15.54	15.43	14.85	13.78	13.62	11.87
0.580645161290323			14.71	14.58	14.1	13.61	13.12	11.76

0.612903225806452	13.57	13.51	13.27	12.77	12.44	10.83
0.645161290322581	13.48	13.34	12.88	12.48	12.42	10.79
0.67741935483871	13.16	13.11	12.81	11.93	11.47	10.66
0.709677419354839	12.37	12.32	12.08	11.74	11.37	10.19
0.741935483870968	12.23	12.18	11.97	11.53	11.25	9.765
0.774193548387097	12.18	12.09	11.8	11.25	10.98	9.754
0.806451612903226	12.14	12.06	11.67	11.25	10.82	9.709
0.838709677419355	11.98	11.88	11.63	11.09	10.7	8.941
0.870967741935484	11.3	11.21	10.86	10.7	10.48	8.941
0.903225806451613	9.076	8.989	8.649	8.215	7.952	6.405
0.935483870967742	7.911	7.831	7.538	7.127	6.852	4.969
0.967741935483871	5.178	5.1	4.825	4.535	4.31	1.345

0.1 22.404 22.156 21.216 19.775 18.687 15.289

Average of yearly averages: 11.5829666666667

Inputs generated by pe5.pl - Novemeber 2006

Data used for this run:

Output File: MNSugarbeets

Metfile: w14914.dvf

PRZM scenario: MNSugarbeetSTD.txt

EXAMS environment file: ir298.exv

Chemical Name: prothioconazole

Description	Variable Name	Value	Units	Comments
Molecular weight	mwt	344.3	g/mol	
Henry's Law Const.	henry	2.96e-10	atm-m ³ /mol	
Vapor Pressure	vapr	3e-9	torr	
Solubility	sol	300	mg/L	
Kd	Kd		mg/L	
Koc	Koc	523	mg/L	
Photolysis half-life	kdp	101.9	days	Half-life
Aerobic Aquatic Metabolism	kbacw	385.2	days	Halfife
Anaerobic Aquatic Metabolism	kbacs	0	days	Halfife
Aerobic Soil Metabolism	asm	1052.2	days	Halfife
Hydrolysis:	pH 7	0	days	Half-life
Method:	CAM	2	integer	See PRZM manual
Incorporation Depth:	DEPI		cm	
Application Rate:	TAPP	0.2	kg/ha	
Application Efficiency:	APPEFF	0.95	fraction	
Spray Drift	DRFT	0.16	fraction of application rate applied to pond	
Application Date	Date	24/8	dd/mm or dd/mmm or dd-mm or dd-mmm	
Interval 1 interval	interval	14	days	Set to 0 or delete line for single app.
app. rate 1	apprate		kg/ha	
Interval 2 interval	interval	14	days	Set to 0 or delete line for single app.
app. rate 2	apprate		kg/ha	
Record 17:	FILTRA			
	IPSCND	1		
	UPTKF			
Record 18:	PLVKRT			
	PLDKRT			
	FEXTRC	0.5		
Flag for Index Res. Run	IR		Reservoir	
Flag for runoff calc.	RUNOFFtotal		none, monthly or total(average of entire run)	

stored as MSSoybeans.out

Chemical: prothioconazole

PRZM environment: MSsoybeanSTD.txt modified Tuesday, 29 May 2007 at 12:58:06

EXAMS environment: ir298.exv modified Thursday, 29 August 2002 at 16:34:12

Metfile: w03940.dvf modified Wednesday, 3 July 2002 at 10:05:46

Water segment concentrations (ppb)

Year	Peak	96 hr	21 Day	60 Day	90 Day	Yearly
1961	5.565	5.362	4.644	3.87	3.267	1.205
1962	2	1.932	1.747	1.433	1.385	0.8182
1963	8.812	8.492	7.321	5.461	4.712	1.922
1964	3.15	3.065	2.745	2.416	2.305	1.283
1965	3.011	2.909	2.538	1.963	1.662	0.9639
1966	5.199	5.02	4.712	3.848	3.531	1.765
1967	5.071	4.902	4.586	4.249	3.875	1.791
1968	3.779	3.65	3.418	2.699	2.349	1.21
1969	2.552	2.468	2.157	1.81	1.694	0.9859
1970	2.241	2.164	1.889	1.517	1.397	0.9188
1971	2.69	2.601	2.365	2.016	1.988	1.001
1972	1.943	1.877	1.677	1.435	1.372	0.7693
1973	2.111	2.037	1.78	1.464	1.26	0.7102
1974	7.133	6.876	5.935	4.429	3.823	1.618
1975	4.891	4.765	4.223	3.761	3.473	1.616
1976	5.919	5.719	5.095	4.73	4.325	1.895
1977	3.94	3.81	3.396	3.052	2.96	1.507
1978	3.307	3.195	2.874	2.477	2.357	1.294
1979	12.55	12.16	10.79	9.062	8.42	3.384
1980	4.119	3.988	3.795	3.539	3.234	1.758
1981	10.19	9.957	8.642	6.514	5.899	2.585
1982	10.64	10.26	8.927	7.647	6.59	2.729
1983	6.127	5.923	5.611	4.573	3.99	1.968
1984	3.334	3.26	2.867	2.717	2.534	1.341
1985	3.512	3.394	2.963	2.4	2.254	1.202
1986	9.087	8.762	7.923	6.409	5.545	2.205
1987	9.974	9.615	8.543	6.504	5.496	2.266
1988	2.916	2.829	2.531	2.262	2.187	1.417
1989	10	9.648	8.766	6.941	5.955	2.511
1990	3.154	3.048	2.719	2.309	1.995	1.169

Sorted results

Prob.	Peak	96 hr	21 Day	60 Day	90 Day	Yearly		
0.032258064516129			12.55	12.16	10.79	9.062	8.42	3.384
0.0645161290322581			10.64	10.26	8.927	7.647	6.59	2.729
0.0967741935483871			10.19	9.957	8.766	6.941	5.955	2.585
0.129032258064516			10	9.648	8.642	6.514	5.899	2.511
0.161290322580645			9.974	9.615	8.543	6.504	5.545	2.266
0.193548387096774			9.087	8.762	7.923	6.409	5.496	2.205
0.225806451612903			8.812	8.492	7.321	5.461	4.712	1.968
0.258064516129032			7.133	6.876	5.935	4.73	4.325	1.922
0.290322580645161			6.127	5.923	5.611	4.573	3.99	1.895
0.32258064516129 5.919			5.719	5.095	4.429	3.875	1.791	
0.354838709677419			5.565	5.362	4.712	4.249	3.823	1.765
0.387096774193548			5.199	5.02	4.644	3.87	3.531	1.758
0.419354838709677			5.071	4.902	4.586	3.848	3.473	1.618
0.451612903225806			4.891	4.765	4.223	3.761	3.267	1.616
0.483870967741936			4.119	3.988	3.795	3.539	3.234	1.507
0.516129032258065			3.94	3.81	3.418	3.052	2.96	1.417
0.548387096774194			3.779	3.65	3.396	2.717	2.534	1.341
0.580645161290323			3.512	3.394	2.963	2.699	2.357	1.294
0.612903225806452			3.334	3.26	2.874	2.477	2.349	1.283
0.645161290322581			3.307	3.195	2.867	2.416	2.305	1.21

0.67741935483871	3.154	3.065	2.745	2.4	2.254	1.205		
0.709677419354839		3.15	3.048	2.719	2.309	2.187	1.202	
0.741935483870968		3.011	2.909	2.538	2.262	1.995	1.169	
0.774193548387097		2.916	2.829	2.531	2.016	1.988	1.001	
0.806451612903226		2.69	2.601	2.365	1.963	1.694	0.9859	
0.838709677419355		2.552	2.468	2.157	1.81	1.662	0.9639	
0.870967741935484		2.241	2.164	1.889	1.517	1.397	0.9188	
0.903225806451613		2.111	2.037	1.78	1.464	1.385	0.8182	
0.935483870967742		2	1.932	1.747	1.435	1.372	0.7693	
0.967741935483871		1.943	1.877	1.677	1.433	1.26	0.7102	
0.1	10.171	9.9261	8.7536	6.8983	5.9494	2.5776		
							Average of yearly averages:	1.59361

Inputs generated by pe5.pl - Novemeber 2006

Data used for this run:

Output File: MSSoybeans

Metfile: w03940.dvf

PRZM scenario: MSsoybeanSTD.txt

EXAMS environment file: ir298.exv

Chemical Name: prothioconazole

Description	Variable Name	Value	Units	Comments
Molecular weight	mwt	344.3	g/mol	
Henry's Law Const.	henry	2.96e-10	atm-m ³ /mol	
Vapor Pressure	vapr	3e-9	torr	
Solubility	sol	300	mg/L	
Kd	Kd		mg/L	
Koc	Koc	523	mg/L	
Photolysis half-life	kdp	101.9	days	Half-life
Aerobic Aquatic Metabolism	kbacw	385.2	days	Halfife
Anaerobic Aquatic Metabolism	kbacs	0	days	Halfife
Aerobic Soil Metabolism	asm	1052.2	days	Halfife
Hydrolysis:	pH 7	0	days	Half-life
Method:	CAM 2	integer	See PRZM manual	
Incorporation Depth:	DEPI		cm	
Application Rate:	TAPP	0.105	kg/ha	
Application Efficiency:	APPEFF	0.95	fraction	
Spray Drift	DRFT	0.16	fraction of application rate applied to pond	
Application Date	Date	15-5	dd/mm or dd/mmm or dd-mm or dd-mmm	
Interval 1 interval	interval	10	days	Set to 0 or delete line for single app.
app. rate 1	apprate		kg/ha	
Interval 2 interval	interval	10	days	Set to 0 or delete line for single app.
app. rate 2	apprate		kg/ha	
Record 17:	FILTRA			
	IPSCND 1			
	UPTKF			
Record 18:	PLVKRT			
	PLDKRT			
	FEXTRC 0.5			
Flag for Index Res. Run	IR		Reservoir	
Flag for runoff calc.	RUNOFFtotal		none, monthly or total(average of entire run)	

Appendix B. Example Output of T-REX for Prothioconazole Use on Sugar Beets

Summary of Risk Quotient Calculations Based on Upper Bound Kenaga EECs – Prothioconazole Use on Sugar Beets

Table B-1. Upper Bound Kenaga, Acute Avian Dose-Based Risk Quotients

Size Class (grams)	Adjusted LD50	EECs and RQs							
		Short Grass		Tall Grass		Broadleaf Plants/ Small Insects		Fruits/Pods/ Seeds/ Large Insects	
		EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ
20	1440.86	61.86	0.04	28.35	0.02	34.80	0.02	3.87	0.00
100	1834.29	35.28	0.02	16.17	0.01	19.84	0.01	2.20	0.00
1000	2591.00	15.79	0.01	7.24	0.00	8.88	0.00	0.99	0.00

Table B-2. Upper Bound Kenaga, Subacute Avian Dietary Based Risk Quotients

LC50	EECs and RQs							
	Short Grass		Tall Grass		Broadleaf Plants/ Small Insects		Fruits/Pods/ Seeds/ Large Insects	
	EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ
4252	54.32	0.01	24.89	0.01	30.55	0.01	3.39	0.00

Size class not used for dietary risk quotients

Table B-3. Upper Bound Kenaga, Chronic Avian Dietary Based Risk Quotients

NOAEC (ppm)	EECs and RQs							
	Short Grass		Tall Grass		Broadleaf Plants/ Small Insects		Fruits/Pods/ Seeds/ Large Insects	
	EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ
449	54.32	0.12	24.89	0.06	30.55	0.07	3.39	0.01

Size class not used for dietary risk quotients

Table B-4. Upper Bound Kenaga, Acute Mammalian Dose-Based Risk Quotients

Size	Adjusted	EECs and RQs							
------	----------	--------------	--	--	--	--	--	--	--

Class (grams)	LD50	Short Grass		Tall Grass		Broadleaf Plants/ Small Insects		Fruits/Pods/ Seeds/ Large Insects		Granivore	
		EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ
15	5507.76	51.79	0.01	23.74	0.00	29.13	0.01	3.24	0.00	0.72	0.00
35	4456.37	35.79	0.01	16.40	0.00	20.13	0.00	2.24	0.00	0.50	0.00
1000	1927.52	8.30	0.00	3.80	0.00	4.67	0.00	0.52	0.00	0.12	0.00

Table B-5. Upper Bound Kenaga, Acute Mammalian Dietary Based Risk Quotients

LC50 (ppm)	EECs and RQs							
	Short Grass		Tall Grass		Broadleaf Plants/ Small Insects		Fruits/Pods/ Seeds/ Large Insects	
	EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ
0	54.32	#####	24.89	#####	30.55	#####	3.39	#####

Size class not used for dietary risk quotients

Table B-6. Upper Bound Kenaga, Chronic Mammalian Dietary Based Risk Quotients

NOAEC (ppm)	EECs and RQs							
	Short Grass		Tall Grass		Broadleaf Plants/ Small Insects		Fruits/Pods/ Seeds/ Large Insects	
	EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ
160	54.32	0.34	24.89	0.16	30.55	0.19	3.39	0.02

Size class not used for dietary risk quotients

Table B-7. Upper Bound Kenaga, Chronic Mammalian Dose-Based Risk Quotients

Size Class (grams)	Adjusted NOAEL	EECs and RQs									
		Short Grass		Tall Grass		Broadleaf Plants/ Small Insects		Fruits/Pods/ Seeds/ Large Insects		Granivore	
		EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ
15	20.88	51.79	2.48	23.74	1.14	29.13	1.40	3.24	0.16	0.72	0.03
35	16.89	35.79	2.12	16.40	0.97	20.13	1.19	2.24	0.13	0.50	0.03
1000	7.31	8.30	1.14	3.80	0.52	4.67	0.64	0.52	0.07	0.12	0.02

Appendix C. Example Output of TerrPlant for Aerial Application of Prothioconazole on Sugar Beets

Table 1. Chemical Identity.	
Chemical Name	Prothioconazole
PC code	x
Use	sugar beets
Application Method	aerial
Application Form	liquid
Solubility in Water (ppm)	300

Table 2. Input parameters used to derive EECs.			
Input Parameter	Symbol	Value	Units
Application Rate	A	0.178	y
Incorporation	I	1	none
Runoff Fraction	R	0.05	none
Drift Fraction	D	0.05	none

Table 3. EECs for Prothioconazole. Units in y.		
Description	Equation	EEC
Runoff to dry areas	$(A/I)*R$	0.0089
Runoff to semi-aquatic areas	$(A/I)*R*10$	0.089
Spray drift	$A*D$	0.0089
Total for dry areas	$((A/I)*R)+(A*D)$	0.0178
Total for semi-aquatic areas	$((A/I)*R*10)+(A*D)$	0.0979

Table 4. Plant survival and growth data used for RQ derivation. Units are in y.				
Plant type	Seedling Emergence		Vegetative Vigor	
	EC25	NOAEC	EC25	NOAEC
Monocot	x	x	x	x
Dicot	0.272	0.03	x	x

Table 5. RQ values for plants in dry and semi-aquatic areas exposed to Prothioconazole through runoff and/or spray drift.*				
Plant Type	Listed Status	Dry	Semi-Aquatic	Spray Drift
Monocot	non-listed	#VALUE!	#VALUE!	#DIV/0!
Monocot	listed	#VALUE!	#VALUE!	#DIV/0!
Dicot	non-listed	<0.1	0.36	<0.1
Dicot	listed	0.59	3.26	0.30

*If RQ > 1.0, the LOC is exceeded, resulting in potential for risk to that plant group.

Appendix D. LOCATES Output of Listed Species by State

Species Listing by State with Use Criteria

No species were excluded

Minimum of 1 Acre.

All Medium Types Reported

Mammal, Marine mml, Bird, Amphibian, Reptile, Fish, Crustacean, Bivalve, Gastropod, Arachnid, Insect, Dicot, Monocot, Ferns, Conf/cycds, Coral, Lichen
soybeans for beans, sugarbeets for seed, sugarbeets for sugar

Alabama	(88) species:		Taxa	Critical Habitat
Salamander, Flatwoods (<i>Ambystoma cingulatum</i>)	Threatened		Amphibian	No
Salamander, Red Hills (<i>Phaeognathus hubrichti</i>)	Threatened		Amphibian	No
Plover, Piping (<i>Charadrius melodus</i>)	Endangered		Bird	Yes
Stork, Wood (<i>Mycteria americana</i>)	Endangered		Bird	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered		Bird	No
Combshell, Southern (=Penitent mussel) (<i>Epioblasma penita</i>)	Endangered		Bivalve	No
Combshell, Upland (<i>Epioblasma metastriata</i>)	Endangered		Bivalve	Yes
Kidneyshell, Triangular (<i>Ptychobranthus greenii</i>)	Endangered		Bivalve	Yes
Mucket, Orangenacre (<i>Lampsilis perovalis</i>)	Threatened		Bivalve	Yes
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered		Bivalve	No
Mussel, Acornshell Southern (<i>Epioblasma othcaloogensis</i>)	Endangered		Bivalve	Yes
Mussel, Alabama Moccasinshell (<i>Medionidus acutissimus</i>)	Threatened		Bivalve	Yes
Mussel, Coosa Moccasinshell (<i>Medionidus parvulus</i>)	Endangered		Bivalve	Yes
Mussel, Cumberland Combshell (<i>Epioblasma brevidens</i>)	Endangered		Bivalve	Yes
Mussel, Dark Pigtoe (<i>Pleurobema furvum</i>)	Endangered		Bivalve	Yes
Mussel, Fine-lined Pocketbook (<i>Lampsilis altilis</i>)	Threatened		Bivalve	Yes
Mussel, Fine-rayed Pigtoe (<i>Fusconaia cuneolus</i>)	Endangered		Bivalve	No

Alabama (88) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Heavy Pigtoe (=Judge Tait's Mussel) (<i>Pleurobema taitianum</i>)	Endangered	Bivalve Freshwater	No
Mussel, Heelsplitter Inflated (<i>Potamilus inflatus</i>)	Threatened	Bivalve Freshwater	No
Mussel, Ovate Clubshell (<i>Pleurobema perovatum</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Ring Pink (=Golf Stick Pearly) (<i>Obovaria retusa</i>)	Endangered	Bivalve Freshwater	No
Mussel, Rough Pigtoe (<i>Pleurobema plenum</i>)	Endangered	Bivalve Freshwater	No
Mussel, Shiny Pigtoe (<i>Fusconaia cor</i>)	Endangered	Bivalve Freshwater	No
Mussel, Shiny-rayed Pocketbook (<i>Lampsilis subangulata</i>)	Endangered	Bivalve Freshwater	No
Mussel, Southern Clubshell (<i>Pleurobema decisum</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Southern Pigtoe (<i>Pleurobema georgianum</i>)	Endangered	Bivalve Freshwater	Yes
Pearlymussel, Alabama Lamp (<i>Lampsilis virescens</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cracking (<i>Hemistena lata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cumberland Monkeyface (<i>Quadrula intermedia</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Orange-footed (<i>Plethobasus cooperianus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Pale Lilliput (<i>Toxolasma cylindrellus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Turgid-blossom (<i>Epioblasma turgidula</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, White Wartyback (<i>Plethobasus cicatricosus</i>)	Endangered	Bivalve Freshwater	No
Stirrupshell (<i>Quadrula stapes</i>)	Endangered	Bivalve Freshwater	No
Shrimp, Alabama Cave (<i>Palaemonias alabamae</i>)	Endangered	Crustacean Freshwater	No
Barbara Buttons, Mohr's (<i>Marshallia mohrii</i>)	Threatened	Dicot Terrestrial	No
Bladderpod, Lyrate (<i>Lesquerella lyrata</i>)	Threatened	Dicot Terrestrial	No
Clover, Leafy Prairie (<i>Dalea foliosa</i>)	Endangered	Dicot Terrestrial	No

Alabama	(88) species:		Taxa	Critical Habitat
Harperella		Endangered	Dicot	No
	(<i>Ptilimnium nodosum</i>)		Freshwater	
Leather-flower, Alabama		Endangered	Dicot	No
	(<i>Clematis socialis</i>)		Terrestrial	
Leather-flower, Morefield's		Endangered	Dicot	No
	(<i>Clematis morefieldii</i>)		Terrestrial	
Pitcher-plant, Alabama Canebrake		Endangered	Dicot	No
	(<i>Sarracenia rubra alabamensis</i>)		Freshwater, Terrestrial	
Pitcher-plant, Green		Endangered	Dicot	No
	(<i>Sarracenia oreophila</i>)		Terrestrial, Freshwater	
Potato-bean, Price's		Threatened	Dicot	No
	(<i>Apios priceana</i>)		Terrestrial	
Fern, American hart's-tongue		Threatened	Ferns	No
	(<i>Asplenium scolopendrium var. americanum</i>)		Terrestrial	
Quillwort, Louisiana		Endangered	Ferns	No
	(<i>Isoetes louisianensis</i>)		Freshwater, Terrestrial	
Cavefish, Alabama		Endangered	Fish	Yes
	(<i>Speoplatyrhinus poulsoni</i>)		Freshwater	
Chub, Spottfin		Threatened	Fish	Yes
	(<i>Erimonax monachus</i>)		Freshwater	
Darter, Boulder		Endangered	Fish	No
	(<i>Etheostoma wapiti</i>)		Freshwater	
Darter, Goldline		Threatened	Fish	No
	(<i>Percina aurolineata</i>)		Freshwater	
Darter, Slackwater		Threatened	Fish	Yes
	(<i>Etheostoma boschungii</i>)		Freshwater	
Darter, Snail		Threatened	Fish	No
	(<i>Percina tanasi</i>)		Freshwater	
Darter, Vermilion		Endangered	Fish	No
	(<i>Etheostoma chermocki</i>)		Freshwater	
Darter, Watercress		Endangered	Fish	No
	(<i>Etheostoma nuchale</i>)		Freshwater	
Madtom, Yellowfin		Threatened	Fish	Yes
	(<i>Noturus flavipinnis</i>)		Freshwater	
Sculpin, Pygmy		Threatened	Fish	No
	(<i>Cottus paulus (=pygmaeus)</i>)		Freshwater	
Shiner, Blue		Threatened	Fish	No
	(<i>Cyprinella caerulea</i>)		Freshwater	
Shiner, Cahaba		Endangered	Fish	No
	(<i>Notropis cahabae</i>)		Freshwater	
Shiner, Palezone		Endangered	Fish	No
	(<i>Notropis albizonatus</i>)		Freshwater	

Alabama

(88) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Sturgeon, Alabama (<i>Scaphirhynchus suttkusi</i>)	Endangered	Fish Freshwater	No
Sturgeon, Gulf (<i>Acipenser oxyrinchus desotoi</i>)	Threatened	Fish Saltwater, Freshwater	Yes
Campeloma, Slender (<i>Campeloma decampi</i>)	Endangered	Gastropod Freshwater	No
Elimia, Lacy (<i>Elimia crenatella</i>)	Threatened	Gastropod Freshwater	No
Pebblesnail, Flat (<i>Lepyrium showalteri</i>)	Endangered	Gastropod Freshwater	No
Riversnail, Anthony's (<i>Atheamia anthonyi</i>)	Endangered	Gastropod Freshwater	No
Rocksnaail, Painted (<i>Leptoxis taeniata</i>)	Threatened	Gastropod Freshwater	No
Rocksnaail, Plicate (<i>Leptoxis plicata</i>)	Endangered	Gastropod Freshwater	No
Rocksnaail, Round (<i>Leptoxis ampla</i>)	Threatened	Gastropod Freshwater	No
Snail, Armored (<i>Pyrgulopsis (=Marstonia) pachyta</i>)	Endangered	Gastropod Freshwater	No
Snail, Lioplax Cylindrical (<i>Lioplax cyclostomaformis</i>)	Endangered	Gastropod Freshwater	No
Snail, Tulotoma (<i>Tulotoma magnifica</i>)	Endangered	Gastropod Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Mouse, Alabama Beach (<i>Peromyscus polionotus ammobates</i>)	Endangered	Mammal Terrestrial, Coastal (neritic)	Yes
Mouse, Perdido Key Beach (<i>Peromyscus polionotus trissyllepsis</i>)	Endangered	Mammal Coastal (neritic)	Yes
Whale, Finback (<i>Balaenoptera physalus</i>)	Endangered	Marine mml Saltwater	No
Whale, Humpback (<i>Megaptera novaeangliae</i>)	Endangered	Marine mml Saltwater	No
Grass, Tennessee Yellow-eyed (<i>Xyris tennesseensis</i>)	Endangered	Monocot Terrestrial	No
Trillium, Relict (<i>Trillium reliquum</i>)	Endangered	Monocot Terrestrial	No
Water-plantain, Kral's (<i>Sagittaria secundifolia</i>)	Threatened	Monocot Freshwater	No

Alabama

(88) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Snake, Eastern Indigo (<i>Drymarchon corais couperi</i>)	Threatened	Reptile Terrestrial	No
Tortoise, Gopher (<i>Gopherus polyphemus</i>)	Threatened	Reptile Terrestrial	No
Turtle, Alabama Red-bellied (<i>Pseudemys alabamensis</i>)	Endangered	Reptile Terrestrial, Freshwater	No
Turtle, Flattened Musk (<i>Stemotherus depressus</i>)	Threatened	Reptile Freshwater, Terrestrial	No

Arkansas

(17) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picooides borealis</i>)	Endangered	Bird Terrestrial	No
Fatmucket, Arkansas (<i>Lampsilis powelli</i>)	Threatened	Bivalve Freshwater	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Scaleshell (<i>Leptodea leptodon</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Fat Pocketbook (<i>Potamilus capax</i>)	Endangered	Bivalve Freshwater	No
Rock-pocketbook, Ouachita (=Wheeler's pm) (<i>Arkansia wheeleri</i>)	Endangered	Bivalve Freshwater	No
Crayfish, Cave (<i>Cambarus aculabrum</i>) (<i>Cambarus aculabrum</i>)	Endangered	Crustacean Freshwater	No
Fruit, Earth (=geocarpon) (<i>Geocarpon minimum</i>)	Threatened	Dicot Terrestrial	No
Harperella (<i>Ptilimnium nodosum</i>)	Endangered	Dicot Freshwater	No
Pondberry (<i>Lindera melissifolia</i>)	Endangered	Dicot Terrestrial	No
Cavefish, Ozark (<i>Amblyopsis rosae</i>)	Threatened	Fish Freshwater	No
Darter, Leopard (<i>Percina pantherina</i>)	Threatened	Fish Freshwater	Yes

Arkansas

(17) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Shagreen, Magazine Mountain (<i>Mesodon magazinensis</i>)	Threatened	Gastropod Terrestrial	No
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No

California

(88) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Frog, California Red-legged (<i>Rana aurora draytonii</i>)	Threatened	Amphibian Terrestrial, Freshwater	Yes
Salamander, California Tiger (<i>Ambystoma californiense</i>)	Endangered	Amphibian Terrestrial, Vernal pool	No
Salamander, Santa Cruz Long-toed (<i>Ambystoma macrodactylum croceum</i>)	Endangered	Amphibian Freshwater, Vernal pool, Terrestrial	No
Toad, Arroyo Southwestern (<i>Bufo californicus (=microscaphus)</i>)	Endangered	Amphibian Freshwater, Terrestrial	Yes
Condor, California (<i>Gymnogyps californianus</i>)	Endangered	Bird Terrestrial	Yes
Flycatcher, Southwestern Willow (<i>Empidonax traillii extimus</i>)	Endangered	Bird Terrestrial	Yes
Murrelet, Marbled (<i>Brachyramphus marmoratus marmoratus</i>)	Threatened	Bird Freshwater, Terrestrial, Saltwater	Yes
Pelican, Brown (<i>Pelecanus occidentalis</i>)	Endangered	Bird Terrestrial	No
Plover, Western Snowy (<i>Charadrius alexandrinus nivosus</i>)	Threatened	Bird Terrestrial	Yes
Rail, California Clapper (<i>Rallus longirostris obsoletus</i>)	Endangered	Bird Terrestrial	No
Rail, Yuma Clapper (<i>Rallus longirostris yumanensis</i>)	Endangered	Bird Terrestrial	No
Tern, California Least (<i>Sterna antillarum browni</i>)	Endangered	Bird Terrestrial	No
Vireo, Least Bell's (<i>Vireo bellii pusillus</i>)	Endangered	Bird Terrestrial	Yes
Cypress, Gowen (<i>Cupressus goveniana ssp. goveniana</i>)	Threatened	Conf/cycds Terrestrial	No
Fairy Shrimp, Conservancy Fairy (<i>Branchinecta conservatio</i>)	Endangered	Crustacean Vernal pool	Yes
Fairy Shrimp, Longhorn (<i>Branchinecta longiantenna</i>)	Endangered	Crustacean Vernal pool	Yes
Fairy Shrimp, Vernal Pool (<i>Branchinecta lynchi</i>)	Threatened	Crustacean Vernal pool	Yes

California

(88) species:

		Taxa	Critical Habitat
Tadpole Shrimp, Vernal Pool (<i>Lepidurus packardii</i>)	Endangered	Crustacean Vernal pool	Yes
Adobe Sunburst, San Joaquin (<i>Pseudobahia peirsonii</i>)	Threatened	Dicot Terrestrial	No
Bird's-beak, Palmate-bracted (<i>Cordylanthus palmatus</i>)	Endangered	Dicot Terrestrial	No
Cactus, Bakersfield (<i>Opuntia treleasei</i>)	Endangered	Dicot Terrestrial	No
Checker-mallow, Keck's (<i>Sidalcea keckii</i>)	Endangered	Dicot Terrestrial	Yes
Clarkia, Springville (<i>Clarkia springvillensis</i>)	Threatened	Dicot Terrestrial	No
Clover, Fleshy Owl's (<i>Castilleja campestris ssp. succulenta</i>)	Threatened	Dicot Vernal pool	Yes
Clover, Monterey (<i>Trifolium trichocalyx</i>)	Endangered	Dicot Terrestrial	No
Dudleya, Santa Clara Valley (<i>Dudleya setchellii</i>)	Endangered	Dicot Terrestrial	No
Evening-primrose, San Benito (<i>Camissonia benitensis</i>)	Threatened	Dicot Terrestrial	No
Fiddleneck, Large-flowered (<i>Amsinckia grandiflora</i>)	Endangered	Dicot Terrestrial	Yes
Gilia, Monterey (<i>Gilia tenuiflora ssp. arenaria</i>)	Endangered	Dicot Terrestrial	No
Golden Sunburst, Hartweg's (<i>Pseudobahia bahiifolia</i>)	Endangered	Dicot Terrestrial	No
Goldfields, Contra Costa (<i>Lasthenia conjugens</i>)	Endangered	Dicot Terrestrial	Yes
Grass, Hairy Orcutt (<i>Orcuttia pilosa</i>)	Endangered	Dicot Vernal pool	Yes
Jewelflower, California (<i>Caulanthus californicus</i>)	Endangered	Dicot Terrestrial	No
Layia, Beach (<i>Layia carnosa</i>)	Endangered	Dicot Terrestrial, Coastal (neritic)	No
Lupine, Clover (<i>Lupinus tidestromii</i>)	Endangered	Dicot Coastal (neritic)	No
Mallow, Kern (<i>Eremalche kernensis</i>)	Endangered	Dicot Terrestrial	No
Milk-vetch, Coastal Dunes (<i>Astragalus tener var. titi</i>)	Endangered	Dicot Terrestrial	No
Milk-vetch, Pierson's (<i>Astragalus magdalenae var. peirsonii</i>)	Threatened	Dicot Terrestrial	Yes

California	(88) species:		Taxa	Critical Habitat
Potentilla, Hickman's (<i>Potentilla hickmanii</i>)	Endangered	Dicot	No	
Pussypaws, Mariposa (<i>Calyptridium pulchellum</i>)	Threatened	Dicot	No	
Spineflower, Monterey (<i>Chorizanthe pungens</i> var. <i>pungens</i>)	Threatened	Dicot	Yes	
Spineflower, Robust (<i>Chorizanthe robusta</i> var. <i>robusta</i>)	Endangered	Dicot	Yes	
Spurge, Hoover's (<i>Chamaesyce hooveri</i>)	Threatened	Dicot	Yes	
Tarplant, Santa Cruz (<i>Holocarpha macradenia</i>)	Threatened	Dicot	Yes	
Tuctoria, Green's (<i>Tuctoria greenei</i>)	Endangered	Dicot	Yes	
Wallflower, Menzie's (<i>Erysimum menziesii</i>)	Endangered	Dicot	No	
Woolly-threads, San Joaquin (<i>Monolopia (=Lembertia) congdonii</i>)	Endangered	Dicot	No	
Chub, Bonytail (<i>Gila elegans</i>)	Endangered	Fish	Yes	
Chub, Mohave Tui (<i>Gila bicolor mohavensis</i>)	Endangered	Fish	No	
Goby, Tidewater (<i>Eucyclogobius newberryi</i>)	Endangered	Fish	Yes	
Pupfish, Desert (<i>Cyprinodon macularius</i>)	Endangered	Fish	Yes	
Salmon, Chinook (Central Valley Fall Run) (<i>Oncorhynchus (=Salmo) tshawytscha</i>)	Threatened	Fish	No	
Smelt, Delta (<i>Hypomesus transpacificus</i>)	Threatened	Fish	Yes	
Squawfish, Colorado (<i>Ptychocheilus lucius</i>)	Endangered	Fish	Yes	
Steelhead, (California Central Valley population) (<i>Oncorhynchus (=Salmo) mykiss</i>)	Threatened	Fish	Yes	
Steelhead, (South-Central California population) (<i>Oncorhynchus (=Salmo) mykiss</i>)	Threatened	Fish	Yes	
Sucker, Razorback (<i>Xyrauchen texanus</i>)	Endangered	Fish	Yes	
Trout, Lahontan Cutthroat (<i>Oncorhynchus clarki henshawi</i>)	Threatened	Fish	No	
Trout, Little Kern Golden (<i>Oncorhynchus aguabonita whitei</i>)	Threatened	Fish	Yes	

California

(88) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Trout, Paiute Cutthroat (<i>Oncorhynchus clarki seleniris</i>)	Threatened	Fish Freshwater	No
Beetle, Valley Elderberry Longhorn (<i>Desmocerus californicus dimorphus</i>)	Threatened	Insect Terrestrial	Yes
Butterfly, Smith's Blue (<i>Euphilotes enoptes smithi</i>)	Endangered	Insect Terrestrial	No
Fly, Delhi Sands Flower-loving (<i>Rhaphiomidas terminatus abdominalis</i>)	Endangered	Insect Terrestrial	No
Moth, Kern Primrose Sphinx (<i>Euproserpinus euterpe</i>)	Threatened	Insect Terrestrial	No
Fox, San Joaquin Kit (<i>Vulpes macrotis mutica</i>)	Endangered	Mammal Terrestrial	No
Kangaroo Rat, Fresno (<i>Dipodomys nitratoides exilis</i>)	Endangered	Mammal Terrestrial	Yes
Kangaroo Rat, Giant (<i>Dipodomys ingens</i>)	Endangered	Mammal Terrestrial	No
Kangaroo Rat, Tipton (<i>Dipodomys nitratoides nitratoides</i>)	Endangered	Mammal Terrestrial	No
Rabbit, Riparian Brush (<i>Sylvilagus bachmani riparius</i>)	Endangered	Mammal Terrestrial	No
Sheep, Peninsular Bighorn (<i>Ovis canadensis</i>)	Endangered	Mammal Terrestrial	Yes
Shrew, Buena Vista Lake Ormate (<i>Sorex ornatus relictus</i>)	Endangered	Mammal Terrestrial	Yes
Woodrat, Riparian (<i>Neotoma fuscipes riparia</i>)	Endangered	Mammal Terrestrial	No
Otter, Southern Sea (<i>Enhydra lutris nereis</i>)	Threatened	Marine mml Saltwater	No
Seal, Guadalupe Fur (<i>Arctocephalus townsendi</i>)	Threatened	Marine mml Coastal (neritic), Saltwater	No
Sea-lion, Steller (eastern) (<i>Eumetopias jubatus</i>)	Threatened	Marine mml Saltwater	Yes
Whale, Finback (<i>Balaenoptera physalus</i>)	Endangered	Marine mml Saltwater	No
Whale, Humpback (<i>Megaptera novaeangliae</i>)	Endangered	Marine mml Saltwater	No
Amole, Purple (<i>Chlorogalum purpureum var. purpureum</i>)	Threatened	Monocot Terrestrial	Yes
Grass, Colusa (<i>Neostapfia colusana</i>)	Threatened	Monocot Vernal pool	No
Grass, San Joaquin Valley Orcutt (<i>Orcuttia inaequalis</i>)	Threatened	Monocot Vernal pool	Yes

California

(88) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Piperia, Yadon's (<i>Piperia yadonii</i>)	Endangered	Monocot Terrestrial	No
Lizard, Blunt-nosed Leopard (<i>Gambelia silus</i>)	Endangered	Reptile Terrestrial	No
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Sea turtle, olive ridley (<i>Lepidochelys olivacea</i>)	Threatened	Reptile Saltwater	No
Snake, Giant Garter (<i>Thamnophis gigas</i>)	Threatened	Reptile Freshwater, Terrestrial	No
Tortoise, Desert (<i>Gopherus agassizii</i>)	Threatened	Reptile Terrestrial	Yes

Colorado

(11) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Crane, Whooping (<i>Grus americana</i>)	Endangered	Bird Terrestrial, Freshwater	Yes
Owl, Mexican Spotted (<i>Strix occidentalis lucida</i>)	Threatened	Bird Terrestrial	Yes
Butterfly Plant, Colorado (<i>Gaura neomexicana</i> var. <i>coloradensis</i>)	Threatened	Dicot Terrestrial	Yes
Chub, Bonytail (<i>Gila elegans</i>)	Endangered	Fish Freshwater	Yes
Chub, Humpback (<i>Gila cypha</i>)	Endangered	Fish Freshwater	Yes
Squawfish, Colorado (<i>Ptychocheilus lucius</i>)	Endangered	Fish Freshwater	Yes
Sucker, Razorback (<i>Xyrauchen texanus</i>)	Endangered	Fish Freshwater	Yes
Trout, Greenback Cutthroat (<i>Oncorhynchus clarki stomias</i>)	Threatened	Fish Freshwater	No
Ferret, Black-footed (<i>Mustela nigripes</i>)	Endangered	Mammal Terrestrial	No
Mouse, Preble's Meadow Jumping (<i>Zapus hudsonius preblei</i>)	Threatened	Mammal Terrestrial	Yes
Ladies'-tresses, Ute (<i>Spiranthes diluvialis</i>)	Threatened	Monocot Terrestrial	No

Connecticut

(9) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes

Connecticut (9) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Whale, northern right (<i>Eubalaena glacialis (incl. australis)</i>)	Endangered	Marine mml Saltwater	Yes
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Turtle, Bog (Northern population) (<i>Clemmys muhlenbergii</i>)	Threatened	Reptile Terrestrial, Freshwater	No

Delaware (14) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered	Fish Saltwater, Freshwater	No
Squirrel, Delmarva Peninsula Fox (<i>Sciurus niger cinereus</i>)	Endangered	Mammal Terrestrial	No
Whale, Finback (<i>Balaenoptera physalus</i>)	Endangered	Marine mml Saltwater	No
Whale, Humpback (<i>Megaptera novaeangliae</i>)	Endangered	Marine mml Saltwater	No
Whale, northern right (<i>Eubalaena glacialis (incl. australis)</i>)	Endangered	Marine mml Saltwater	Yes
Pink, Swamp (<i>Helonias bullata</i>)	Threatened	Monocot Terrestrial, Freshwater	No
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No

Delaware (14) species:

Turtle, Bog (Northern population)
(*Clemmys muhlenbergii*)

Threatened

Taxa

Critical Habitat

Reptile

No

Terrestrial, Freshwater

Florida (60) species:

Salamander, Flatwoods

(*Ambystoma cingulatum*)

Threatened

Taxa

Critical Habitat

Amphibian

No

Freshwater, Vernal pool, Terrestrial

Caracara, Audubon's Crested

(*Polyborus plancus audubonii*)

Threatened

Bird

No

Terrestrial

Kite, Everglade Snail

(*Rostrhamus sociabilis plumbeus*)

Endangered

Bird

Yes

Terrestrial

Plover, Piping

(*Charadrius melodus*)

Endangered

Bird

Yes

Terrestrial

Scrub-Jay, Florida

(*Aphelocoma coerulescens*)

Threatened

Bird

No

Terrestrial

Sparrow, Florida Grasshopper

(*Ammodramus savannarum floridanus*)

Endangered

Bird

No

Terrestrial

Stork, Wood

(*Mycteria americana*)

Endangered

Bird

No

Terrestrial

Woodpecker, Red-cockaded

(*Picoides borealis*)

Endangered

Bird

No

Terrestrial

Bankclimber, Purple

(*Elliptioideus sloatianus*)

Threatened

Bivalve

No

Freshwater

Mussel, Gulf Moccasinshell

(*Medionidus penicillatus*)

Endangered

Bivalve

No

Freshwater

Mussel, Ochlockonee Moccasinshell

(*Medionidus simpsonianus*)

Endangered

Bivalve

No

Freshwater

Mussel, Oval Pigtoe

(*Pleurobema pyriforme*)

Endangered

Bivalve

No

Freshwater

Mussel, Shiny-rayed Pocketbook

(*Lampsilis subangulata*)

Endangered

Bivalve

No

Freshwater

Slabshell, Chipola

(*Elliptio chipolaensis*)

Threatened

Bivalve

No

Freshwater

Threeridge, Fat (Mussel)

(*Amblema neislerii*)

Endangered

Bivalve

No

Freshwater

Torreya, Florida

(*Torreya taxifolia*)

Endangered

Conf/cycds

No

Terrestrial

Blazing Star, Scrub

(*Liatris ohlingerae*)

Endangered

Dicot

No

Terrestrial

Bonamia, Florida

(*Bonamia grandiflora*)

Threatened

Dicot

No

Terrestrial

Buckwheat, Scrub

(*Eriogonum longifolium var. gnaphalifolium*)

Threatened

Dicot

No

Terrestrial

Campion, Fringed

(*Silene polypetala*)

Endangered

Dicot

No

Terrestrial

Florida

(60) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Chaffseed, American (<i>Schwalbea americana</i>)	Endangered	Dicot Terrestrial	No
Fringe Tree, Pygmy (<i>Chionanthus pygmaeus</i>)	Endangered	Dicot Terrestrial	No
Gooseberry, Miccosukee (<i>Ribes echinellum</i>)	Threatened	Dicot Terrestrial	No
Harebells, Avon Park (<i>Crotalaria avonensis</i>)	Endangered	Dicot Terrestrial	No
Hypericum, Highlands Scrub (<i>Hypericum cumulicola</i>)	Endangered	Dicot Terrestrial	No
Lupine, Scrub (<i>Lupinus aridorum</i>)	Endangered	Dicot Terrestrial	No
Mint, Longspurred (<i>Dicerandra comutissima</i>)	Endangered	Dicot Terrestrial	No
Mustard, Carter's (<i>Warea carteri</i>)	Endangered	Dicot Terrestrial	No
Pinkroot, Gentian (<i>Spigelia gentianoides</i>)	Endangered	Dicot Terrestrial	No
Plum, Scrub (<i>Prunus geniculata</i>)	Endangered	Dicot Terrestrial	No
Polygala, Lewton's (<i>Polygala lewtonii</i>)	Endangered	Dicot Terrestrial	No
Rhododendron, Chapman (<i>Rhododendron chapmanii</i>)	Endangered	Dicot Terrestrial	No
Rosemary, Short-leaved (<i>Conradina brevifolia</i>)	Endangered	Dicot Terrestrial	No
Sandlace (<i>Polygonella myriophylla</i>)	Endangered	Dicot Terrestrial	No
Warea, Wide-leaf (<i>Warea amplexifolia</i>)	Endangered	Dicot Terrestrial	No
Whitlow-wort, Papery (<i>Paronychia chartacea</i>)	Threatened	Dicot Terrestrial	No
Wings, Pigeon (<i>Clitoria fragrans</i>)	Threatened	Dicot Terrestrial	No
Wireweed (<i>Polygonella basiramia</i>)	Endangered	Dicot Terrestrial	No
Ziziphus, Florida (<i>Ziziphus celata</i>)	Endangered	Dicot Terrestrial	No
Darter, Okaloosa (<i>Etheostoma okaloosae</i>)	Endangered	Fish Freshwater	No
Sturgeon, Gulf (<i>Acipenser oxyrinchus desotoi</i>)	Threatened	Fish Saltwater, Freshwater	Yes

Florida

(60) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Cladonia, Florida Perforate (<i>Cladonia perforata</i>)	Endangered	Lichen Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Mouse, Perdido Key Beach (<i>Peromyscus polionotus trissyllepsis</i>)	Endangered	Mammal Coastal (neritic)	Yes
Panther, Florida (<i>Puma (=Felis) concolor coryi</i>)	Endangered	Mammal Terrestrial	No
Manatee, West Indian (<i>Trichechus manatus</i>)	Endangered	Marine mml Saltwater	Yes
Seal, Caribbean Monk (<i>Monachus tropicalis</i>)	Endangered	Marine mml Coastal (neritic), Saltwater	No
Whale, Finback (<i>Balaenoptera physalus</i>)	Endangered	Marine mml Saltwater	No
Whale, Humpback (<i>Megaptera novaeangliae</i>)	Endangered	Marine mml Saltwater	No
Whale, northern right (<i>Eubalaena glacialis (incl. australis)</i>)	Endangered	Marine mml Saltwater	Yes
Beargrass, Britton's (<i>Nolina brittoniana</i>)	Endangered	Monocot Terrestrial	No
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Skink, Blue-tailed Mole (<i>Eumeces egregius lividus</i>)	Threatened	Reptile Terrestrial	No
Skink, Sand (<i>Neoseps reynoldsi</i>)	Threatened	Reptile Terrestrial	No
Snake, Eastern Indigo (<i>Drymarchon corais couperi</i>)	Threatened	Reptile Terrestrial	No

Georgia

(59) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Salamander, Flatwoods (<i>Ambystoma cingulatum</i>)	Threatened	Amphibian Freshwater, Vernal pool, Terrestrial	No
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes

Georgia

(59) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Stork, Wood (<i>Mycteria americana</i>)	Endangered	Bird Terrestrial	No
Warbler (=Wood), Kirtland's (<i>Dendroica kirtlandii</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Bankclimber, Purple (<i>Elliotoideus sloatianus</i>)	Threatened	Bivalve Freshwater	No
Combshell, Upland (<i>Epioblasma metastrata</i>)	Endangered	Bivalve Freshwater	Yes
Kidneyshell, Triangular (<i>Ptychobranhus greenii</i>)	Endangered	Bivalve Freshwater	Yes
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Acornshell Southern (<i>Epioblasma othcaloogensis</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Alabama Moccasinshell (<i>Medionidus acutissimus</i>)	Threatened	Bivalve Freshwater	Yes
Mussel, Coosa Moccasinshell (<i>Medionidus parvulus</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Fine-lined Pocketbook (<i>Lampsilis atilis</i>)	Threatened	Bivalve Freshwater	Yes
Mussel, Gulf Moccasinshell (<i>Medionidus penicillatus</i>)	Endangered	Bivalve Freshwater	No
Mussel, Oval Pigtoe (<i>Pleurobema pyriforme</i>)	Endangered	Bivalve Freshwater	No
Mussel, Ovate Clubshell (<i>Pleurobema perovatum</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Shiny-rayed Pocketbook (<i>Lampsilis subangulata</i>)	Endangered	Bivalve Freshwater	No
Mussel, Southern Clubshell (<i>Pleurobema decisum</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Southern Pigtoe (<i>Pleurobema georgianum</i>)	Endangered	Bivalve Freshwater	Yes
Threeridge, Fat (Mussel) (<i>Amblema neislerii</i>)	Endangered	Bivalve Freshwater	No
Torreya, Florida (<i>Torreya taxifolia</i>)	Endangered	Conf/cycds Terrestrial	No
Amphianthus, Little (<i>Amphianthus pusillus</i>)	Threatened	Dicot Freshwater	No
Barbara Buttons, Mohr's (<i>Marshallia mohrii</i>)	Threatened	Dicot Terrestrial	No

Georgia

(59) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Campion, Fringed (<i>Silene polypetala</i>)	Endangered	Dicot Terrestrial	No
Dropwort, Canby's (<i>Oxypolis canbyi</i>)	Endangered	Dicot Terrestrial, Freshwater	No
Pitcher-plant, Green (<i>Sarracenia oreophila</i>)	Endangered	Dicot Terrestrial, Freshwater	No
Pondberry (<i>Lindera melissifolia</i>)	Endangered	Dicot Terrestrial	No
Rattleweed, Hairy (<i>Baptisia arachnifera</i>)	Endangered	Dicot Terrestrial	No
Skullcap, Large-flowered (<i>Scutellaria montana</i>)	Threatened	Dicot Terrestrial	No
Spiraea, Virginia (<i>Spiraea virginiana</i>)	Threatened	Dicot Terrestrial	No
Quillwort, Black-spored (<i>Isoetes melanospora</i>)	Endangered	Ferns Vernal pool	No
Quillwort, Mat-forming (<i>Isoetes tegetiformans</i>)	Endangered	Ferns Vernal pool	No
Chub, Spotfin (<i>Erimonax monachus</i>)	Threatened	Fish Freshwater	Yes
Darter, Amber (<i>Percina antesella</i>)	Endangered	Fish Freshwater	Yes
Darter, Cherokee (<i>Etheostoma scotti</i>)	Threatened	Fish Freshwater	No
Darter, Etowah (<i>Etheostoma etowahae</i>)	Endangered	Fish Freshwater	No
Darter, Goldline (<i>Percina aurolineata</i>)	Threatened	Fish Freshwater	No
Darter, Snail (<i>Percina tanasi</i>)	Threatened	Fish Freshwater	No
Logperch, Conasauga (<i>Percina jenkinsi</i>)	Endangered	Fish Freshwater	Yes
Madtom, Yellowfin (<i>Noturus flavipinnis</i>)	Threatened	Fish Freshwater	Yes
Shiner, Blue (<i>Cyprinella caerulea</i>)	Threatened	Fish Freshwater	No
Sturgeon, Gulf (<i>Acipenser oxyrinchus desotoi</i>)	Threatened	Fish Saltwater, Freshwater	Yes
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered	Fish Saltwater, Freshwater	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterraneous, Terrestrial	No

Georgia

(59) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Manatee, West Indian (<i>Trichechus manatus</i>)	Endangered	Marine mml Saltwater	Yes
Whale, Finback (<i>Balaenoptera physalus</i>)	Endangered	Marine mml Saltwater	No
Whale, Humpback (<i>Megaptera novaeangliae</i>)	Endangered	Marine mml Saltwater	No
Whale, northern right (<i>Eubalaena glacialis (incl. australis)</i>)	Endangered	Marine mml Saltwater	Yes
Grass, Tennessee Yellow-eyed (<i>Xyris tennesseensis</i>)	Endangered	Monocot Terrestrial	No
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No
Trillium, Relict (<i>Trillium reliquum</i>)	Endangered	Monocot Terrestrial	No
Water-plantain, Kral's (<i>Sagittaria secundifolia</i>)	Threatened	Monocot Freshwater	No
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Snake, Eastern Indigo (<i>Drymarchon corais couperi</i>)	Threatened	Reptile Terrestrial	No

Hawaii

(108) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Spider, Kauai Cave Wolf (<i>Gopherus polyphemus</i>)	Endangered	Arachnid Terrestrial, Subterranean	Yes
'Aki'a Loa, Kauai (<i>Hemignathus procerus</i>) (<i>Hemignathus procerus</i>)	Endangered	Bird Terrestrial	No
Coot, Hawaiian (=Alae keo keo) (<i>Fulica americana alai</i>)	Endangered	Bird Terrestrial	No
Duck, Hawaiian (Koloa) (<i>Anas wyvilliana</i>)	Endangered	Bird Freshwater, Terrestrial	No
Goose, Hawaiian (Nene) (<i>Branta (=Nesochen) sandvicensis</i>)	Endangered	Bird Terrestrial, Freshwater	No
Moorhen, Hawaiian Common (<i>Gallinula chloropus sandvicensis</i>)	Endangered	Bird Terrestrial	No

Hawaii

(108) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Nuku Pu'u (<i>Hemignathus lucidus</i>)	Endangered	Bird Terrestrial	No
'O'o, Kauai (=A'a) (<i>Moho braccatus</i>)	Endangered	Bird Terrestrial	No
'O'u (Honeycreeper) (<i>Psittirostra psittacea</i>)	Endangered	Bird Terrestrial	No
Petrel, Hawaiian Dark-rumped (<i>Pterodroma phaeopygia sandwichensis</i>)	Endangered	Bird Terrestrial	No
Shearwater, Newell's Townsend's (<i>Puffinus auricularis newelli</i>)	Threatened	Bird Terrestrial, Saltwater	No
Stilt, Hawaiian (=Ae'o) (<i>Himantopus mexicanus knudseni</i>)	Endangered	Bird Terrestrial	No
Thrush, Large Kauai (<i>Myadestes myadestinus</i>)	Endangered	Bird Terrestrial	No
Thrush, Small Kauai (Puaiohi) (<i>Myadestes palmeri</i>)	Endangered	Bird Terrestrial	No
Amphipod, Kauai Cave (<i>Spelaeorchestia koloana</i>)	Endangered	Crustacean Freshwater, Subterraneous	Yes
A'e (Zanthoxylum hawaiiense) (<i>Zanthoxylum hawaiiense</i>)	Endangered	Dicot Terrestrial	Yes
'Aiea (Nothocestrum peltatum) (<i>Nothocestrum peltatum</i>)	Endangered	Dicot Terrestrial	Yes
'Akoko (Euphorbia haeleeeleana) (<i>Euphorbia haeleeeleana</i>)	Endangered	Dicot Terrestrial	Yes
Alani (Melicope haupuensis) (<i>Melicope haupuensis</i>)	Endangered	Dicot Terrestrial	Yes
Alani (Melicope knudsenii) (<i>Melicope knudsenii</i>)	Endangered	Dicot Terrestrial	Yes
Alani (Melicope pallida) (<i>Melicope pallida</i>)	Endangered	Dicot Terrestrial	Yes
Alani (Melicope quadrangularis) (<i>Melicope quadrangularis</i>)	Endangered	Dicot Terrestrial	No
Alsinidendron viscosum (ncn) (<i>Alsinidendron viscosum</i>)	Endangered	Dicot Terrestrial	Yes
Aupaka (Isodendron laurifolium) (<i>Isodendron laurifolium</i>)	Endangered	Dicot Terrestrial	Yes
Aupaka (Isodendron longifolium) (<i>Isodendron longifolium</i>)	Threatened	Dicot Terrestrial	Yes
'Awiwi (Centaurium sebaeoides) (<i>Centaurium sebaeoides</i>)	Endangered	Dicot Terrestrial	Yes
'Awiwi (Hedyotis cookiana) (<i>Hedyotis cookiana</i>)	Endangered	Dicot Terrestrial	Yes

Hawaii

(108) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Bonamia menziesii (ncn)	Endangered	Dicot	Yes
(<i>Bonamia menziesii</i>)		Terrestrial	
Chamaesyce Halemanui (ncn)	Endangered	Dicot	Yes
(<i>Chamaesyce halemanui</i>)		Terrestrial	
Cyanea undulata (ncn)	Endangered	Dicot	Yes
(<i>Cyanea undulata</i>)		Terrestrial	
Delissea rhytidisperma (ncn)	Endangered	Dicot	Yes
(<i>Delissea rhytidisperma</i>)		Terrestrial	
Dubautia latifolia (ncn)	Endangered	Dicot	Yes
(<i>Dubautia latifolia</i>)		Terrestrial	
Dubautia pauciflora (ncn)	Endangered	Dicot	Yes
(<i>Dubautia pauciflora</i>)		Terrestrial	
Gouania meyenii (ncn)	Endangered	Dicot	Yes
(<i>Gouania meyenii</i>)		Terrestrial	
Haha (Cyanea asarifolia)	Endangered	Dicot	Yes
(<i>Cyanea asarifolia</i>)		Terrestrial	
Haha (Cyanea recta)	Threatened	Dicot	Yes
(<i>Cyanea recta</i>)		Terrestrial	
Haha (Cyanea remyi)	Endangered	Dicot	Yes
(<i>Cyanea remyi</i>)		Terrestrial	
Ha'lwale (Cyrtandra limahuliensis)	Threatened	Dicot	Yes
(<i>Cyrtandra limahuliensis</i>)		Terrestrial	
Hau Kauhiwi (Hibiscadelphus woodii)	Endangered	Dicot	Yes
(<i>Hibiscadelphus woodii</i>)		Terrestrial	
Hau Kuahiwi (Hibiscadelphus distans)	Endangered	Dicot	No
(<i>Hibiscadelphus distans</i>)		Terrestrial	
Heau (Exocarpos luteolus)	Endangered	Dicot	Yes
(<i>Exocarpos luteolus</i>)		Terrestrial	
Hedyotis St.-Johnii (ncn)	Endangered	Dicot	Yes
(<i>Hedyotis st.-johnii</i>)		Terrestrial	
Hesperomannia lydgatei (ncn)	Endangered	Dicot	Yes
(<i>Hesperomannia lydgatei</i>)		Terrestrial	
Hibiscus, Clay's	Endangered	Dicot	Yes
(<i>Hibiscus clayi</i>)		Terrestrial	
Iliau (Wilkesia hobdyi)	Endangered	Dicot	Yes
(<i>Wilkesia hobdyi</i>)		Terrestrial	
Kamakahala (Labordia lydgatei)	Endangered	Dicot	Yes
(<i>Labordia lydgatei</i>)		Terrestrial	
Kamakahala (Labordia tinifolia var. wahiawaen)	Endangered	Dicot	Yes
(<i>Labordia tinifolia var. wahiawaensis</i>)		Terrestrial	
Kaulu (Pteralyxia kauaiensis)	Endangered	Dicot	Yes
(<i>Pteralyxia kauaiensis</i>)		Terrestrial	

Hawaii

(108) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Koki'o (<i>Kokia kauaiensis</i>)	Endangered	Dicot	Yes
(<i>Kokia kauaiensis</i>)		Terrestrial	
Koki'o Ke'oke'o (<i>Hibiscus waimeae</i> ssp. <i>hannerae</i>)	Endangered	Dicot	Yes
(<i>Hibiscus waimeae</i> ssp. <i>hannerae</i>)		Terrestrial	
Kolea (<i>Myrsine linearifolia</i>)	Threatened	Dicot	Yes
(<i>Myrsine linearifolia</i>)		Terrestrial	
Kuawawaenohu (<i>Alsinidendron lychnoides</i>)	Endangered	Dicot	Yes
(<i>Alsinidendron lychnoides</i>)		Terrestrial	
Laukahi Kuahiwi (<i>Plantago princeps</i>)	Endangered	Dicot	Yes
(<i>Plantago princeps</i>)		Terrestrial	
Laulihilihi (<i>Schiedea stellarioides</i>)	Endangered	Dicot	Yes
(<i>Schiedea stellarioides</i>)		Terrestrial	
Lobelia niihauensis (ncn)	Endangered	Dicot	Yes
(<i>Lobelia niihauensis</i>)		Terrestrial	
Lysimachia filifolia (ncn)	Endangered	Dicot	Yes
(<i>Lysimachia filifolia</i>)		Terrestrial	
Mahoe (<i>Alectryon macrococcus</i>)	Endangered	Dicot	Yes
(<i>Alectryon macrococcus</i>)		Terrestrial	
Makou (<i>Peucedanum sandwicense</i>)	Threatened	Dicot	Yes
(<i>Peucedanum sandwicense</i>)		Terrestrial	
Ma'oli'oli (<i>Schiedea apokremnos</i>)	Endangered	Dicot	Yes
(<i>Schiedea apokremnos</i>)		Terrestrial	
Mapele (<i>Cyrtandra cyaneoides</i>)	Endangered	Dicot	Yes
(<i>Cyrtandra cyaneoides</i>)		Terrestrial	
Mehamehame (<i>Flueggea neowawraea</i>)	Endangered	Dicot	Yes
(<i>Flueggea neowawraea</i>)		Terrestrial	
Munroidendron racemosum (ncn)	Endangered	Dicot	Yes
(<i>Munroidendron racemosum</i>)		Terrestrial	
Nani Wai'ale'ale (<i>Viola kauaiensis</i> var. <i>wahiawaensis</i>)	Endangered	Dicot	Yes
(<i>Viola kauaiensis</i> var. <i>wahiawaensis</i>)		Terrestrial	
Nehe (<i>Lipochaeta fauriei</i>)	Endangered	Dicot	Yes
(<i>Lipochaeta fauriei</i>)		Terrestrial	
Nehe (<i>Lipochaeta micrantha</i>)	Endangered	Dicot	Yes
(<i>Lipochaeta micrantha</i>)		Terrestrial	
Nehe (<i>Lipochaeta waimeaensis</i>)	Endangered	Dicot	Yes
(<i>Lipochaeta waimeaensis</i>)		Terrestrial	
'Oha (<i>Delissea rivularis</i>)	Endangered	Dicot	Yes
(<i>Delissea rivularis</i>)		Terrestrial	
'Ohai (<i>Sesbania tomentosa</i>)	Endangered	Dicot	Yes
(<i>Sesbania tomentosa</i>)		Terrestrial	
'Olulu (<i>Brighamia insignis</i>)	Endangered	Dicot	Yes
(<i>Brighamia insignis</i>)		Terrestrial	

Hawaii

(108) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Phyllostegia knudsenii (ncn) (<i>Phyllostegia knudsenii</i>)	Endangered	Dicot Terrestrial	Yes
Phyllostegia waimeae (ncn) (<i>Phyllostegia waimeae</i>)	Endangered	Dicot Terrestrial	Yes
Phyllostegia wawrana (ncn) (<i>Phyllostegia wawrana</i>)	Endangered	Dicot Terrestrial	Yes
Popolo 'Aiakeakua (<i>Solanum sandwicense</i>) (<i>Solanum sandwicense</i>)	Endangered	Dicot Terrestrial	Yes
Remya kauaiensis (ncn) (<i>Remya kauaiensis</i>)	Endangered	Dicot Terrestrial	Yes
Remya montgomeryi (ncn) (<i>Remya montgomeryi</i>)	Endangered	Dicot Terrestrial	Yes
Schiedea helleri (ncn) (<i>Schiedea helleri</i>)	Endangered	Dicot Terrestrial	Yes
Schiedea kauaiensis (ncn) (<i>Schiedea kauaiensis</i>)	Endangered	Dicot Terrestrial	Yes
Schiedea membranacea (ncn) (<i>Schiedea membranacea</i>)	Endangered	Dicot Terrestrial	Yes
Schiedea nuttallii (ncn) (<i>Schiedea nuttallii</i>)	Endangered	Dicot Terrestrial	Yes
Schiedea spergulina var. leiopoda (ncn) (<i>Schiedea spergulina var. leiopoda</i>)	Endangered	Dicot Terrestrial	Yes
Schiedea spergulina var. spergulina (ncn) (<i>Schiedea spergulina var. spergulina</i>)	Threatened	Dicot Terrestrial	Yes
Silene lanceolata (ncn) (<i>Silene lanceolata</i>)	Endangered	Dicot Terrestrial	Yes
Spermolepis hawaiiensis (ncn) (<i>Spermolepis hawaiiensis</i>)	Endangered	Dicot Terrestrial	Yes
Stenogyne campanulata (ncn) (<i>Stenogyne campanulata</i>)	Endangered	Dicot Terrestrial	Yes
Vigna o-wahuensis (ncn) (<i>Vigna o-wahuensis</i>)	Endangered	Dicot Terrestrial	Yes
Viola helenae (ncn) (<i>Viola helenae</i>)	Endangered	Dicot Terrestrial	Yes
Xylosma crenatum (ncn) (<i>Xylosma crenatum</i>)	Endangered	Dicot Terrestrial	Yes
Diellia pallida (ncn) (<i>Diellia pallida</i>)	Endangered	Ferns Terrestrial	Yes
Fern, Pendant Kihī (<i>Adenophorus periens</i>) (<i>Adenophorus periens</i>)	Endangered	Ferns Terrestrial	Yes
Snail, Newcomb's (<i>Erinna newcombi</i>)	Threatened	Gastropod Freshwater	Yes

Hawaii

(108) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Bat, Hawaiian Hoary (<i>Lasiurus cinereus semotus</i>)	Endangered	Mammal Terrestrial, Subterraneous	No
Seal, Hawaiian Monk (<i>Monachus schauinslandi</i>)	Endangered	Marine mml Coastal (neritic), Saltwater	Yes
Whale, Humpback (<i>Megaptera novaeangliae</i>)	Endangered	Marine mml Saltwater	No
Bluegrass, Hawaiian (<i>Poa sandvicensis</i>)	Endangered	Monocot Terrestrial	Yes
Bluegrass, Mann's (<i>Poa mannii</i>) (<i>Poa mannii</i>)	Endangered	Monocot Terrestrial	Yes
Hilo Ischaemum (<i>Ischaemum byrone</i>) (<i>Ischaemum byrone</i>)	Endangered	Monocot Terrestrial	Yes
Lau'ehu (<i>Panicum niihauense</i>) (<i>Panicum niihauense</i>)	Endangered	Monocot Terrestrial	Yes
Lo'ulu (<i>Pritchardia napaliensis</i>) (<i>Pritchardia napaliensis</i>)	Endangered	Monocot Terrestrial	No
Lo'ulu (<i>Pritchardia viscosa</i>) (<i>Pritchardia viscosa</i>)	Endangered	Monocot Terrestrial	No
Mariscus pennatifomis (ncn) (<i>Mariscus pennatifomis</i>)	Endangered	Monocot Terrestrial	Yes
Platanthera holochila (ncn) (<i>Platanthera holochila</i>)	Endangered	Monocot Terrestrial	Yes
Poa siphonoglossa (ncn) (<i>Poa siphonoglossa</i>)	Endangered	Monocot Terrestrial	Yes
Pu'uka'a (<i>Cyperus trachysanthos</i>) (<i>Cyperus trachysanthos</i>)	Endangered	Monocot Terrestrial	Yes
Wahane (<i>Pritchardia aylmer-robinsonii</i>) (<i>Pritchardia aylmer-robinsonii</i>)	Endangered	Monocot Terrestrial	No
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No

Idaho

(9) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Trout, Bull (<i>Salvelinus confluentus</i>)	Threatened	Fish Freshwater	No
Trout, Bull (Columbia River population) (<i>Salvelinus confluentus</i>)	Threatened	Fish Freshwater	Yes
Trout, Bull (Klamath River population) (<i>Salvelinus confluentus</i>)	Threatened	Fish Freshwater	Yes

Idaho

(9) species:

Limpet, Banbury Springs
(*Lanx sp.*)Snail, Bliss Rapids
(*Taylorconcha serpenticola*)Snail, Snake River Physa
(*Physa natricina*)Snail, Utah Valvata
(*Valvata utahensis*)Springsnail, Bruneau Hot
(*Pyrgulopsis bruneauensis*)Springsnail, Idaho
(*Fontelicella idahoensis*)**Illinois**

(25) species:

Plover, Piping
(*Charadrius melodus*)Tern, Interior (population) Least
(*Sterna antillarum*)Fanshell
(*Cyprogenia stegaria*)Mucket, Pink (Pearlymussel)
(*Lampsilis abrupta*)Mussel, Clubshell
(*Pleurobema clava*)Pearlymussel, Fat Pocketbook
(*Potamilus capax*)Pearlymussel, Higgins' Eye
(*Lampsilis higginsii*)Pearlymussel, Orange-footed
(*Plethobasus cooperianus*)Pearlymussel, White Wartback
(*Plethobasus cicatricosus*)Amphipod, Illinois Cave
(*Gammarus acherondytes*)Aster, Decurrent False
(*Boltonia decurrens*)Clover, Leafy Prairie
(*Dalea foliosa*)Clover, Prairie Bush
(*Lespedeza leptostachya*)Daisy, Lakeside
(*Hymenoxys herbacea*)Milkweed, Mead's
(*Asclepias meadii*)

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	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Gastropod	No
	Freshwater	
Threatened	Gastropod	No
	Freshwater	
Endangered	Gastropod	No
	Terrestrial	
Endangered	Gastropod	No
	Terrestrial	
Endangered	Gastropod	No
	Freshwater	
Endangered	Gastropod	No
	Freshwater	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Endangered	Crustacean	No
	Subterranean, Freshwater	
Threatened	Dicot	No
	Terrestrial, Freshwater	
Endangered	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Freshwater	
Threatened	Dicot	No
	Terrestrial	

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Illinois (25) species:

	<u>Taxa</u>	<u>Critical Habitat</u>
Potato-bean, Price's (<i>Apios priceana</i>)	Threatened Dicot Terrestrial	No
Thistle, Pitcher's (<i>Cirsium pitcheri</i>)	Threatened Dicot Terrestrial	No
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered Fish Freshwater	No
Snail, Iowa Pleistocene (<i>Discus macclintocki</i>)	Endangered Gastropod Terrestrial	No
Butterfly, Karner Blue (<i>Lycaeides melissa samuelis</i>)	Endangered Insect Terrestrial	No
Dragonfly, Hine's Emerald (<i>Somatochlora hineana</i>)	Endangered Insect Freshwater, Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered Mammal Subterranean, Terrestrial	Yes
Orchid, Eastern Prairie Fringed (<i>Platanthera leucophaea</i>)	Threatened Monocot Terrestrial	No
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened Monocot Terrestrial	No

Indiana (23) species:

	<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered Bird Terrestrial	Yes
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered Bird Terrestrial	No
Fanshell (<i>Cyprogenia stegaria</i>)	Endangered Bivalve Freshwater	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered Bivalve Freshwater	No
Mussel, Clubshell (<i>Pleurobema clava</i>)	Endangered Bivalve Freshwater	No
Mussel, Ring Pink (=Golf Stick Pearly) (<i>Obovaria retusa</i>)	Endangered Bivalve Freshwater	No
Mussel, Rough Pigtoe (<i>Pleurobema plenum</i>)	Endangered Bivalve Freshwater	No
Pearlymussel, Fat Pocketbook (<i>Potamilus capax</i>)	Endangered Bivalve Freshwater	No
Pearlymussel, Orange-footed (<i>Plethobasus cooperianus</i>)	Endangered Bivalve Freshwater	No
Pearlymussel, Tubercled-blossom (<i>Epioblasma torulosa torulosa</i>)	Endangered Bivalve Freshwater	No
Pearlymussel, White Cat's Paw (<i>Epioblasma obliquata perobliqua</i>)	Endangered Bivalve Freshwater	No

Indiana (23) species:

Pearlymussel, White Wartyback
(*Plethobasus cicatricosus*)
Riffleshell, Northern
(*Epioblasma torulosa rangiana*)
Clover, Running Buffalo
(*Trifolium stoloniferum*)
Goldenrod, Short's
(*Solidago shortii*)
Milkweed, Mead's
(*Asclepias meadii*)
Thistle, Pitcher's
(*Cirsium pitcheri*)
Butterfly, Karner Blue
(*Lycaeides melissa samuelis*)
Butterfly, Mitchell's Satyr
(*Neonympha mitchellii mitchellii*)
Bat, Gray
(*Myotis grisescens*)
Bat, Indiana
(*Myotis sodalis*)
Orchid, Eastern Prairie Fringed
(*Platanthera leucophaea*)
Snake, Northern Copperbelly Water
(*Nerodia erythrogaster neglecta*)

Iowa (14) species:

Plover, Piping
(*Charadrius melodus*)
Tern, Interior (population) Least
(*Sterna antillarum*)
Pearlymussel, Fat Pocketbook
(*Potamilus capax*)
Pearlymussel, Higgins' Eye
(*Lampsilis higginsii*)
Clover, Prairie Bush
(*Lespedeza leptostachya*)
Milkweed, Mead's
(*Asclepias meadii*)
Monkshood, Northern Wild
(*Aconitum noveboracense*)
Fern, American hart's-tongue
(*Asplenium scolopendrium var. americanum*)
Shiner, Topeka
(*Notropis topeka (=tristis)*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Endangered	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Endangered	Insect	No
	Terrestrial	
Endangered	Insect	No
	Terrestrial	
Endangered	Mammal	No
	Subterranean, Terrestrial	
Endangered	Mammal	Yes
	Subterranean, Terrestrial	
Threatened	Monocot	No
	Terrestrial	
Threatened	Reptile	No
	Freshwater, Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Threatened	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Ferns	No
	Terrestrial	
Endangered	Fish	Yes
	Freshwater	

Iowa (14) species:

Sturgeon, Pallid
(*Scaphirhynchus albus*)
Snail, Iowa Pleistocene
(*Discus macclintocki*)
Bat, Indiana
(*Myotis sodalis*)
Orchid, Eastern Prairie Fringed
(*Platanthera leucophaea*)
Orchid, Western Prairie Fringed
(*Platanthera praeclara*)

Kansas (12) species:

Crane, Whooping
(*Grus americana*)
Plover, Piping
(*Charadrius melodus*)
Tern, Interior (population) Least
(*Sterna antillarum*)
Milkweed, Mead's
(*Asclepias meadii*)
Madtom, Neosho
(*Noturus placidus*)
Shiner, Arkansas River
(*Notropis girardi*)
Shiner, Topeka
(*Notropis topeka (=tristis)*)
Sturgeon, Pallid
(*Scaphirhynchus albus*)
Beetle, American Burying
(*Nicrophorus americanus*)
Bat, Gray
(*Myotis grisescens*)
Ferret, Black-footed
(*Mustela nigripes*)
Orchid, Western Prairie Fringed
(*Platanthera praeclara*)

Kentucky (48) species:

Plover, Piping
(*Charadrius melodus*)
Tern, Interior (population) Least
(*Sterna antillarum*)
Warbler (=Wood), Kirtland's
(*Dendroica kirtlandii*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Fish	No
	Freshwater	
Endangered	Gastropod	No
	Terrestrial	
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	
Threatened	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial, Freshwater	
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Fish	No
	Freshwater	
Threatened	Fish	Yes
	Freshwater	
Endangered	Fish	Yes
	Freshwater	
Endangered	Fish	No
	Freshwater	
Endangered	Insect	No
	Terrestrial	
Endangered	Mammal	No
	Subterraneous, Terrestrial	
Endangered	Mammal	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	No
	Terrestrial	

Kentucky

(48) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Warbler, Bachman's (<i>Vermivora bachmanii</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Ivory-billed (<i>Campephilus principalis</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Fanshell (<i>Cyprogenia stegaria</i>)	Endangered	Bivalve Freshwater	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Clubshell (<i>Pleurobema clava</i>)	Endangered	Bivalve Freshwater	No
Mussel, Cumberland Combshell (<i>Epioblasma brevidens</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Cumberland Elktoe (<i>Alasmidonta atropurpurea</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Oyster (<i>Epioblasma capsaeformis</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Ring Pink (=Golf Stick Pearly) (<i>Obovaria retusa</i>)	Endangered	Bivalve Freshwater	No
Mussel, Rough Pigtoe (<i>Pleurobema plenum</i>)	Endangered	Bivalve Freshwater	No
Mussel, Winged Mapleleaf (<i>Quadrula fragosa</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Appalachian Monkeyface (<i>Quadrula sparsa</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cracking (<i>Hemistena lata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cumberland Bean (<i>Villosa trabalis</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Dromedary (<i>Dromus dromas</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Fat Pocketbook (<i>Potamilus capax</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Little-wing (<i>Pegias fabula</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Orange-footed (<i>Plethobasus cooperianus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Purple Cat's Paw (<i>Epioblasma obliquata obliquata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Tubercled-blossom (<i>Epioblasma torulosa torulosa</i>)	Endangered	Bivalve Freshwater	No

Kentucky (48) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Pearlymussel, White Wartback (<i>Plethobasus cicatricosus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Yellow-blossom (<i>Epioblasma florentina florentina</i>)	Endangered	Bivalve Freshwater	No
Riffleshell, Northern (<i>Epioblasma torulosa rangiana</i>)	Endangered	Bivalve Freshwater	No
Riffleshell, Tan (<i>Epioblasma florentina walkeri</i> (=E. walkeri))	Endangered	Bivalve Freshwater	No
Shrimp, Kentucky Cave (<i>Palaemonias ganteri</i>)	Endangered	Crustacean Freshwater	Yes
Chaffseed, American (<i>Schwalbea americana</i>)	Endangered	Dicot Terrestrial	No
Clover, Running Buffalo (<i>Trifolium stoloniferum</i>)	Endangered	Dicot Terrestrial	No
Goldenrod, Short's (<i>Solidago shortii</i>)	Endangered	Dicot Terrestrial	No
Goldenrod, White-haired (<i>Solidago albopilosa</i>)	Threatened	Dicot Terrestrial	No
Potato-bean, Price's (<i>Apios priceana</i>)	Threatened	Dicot Terrestrial	No
Rock-cress, Large (=Braun's) (<i>Arabis perstellata</i> E. L. Braun var. <i>ampla</i> Rollins)	Endangered	Dicot Terrestrial	Yes
Rock-cress, Small (<i>Arabis perstellata</i> E. L. Braun var. <i>perstellata</i> Fernald)	Endangered	Dicot Terrestrial	Yes
Rosemary, Cumberland (<i>Conradina verticillata</i>)	Threatened	Dicot Terrestrial	No
Sandwort, Cumberland (<i>Arenaria cumberlandensis</i>)	Endangered	Dicot Terrestrial	No
Spiraea, Virginia (<i>Spiraea virginiana</i>)	Threatened	Dicot Terrestrial	No
Dace, Blackside (<i>Phoxinus cumberlandensis</i>)	Threatened	Fish Freshwater	No
Darter, Bluemask (=jewel) (<i>Etheostoma /</i>)	Endangered	Fish Freshwater	No
Darter, Relict (<i>Etheostoma chienense</i>)	Endangered	Fish Freshwater	No
Shiner, Palezone (<i>Notropis albizonatus</i>)	Endangered	Fish Freshwater	No
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No

Kentucky

(48) species:

- Bat, Gray
(*Myotis grisescens*)
Bat, Indiana
(*Myotis sodalis*)
Bat, Virginia Big-eared
(*Corynorhinus (=Plecotus) townsendii virginianus*)

Louisiana

(22) species:

- Pelican, Brown
(*Pelecanus occidentalis*)
Plover, Piping
(*Charadrius melodus*)
Tern, California Least
(*Sterna antillarum browni*)
Tern, Interior (population) Least
(*Sterna antillarum*)
Woodpecker, Red-cockaded
(*Picooides borealis*)
Mucket, Pink (Pearlymussel)
(*Lampsilis abrupta*)
Mussel, Heelsplitter Inflated
(*Potamilus inflatus*)
Pearlshell, Louisiana
(*Margaritifera hembeli*)
Chaffseed, American
(*Schwalbea americana*)
Fruit, Earth (=geocarpon)
(*Geocarpon minimum*)
Sturgeon, Gulf
(*Acipenser oxyrinchus desotoi*)
Sturgeon, Pallid
(*Scaphirhynchus albus*)
Bear, Louisiana Black
(*Ursus americanus luteolus*)
Manatee, West Indian
(*Trichechus manatus*)
Whale, Finback
(*Balaenoptera physalus*)
Whale, Humpback
(*Megaptera novaeangliae*)
Sea turtle, green
(*Chelonia mydas*)
Sea turtle, hawksbill
(*Eretmochelys imbricata*)

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	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Mammal	No
	Subterranean, Terrestrial	
Endangered	Mammal	Yes
	Subterranean, Terrestrial	
Endangered	Mammal	Yes
	Terrestrial, Subterranean	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Threatened	Bivalve	No
	Freshwater	
Threatened	Bivalve	No
	Freshwater	
Endangered	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Fish	Yes
	Saltwater, Freshwater	
Endangered	Fish	No
	Freshwater	
Threatened	Mammal	No
	Terrestrial	
Endangered	Marine mml	Yes
	Saltwater	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	No
	Saltwater	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	

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Louisiana (22) species:

- Sea turtle, Kemp's ridley
(*Lepidochelys kempii*)
- Sea turtle, leatherback
(*Dermochelys coriacea*)
- Sea turtle, loggerhead
(*Caretta caretta*)
- Tortoise, Gopher
(*Gopherus polyphemus*)

Maine (11) species:

- Plover, Piping
(*Charadrius melodus*)
- Tern, Roseate
(*Sterna dougallii dougallii*)
- Lousewort, Furbish
(*Pedicularis furbishiae*)
- Salmon, Atlantic
(*Salmo salar*)
- Lynx, Canada
(*Lynx canadensis*)
- Whale, Finback
(*Balaenoptera physalus*)
- Whale, Humpback
(*Megaptera novaeangliae*)
- Whale, northern right
(*Eubalaena glacialis (incl. australis)*)
- Orchid, Eastern Prairie Fringed
(*Platanthera leucophaea*)
- Pogonia, Small Whorled
(*Isotria medeoloides*)
- Sea turtle, leatherback
(*Dermochelys coriacea*)

Maryland (22) species:

- Plover, Piping
(*Charadrius melodus*)
- Mussel, Dwarf Wedge
(*Alasmidonta heterodon*)
- Dropwort, Canby's
(*Oxypolis canbyi*)
- Gerardia, Sandplain
(*Agalinis acuta*)
- Harperella
(*Ptilimnium nodosum*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Threatened	Reptile	No
	Saltwater	
Threatened	Reptile	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Dicot	No
	Terrestrial	
Endangered	Fish	No
	Brackish, Saltwater, Freshwater	
Threatened	Mammal	No
	Terrestrial	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	Yes
	Saltwater	
Threatened	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	
Endangered	Reptile	Yes
	Saltwater	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Endangered	Dicot	No
	Terrestrial, Freshwater	
Endangered	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Freshwater	

Maryland (22) species:

Joint-vetch, Sensitive
(*Aeschynomene virginica*)
Darter, Maryland
(*Etheostoma sellare*)
Sturgeon, Shortnose
(*Acipenser brevirostrum*)
Beetle, Northeastern Beach Tiger
(*Cicindela dorsalis dorsalis*)
Beetle, Puritan Tiger
(*Cicindela puritana*)
Bat, Indiana
(*Myotis sodalis*)
Squirrel, Delmarva Peninsula Fox
(*Sciurus niger cinereus*)
Whale, Finback
(*Balaenoptera physalus*)
Whale, Humpback
(*Megaptera novaeangliae*)
Whale, northern right
(*Eubalaena glacialis (incl. australis)*)
Bulrush, Northeastern (=Barbed Bristle)
(*Scirpus ancistrochaetus*)
Pink, Swamp
(*Helonias bullata*)
Sea turtle, hawksbill
(*Eretmochelys imbricata*)
Sea turtle, Kemp's ridley
(*Lepidochelys kempii*)
Sea turtle, leatherback
(*Dermochelys coriacea*)
Sea turtle, loggerhead
(*Caretta caretta*)
Turtle, Bog (Northern population)
(*Clemmys muhlenbergii*)

Massachusetts (13) species:

Plover, Piping
(*Charadrius melodus*)
Starling, Ponape Mountain
(*Aplonis pelzelni*)
Sturgeon, Shortnose
(*Acipenser brevirostrum*)
Beetle, Puritan Tiger
(*Cicindela puritana*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Dicot	No
	Terrestrial, Brackish	
Endangered	Fish	Yes
	Freshwater	
Endangered	Fish	No
	Saltwater, Freshwater	
Threatened	Insect	No
	Terrestrial	
Threatened	Insect	No
	Terrestrial, Coastal (neritic)	
Endangered	Mammal	Yes
	Subterranean, Terrestrial	
Endangered	Mammal	No
	Terrestrial	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	Yes
	Saltwater	
Endangered	Monocot	No
	Terrestrial, Freshwater	
Threatened	Monocot	No
	Terrestrial, Freshwater	
Endangered	Reptile	Yes
	Saltwater	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Threatened	Reptile	No
	Saltwater	
Threatened	Reptile	No
	Terrestrial, Freshwater	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Fish	No
	Saltwater, Freshwater	
Threatened	Insect	No
	Terrestrial, Coastal (neritic)	

Massachusetts (13) species:

Bat, Indiana
(Myotis sodalis)
 Whale, Finback
(Balaenoptera physalus)
 Whale, northern right
(Eubalaena glacialis (incl. australis))
 Pogonia, Small Whorled
(Isotria medeoloides)
 Sea turtle, hawksbill
(Eretmochelys imbricata)
 Sea turtle, Kemp's ridley
(Lepidochelys kempii)
 Sea turtle, leatherback
(Dermochelys coriacea)
 Sea turtle, loggerhead
(Caretta caretta)
 Turtle, Bog (Northern population)
(Clemmys muhlenbergii)

Michigan (18) species:

Plover, Piping
(Charadrius melodus)
 Warbler (=Wood), Kirtland's
(Dendroica kirtlandii)
 Mussel, Clubshell
(Pleurobema clava)
 Riffleshell, Northern
(Epioblasma torulosa rangiana)
 Goldenrod, Houghton's
(Solidago houghtonii)
 Monkey-flower, Michigan
(Mimulus glabratus var. michiganensis)
 Thistle, Pitcher's
(Cirsium pitcheri)
 Beetle, Hungerford's Crawling Water
(Brychius hungerfordi)
 Butterfly, Karner Blue
(Lycaeides melissa samuelis)
 Butterfly, Mitchell's Satyr
(Neonympha mitchellii mitchellii)
 Dragonfly, Hine's Emerald
(Somatochlora hineana)
 Bat, Indiana
(Myotis sodalis)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	Yes
	Saltwater	
Threatened	Monocot	No
	Terrestrial	
Endangered	Reptile	Yes
	Saltwater	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Threatened	Reptile	No
	Saltwater	
Threatened	Reptile	No
	Terrestrial, Freshwater	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Threatened	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Terrestrial, Freshwater	
Threatened	Dicot	No
	Terrestrial	
Endangered	Insect	No
	Freshwater	
Endangered	Insect	No
	Terrestrial	
Endangered	Insect	No
	Terrestrial	
Endangered	Insect	No
	Freshwater, Terrestrial	
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	

Michigan (18) species:

- Lynx, Canada
(*Lynx canadensis*)
- Wolf, Gray
(*Canis lupus*)
- Iris, Dwarf Lake
(*Iris lacustris*)
- Orchid, Eastern Prairie Fringed
(*Platanthera leucophaea*)
- Pogonia, Small Whorled
(*Isotria medeoloides*)
- Snake, Northern Copperbelly Water
(*Nerodia erythrogaster neglecta*)

Minnesota (11) species:

- Plover, Piping
(*Charadrius melodus*)
- Mussel, Winged Mapleleaf
(*Quadrula fragosa*)
- Pearlymussel, Higgins' Eye
(*Lampsilis higginsii*)
- Clover, Prairie Bush
(*Lespedeza leptostachya*)
- Roseroot, Leedy's
(*Sedum integrifolium ssp. leedyi*)
- Shiner, Topeka
(*Notropis topeka (=tristis)*)
- Butterfly, Karner Blue
(*Lycaeides melissa samuelis*)
- Lynx, Canada
(*Lynx canadensis*)
- Wolf, Gray
(*Canis lupus*)
- Lily, Minnesota Trout
(*Erythronium propullans*)
- Orchid, Western Prairie Fringed
(*Platanthera praeclara*)

Mississippi (34) species:

- Crane, Mississippi Sandhill
(*Grus canadensis pulla*)
- Pelican, Brown
(*Pelecanus occidentalis*)
- Plover, Piping
(*Charadrius melodus*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Mammal	No
	Terrestrial	
Endangered	Mammal	Yes
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	
Threatened	Reptile	No
	Freshwater, Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Threatened	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Endangered	Fish	Yes
	Freshwater	
Endangered	Insect	No
	Terrestrial	
Threatened	Mammal	No
	Terrestrial	
Threatened	Mammal	Yes
	Terrestrial	
Endangered	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial, Freshwater	
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	Yes
	Terrestrial	

Mississippi (34) species:

	<u>Taxa</u>	<u>Critical Habitat</u>
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered Bird Terrestrial	No
Combshell, Southern (=Penitent mussel) (<i>Epioblasma penita</i>)	Endangered Bivalve Freshwater	No
Mucket, Orangenacre (<i>Lampsilis perovalis</i>)	Threatened Bivalve Freshwater	Yes
Mussel, Alabama Moccasinshell (<i>Medionidus acutissimus</i>)	Threatened Bivalve Freshwater	Yes
Mussel, Black (=Curtus' Mussel) Clubshell (<i>Pleurobema curtum</i>)	Endangered Bivalve Freshwater	No
Mussel, Heavy Pigtoe (=Judge Tait's Mussel) (<i>Pleurobema taitianum</i>)	Endangered Bivalve Freshwater	No
Mussel, Heelsplitter Inflated (<i>Potamilus inflatus</i>)	Threatened Bivalve Freshwater	No
Mussel, Ovate Clubshell (<i>Pleurobema perovatium</i>)	Endangered Bivalve Freshwater	Yes
Mussel, Southern Clubshell (<i>Pleurobema decisum</i>)	Endangered Bivalve Freshwater	Yes
Pearlymussel, Fat Pocketbook (<i>Potamilus capax</i>)	Endangered Bivalve Freshwater	No
Pondberry (<i>Lindera melissifolia</i>)	Endangered Dicot Terrestrial	No
Potato-bean, Price's (<i>Apios priceana</i>)	Threatened Dicot Terrestrial	No
Quillwort, Louisiana (<i>Isoetes louisianensis</i>)	Endangered Ferns Freshwater, Terrestrial	No
Darter, Bayou (<i>Etheostoma rubrum</i>)	Threatened Fish Freshwater	No
Sturgeon, Gulf (<i>Acipenser oxyrinchus desotoi</i>)	Threatened Fish Saltwater, Freshwater	Yes
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered Fish Freshwater	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered Mammal Subterranean, Terrestrial	Yes
Bear, Louisiana Black (<i>Ursus americanus luteolus</i>)	Threatened Mammal Terrestrial	No
Whale, Finback (<i>Balaenoptera physalus</i>)	Endangered Marine mml Saltwater	No

Mississippi (34) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Whale, Humpback (<i>Megaptera novaeangliae</i>)	Endangered	Marine mml Saltwater	No
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Snake, Eastern Indigo (<i>Drymarchon corais couperi</i>)	Threatened	Reptile Terrestrial	No
Tortoise, Gopher (<i>Gopherus polyphemus</i>)	Threatened	Reptile Terrestrial	No
Turtle, Ringed Sawback (<i>Graptemys oculifera</i>)	Threatened	Reptile Freshwater, Terrestrial	No
Turtle, Yellow-blotched Map (<i>Graptemys flavimaculata</i>)	Threatened	Reptile Freshwater, Terrestrial	No

Missouri (29) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Scaleshell (<i>Leptodea leptodon</i>)	Endangered	Bivalve Freshwater	No
Mussel, Winged Mapleleaf (<i>Quadrula fragosa</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Curtis' (<i>Epioblasma florentina curtisii</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Fat Pocketbook (<i>Potamilus capax</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Higgins' Eye (<i>Lampsilis higginsii</i>)	Endangered	Bivalve Freshwater	No
Crayfish, Cave (<i>Cambarus aculabrum</i>) (<i>Cambarus aculabrum</i>)	Endangered	Crustacean Freshwater	No
Aster, Decurrent False (<i>Boltonia decurrens</i>)	Threatened	Dicot Terrestrial, Freshwater	No
Bladderpod, Missouri (<i>Lesquerella filiformis</i>)	Threatened	Dicot Terrestrial	No

Missouri (29) species:

Clover, Running Buffalo
(*Trifolium stoloniferum*)
Fruit, Earth (=geocarpon)
(*Geocarpon minimum*)
Milkweed, Mead's
(*Asclepias meadii*)
Pondberry
(*Lindera melissifolia*)
Sneezeweed, Virginia
(*Helenium virginicum*)
Cavefish, Ozark
(*Amblyopsis rosae*)
Chub, Humpback
(*Gila cypha*)
Darter, Niangua
(*Etheostoma nianguae*)
Madtom, Neosho
(*Noturus placidus*)
Shiner, Topeka
(*Notropis topeka (=tristis)*)
Sturgeon, Gulf
(*Acipenser oxyrinchus desotoi*)
Sturgeon, Pallid
(*Scaphirhynchus albus*)
Cavesnail, Tumbling Creek
(*Antrobia culveri*)
Beetle, American Burying
(*Nicrophorus americanus*)
Dragonfly, Hine's Emerald
(*Somatochlora hineana*)
Bat, Gray
(*Myotis grisescens*)
Bat, Indiana
(*Myotis sodalis*)
Orchid, Western Prairie Fringed
(*Platanthera praeclara*)

Montana (7) species:

Crane, Whooping
(*Grus americana*)
Plover, Piping
(*Charadrius melodus*)
Tern, Interior (population) Least
(*Sterna antillarum*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Vernal pool	
Threatened	Fish	No
	Freshwater	
Endangered	Fish	Yes
	Freshwater	
Threatened	Fish	Yes
	Freshwater	
Threatened	Fish	No
	Freshwater	
Endangered	Fish	Yes
	Freshwater	
Threatened	Fish	Yes
	Saltwater, Freshwater	
Endangered	Fish	No
	Freshwater	
Endangered	Gastropod	No
	Subterraneous, Freshwater	
Endangered	Insect	No
	Terrestrial	
Endangered	Insect	No
	Freshwater, Terrestrial	
Endangered	Mammal	No
	Subterraneous, Terrestrial	
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	
Threatened	Monocot	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial, Freshwater	
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	

Montana (7) species:

- Sturgeon, Pallid
(*Scaphirhynchus albus*)
- Bear, Grizzly
(*Ursus arctos horribilis*)
- Ferret, Black-footed
(*Mustela nigripes*)
- Wolf, Gray
(*Canis lupus*)

Nebraska (10) species:

- Crane, Whooping
(*Grus americana*)
- Plover, Piping
(*Charadrius melodus*)
- Tern, Interior (population) Least
(*Sterna antillarum*)
- Butterfly Plant, Colorado
(*Gaura neomexicana var. coloradensis*)
- Penstemon, Blowout
(*Penstemon haydenii*)
- Shiner, Topeka
(*Notropis topeka (=tristis)*)
- Sturgeon, Pallid
(*Scaphirhynchus albus*)
- Beetle, Salt Creek Tiger
(*Cicindela nevadica lincolniiana*)
- Ferret, Black-footed
(*Mustela nigripes*)
- Orchid, Western Prairie Fringed
(*Platanthera praeclara*)

New Hampshire (2) species:

- Whale, Finback
(*Balaenoptera physalus*)
- Sea turtle, leatherback
(*Dermochelys coriacea*)

New Jersey (17) species:

- Curllew, Eskimo
(*Numenius borealis*)
- Plover, Piping
(*Charadrius melodus*)
- Chaffseed, American
(*Schwalbea americana*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Fish	No
	Freshwater	
Threatened	Mammal	No
	Terrestrial	
Endangered	Mammal	No
	Terrestrial	
Endangered	Mammal	Yes
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial, Freshwater	
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Threatened	Dicot	Yes
	Terrestrial	
Endangered	Dicot	No
	Terrestrial	
Endangered	Fish	Yes
	Freshwater	
Endangered	Fish	No
	Freshwater	
Endangered	Insect	No
	Terrestrial	
Endangered	Mammal	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Marine mml	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	Yes
	Terrestrial	
Endangered	Dicot	No
	Terrestrial	

New Jersey (17) species:

Joint-vetch, Sensitive
(*Aeschynomene virginica*)
Sturgeon, Shortnose
(*Acipenser brevirostrum*)
Bat, Indiana
(*Myotis sodalis*)
Whale, Finback
(*Balaenoptera physalus*)
Whale, Humpback
(*Megaptera novaeangliae*)
Whale, northern right
(*Eubalaena glacialis (incl. australis)*)
Beaked-rush, Knieskern's
(*Rhynchospora knieskernii*)
Pink, Swamp
(*Helonias bullata*)
Pogonia, Small Whorled
(*Isotria medeoloides*)
Sea turtle, hawksbill
(*Eretmochelys imbricata*)
Sea turtle, Kemp's ridley
(*Lepidochelys kempii*)
Sea turtle, leatherback
(*Dermochelys coriacea*)
Sea turtle, loggerhead
(*Caretta caretta*)
Turtle, Bog (Northern population)
(*Clemmys muhlenbergii*)

New Mexico (2) species:

Tern, Interior (population) Least
(*Sterna antillarum*)
Ferret, Black-footed
(*Mustela nigripes*)

New York (22) species:

Plover, Piping
(*Charadrius melodus*)
Tern, Roseate
(*Sterna dougallii dougallii*)
Mussel, Dwarf Wedge
(*Alasmidonta heterodon*)
Amaranth, Seabeach
(*Amaranthus pumilus*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Dicot	No
	Terrestrial, Brackish	
Endangered	Fish	No
	Saltwater, Freshwater	
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	Yes
	Saltwater	
Threatened	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial, Freshwater	
Threatened	Monocot	No
	Terrestrial	
Endangered	Reptile	Yes
	Saltwater	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Threatened	Reptile	No
	Saltwater	
Threatened	Reptile	No
	Terrestrial, Freshwater	
	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	No
	Terrestrial	
Endangered	Mammal	No
	Terrestrial	
	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Threatened	Dicot	No
	Coastal (neritic)	

New York (22) species:

Gerardia, Sandplain
(*Agalinis acuta*)
 Monkshood, Northern Wild
(*Aconitum noveboracense*)
 Roseroot, Leedy's
(*Sedum integrifolium ssp. leedyi*)
 Fern, American hart's-tongue
(*Asplenium scolopendrium var. americanum*)
 Sturgeon, Shortnose
(*Acipenser brevirostrum*)
 Snail, Chittenango Ovate Amber
(*Succinea chittenangoensis*)
 Butterfly, Karner Blue
(*Lycaeides melissa samuelis*)
 Bat, Indiana
(*Myotis sodalis*)
 Whale, Finback
(*Balaenoptera physalus*)
 Whale, Humpback
(*Megaptera novaeangliae*)
 Whale, northern right
(*Eubalaena glacialis (incl. australis)*)
 Pogonia, Small Whorled
(*Isotria medeoloides*)
 Sea turtle, green
(*Chelonia mydas*)
 Sea turtle, hawksbill
(*Eretmochelys imbricata*)
 Sea turtle, Kemp's ridley
(*Lepidochelys kempii*)
 Sea turtle, leatherback
(*Dermochelys coriacea*)
 Sea turtle, loggerhead
(*Caretta caretta*)
 Turtle, Bog (Northern population)
(*Clemmys muhlenbergii*)

North Carolina (54) species:

Spider, Spruce-fir Moss
(*Microhexura montivaga*)
 Plover, Piping
(*Charadrius melodus*)
 Stork, Wood
(*Mycteria americana*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Ferns	No
	Terrestrial	
Endangered	Fish	No
	Saltwater, Freshwater	
Threatened	Gastropod	No
	Terrestrial, Freshwater	
Endangered	Insect	No
	Terrestrial	
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	Yes
	Saltwater	
Threatened	Monocot	No
	Terrestrial	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Threatened	Reptile	No
	Saltwater	
Threatened	Reptile	No
	Terrestrial, Freshwater	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Arachnid	Yes
	Terrestrial	
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	

North Carolina (54) species:

	<u>Taxa</u>	<u>Critical Habitat</u>
Tern, Roseate (<i>Sterna dougallii dougallii</i>)	Endangered Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered Bird Terrestrial	No
Elktoe, Appalachian (<i>Alasmidonta raveneliana</i>)	Endangered Bivalve Freshwater	Yes
Mussel, Dwarf Wedge (<i>Alasmidonta heterodon</i>)	Endangered Bivalve Freshwater	No
Mussel, Heelsplitter Carolina (<i>Lasmigona decorata</i>)	Endangered Bivalve Freshwater	Yes
Mussel, Oyster (<i>Epioblasma capsaeformis</i>)	Endangered Bivalve Freshwater	Yes
Pearl mussel, Little-wing (<i>Pegias fabula</i>)	Endangered Bivalve Freshwater	No
Purple Bean (<i>Villosa perpurpurea</i>)	Endangered Bivalve Freshwater	Yes
Spiny mussel, James River (<i>Pleurobema collina</i>)	Endangered Bivalve Freshwater	No
Spiny mussel, Tar River (<i>Elliptio steinstansana</i>)	Endangered Bivalve Freshwater	No
Amaranth, Seabeach (<i>Amaranthus pumilus</i>)	Threatened Dicot Coastal (neritic)	No
Avens, Spreading (<i>Geum radiatum</i>)	Endangered Dicot Terrestrial	No
Bittercress, Small-anthered (<i>Cardamine micranthera</i>)	Endangered Dicot Terrestrial	No
Blazing Star, Heller's (<i>Liatris helleri</i>)	Threatened Dicot Terrestrial	No
Chaffseed, American (<i>Schwalbea americana</i>)	Endangered Dicot Terrestrial	No
Coneflower, Smooth (<i>Echinacea laevigata</i>)	Endangered Dicot Terrestrial	No
Dropwort, Canby's (<i>Oxypolis canbyi</i>)	Endangered Dicot Terrestrial, Freshwater	No
Goldenrod, Blue Ridge (<i>Solidago spithamea</i>)	Threatened Dicot Terrestrial	No
Harperella (<i>Ptilimnium nodosum</i>)	Endangered Dicot Freshwater	No
Heartleaf, Dwarf-flowered (<i>Hexastylis naniflora</i>)	Threatened Dicot Terrestrial	No
Heather, Mountain Golden (<i>Hudsonia montana</i>)	Threatened Dicot Terrestrial	Yes

North Carolina (54) species:

	<u>Taxa</u>	<u>Critical Habitat</u>
Joint-vetch, Sensitive (<i>Aeschynomene virginica</i>)	Threatened Dicot Terrestrial, Brackish	No
Loosestrife, Rough-leaved (<i>Lysimachia asperulaefolia</i>)	Endangered Dicot Terrestrial	No
Meadowrue, Cooley's (<i>Thalictrum cooleyi</i>)	Endangered Dicot Terrestrial	No
Pitcher-plant, Green (<i>Sarracenia oreophila</i>)	Endangered Dicot Terrestrial, Freshwater	No
Pitcher-plant, Mountain Sweet (<i>Sarracenia rubra ssp. jonesii</i>)	Endangered Dicot Freshwater, Terrestrial	No
Pondberry (<i>Lindera melissifolia</i>)	Endangered Dicot Terrestrial	No
Spiraea, Virginia (<i>Spiraea virginiana</i>)	Threatened Dicot Terrestrial	No
Sumac, Michaux's (<i>Rhus michauxii</i>)	Endangered Dicot Terrestrial	No
Sunflower, Schweinitz's (<i>Helianthus schweinitzii</i>)	Endangered Dicot Terrestrial	No
Shiner, Cape Fear (<i>Notropis mekistocholas</i>)	Endangered Fish Freshwater	Yes
Silverside, Waccamaw (<i>Menidia extensa</i>)	Threatened Fish Freshwater	Yes
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered Fish Saltwater, Freshwater	No
Butterfly, Saint Francis' Satyr (<i>Neonympha mitchellii francisci</i>)	Endangered Insect Terrestrial	No
Lichen, Rock Gnome (<i>Gymnoderma lineare</i>)	Endangered Lichen Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered Mammal Subterranean, Terrestrial	Yes
Squirrel, Carolina Northern Flying (<i>Glaucomys sabrinus coloratus</i>)	Endangered Mammal Terrestrial	No
Manatee, West Indian (<i>Trichechus manatus</i>)	Endangered Marine mml Saltwater	Yes
Whale, Finback (<i>Balaenoptera physalus</i>)	Endangered Marine mml Saltwater	No
Whale, Humpback (<i>Megaptera novaeangliae</i>)	Endangered Marine mml Saltwater	No
Whale, northern right (<i>Eubalaena glacialis (incl. australis)</i>)	Endangered Marine mml Saltwater	Yes
Arrowhead, Bunched (<i>Sagittaria fasciculata</i>)	Endangered Monocot Freshwater	No

North Carolina (54) species:

Irisette, White
(*Sisyrinchium dichotomum*)
Pink, Swamp
(*Helonias bullata*)
Pogonia, Small Whorled
(*Isotria medeoloides*)
Sedge, Golden
(*Carex lutea*)
Sea turtle, green
(*Chelonia mydas*)
Sea turtle, hawksbill
(*Eretmochelys imbricata*)
Sea turtle, Kemp's ridley
(*Lepidochelys kempii*)
Sea turtle, leatherback
(*Dermochelys coriacea*)
Sea turtle, loggerhead
(*Caretta caretta*)

North Dakota (5) species:

Crane, Whooping
(*Grus americana*)
Plover, Piping
(*Charadrius melodus*)
Tern, Interior (population) Least
(*Sterna antillarum*)
Sturgeon, Pallid
(*Scaphirhynchus albus*)
Orchid, Western Prairie Fringed
(*Platanthera praeclara*)

Ohio (22) species:

Plover, Piping
(*Charadrius melodus*)
Fanshell
(*Cyprogenia stegaria*)
Mucket, Pink (Pearlymussel)
(*Lampsilis abrupta*)
Mussel, Clubshell
(*Pleurobema clava*)
Pearlymussel, Purple Cat's Paw
(*Epioblasma obliquata obliquata*)
Pearlymussel, White Cat's Paw
(*Epioblasma obliquata perobliqua*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Monocot Terrestrial	No
Threatened	Monocot Terrestrial, Freshwater	No
Threatened	Monocot Terrestrial	No
Endangered	Monocot Terrestrial	No
Endangered	Reptile Saltwater	No
Endangered	Reptile Saltwater	Yes
Endangered	Reptile Saltwater	No
Endangered	Reptile Saltwater	Yes
Threatened	Reptile Saltwater	No

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird Terrestrial, Freshwater	Yes
Endangered	Bird Terrestrial	Yes
Endangered	Bird Terrestrial	No
Endangered	Fish Freshwater	No
Threatened	Monocot Terrestrial	No

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird Terrestrial	Yes
Endangered	Bivalve Freshwater	No

Ohio (22) species:

Riffleshell, Northern
(*Epioblasma torulosa rangiana*)
Clover, Running Buffalo
(*Trifolium stoloniferum*)
Daisy, Lakeside
(*Hymenoxys herbacea*)
Monkshood, Northern Wild
(*Aconitum noveboracense*)
Spiraea, Virginia
(*Spiraea virginiana*)
Madtom, Scioto
(*Noturus trautmani*)
Beetle, American Burying
(*Nicrophorus americanus*)
Butterfly, Karner Blue
(*Lycaeides melissa samuelis*)
Butterfly, Mitchell's Satyr
(*Neonympha mitchellii mitchellii*)
Dragonfly, Hine's Emerald
(*Somatochlora hineana*)
Bat, Gray
(*Myotis grisescens*)
Bat, Indiana
(*Myotis sodalis*)
Orchid, Eastern Prairie Fringed
(*Platanthera leucophaea*)
Pogonia, Small Whorled
(*Isotria medeoloides*)
Snake, Lake Erie Water
(*Nerodia sipedon insularum*)
Snake, Northern Copperbelly Water
(*Nerodia erythrogaster neglecta*)

Oklahoma (18) species:

Crane, Whooping
(*Grus americana*)
Curlew, Eskimo
(*Numenius borealis*)
Plover, Piping
(*Charadrius melodus*)
Tern, Interior (population) Least
(*Sterna antillarum*)
Vireo, Black-capped
(*Vireo atricapilla*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bivalve	No
	Freshwater	
Endangered	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Freshwater	
Threatened	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Endangered	Fish	No
	Freshwater	
Endangered	Insect	No
	Terrestrial	
Endangered	Insect	No
	Terrestrial	
Endangered	Insect	No
	Terrestrial	
Endangered	Insect	No
	Freshwater, Terrestrial	
Endangered	Mammal	No
	Subterraneous, Terrestrial	
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	
Threatened	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	
Threatened	Reptile	No
	Terrestrial, Freshwater	
Threatened	Reptile	No
	Freshwater, Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial, Freshwater	
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	No
	Terrestrial	

Oklahoma (18) species:

Woodpecker, Red-cockaded
(*Picoides borealis*)

Mussel, Scaleshell
(*Leptodea leptodon*)

Rock-pocketbook, Ouachita (=Wheeler's pm)
(*Arkansia wheeleri*)

Cavefish, Ozark
(*Amblyopsis rosae*)

Darter, Leopard
(*Percina pantherina*)

Madtom, Neosho
(*Noturus placidus*)

Shiner, Arkansas River
(*Notropis girardi*)

Beetle, American Burying
(*Nicrophorus americanus*)

Bat, Gray
(*Myotis grisescens*)

Bat, Indiana
(*Myotis sodalis*)

Bat, Ozark Big-eared
(*Corynorhinus (=Plecotus) townsendii ingens*)

Orchid, Eastern Prairie Fringed
(*Platanthera leucophaea*)

Orchid, Western Prairie Fringed
(*Platanthera praeclara*)

Oregon (39) species:

Murrelet, Marbled
(*Brachyramphus marmoratus marmoratus*)

Owl, Northern Spotted
(*Strix occidentalis caurina*)

Pelican, Brown
(*Pelecanus occidentalis*)

Plover, Western Snowy
(*Charadrius alexandrinus nivosus*)

Fairy Shrimp, Vernal Pool
(*Branchinecta lynchi*)

Checker-mallow, Nelson's
(*Sidalcea nelsoniana*)

Daisy, Willamette
(*Erigeron decumbens var. decumbens*)

Lomatium, Bradshaw's
(*Lomatium bradshawii*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	No
	Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Threatened	Fish	No
	Freshwater	
Threatened	Fish	Yes
	Freshwater	
Threatened	Fish	No
	Freshwater	
Threatened	Fish	Yes
	Freshwater	
Endangered	Insect	No
	Terrestrial	
Endangered	Mammal	No
	Subterraneous, Terrestrial	
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	
Endangered	Mammal	No
	Terrestrial, Subterraneous	
Threatened	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Bird	Yes
	Freshwater, Terrestrial, Saltwater	
Threatened	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Threatened	Bird	Yes
	Terrestrial	
Threatened	Crustacean	Yes
	Vernal pool	
Threatened	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Terrestrial, Freshwater	

Oregon

(39) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Lomatium, Cook's (<i>Lomatium cookii</i>)	Endangered	Dicot Vernal pool	No
Lupine, Kincaid's (<i>Lupinus sulphureus</i> (=oreganus) ssp. kincaidii (=var. kincaidii))	Threatened	Dicot Terrestrial	No
Meadowfoam, Large-flowered Woolly (<i>Limnanthes floccosa</i> ssp. Grandiflora)	Endangered	Dicot Vernal pool	No
Popcornflower, Rough (<i>Plagiobothrys hirtus</i>)	Endangered	Dicot Vernal pool	No
Thelypody, Howell's Spectacular (<i>Thelypodium howellii spectabilis</i>)	Threatened	Dicot Terrestrial	No
Chub, Oregon (<i>Oregonichthys crameri</i>)	Endangered	Fish Freshwater	No
Salmon, Chinook (Lower Columbia River) (<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)	Threatened	Fish Freshwater, Brackish, Saltwater	Yes
Salmon, Chinook (Snake River Fall Run) (<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)	Threatened	Fish Freshwater, Saltwater, Brackish	No
Salmon, Chinook (Snake River spring/summer) (<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)	Threatened	Fish Brackish, Saltwater, Freshwater	Yes
Salmon, Chinook (Upper Columbia River Spring) (<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)	Endangered	Fish Freshwater, Saltwater, Brackish	Yes
Salmon, Chinook (Upper Willamette River) (<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)	Threatened	Fish Saltwater, Brackish, Freshwater	Yes
Salmon, Chum (Columbia River population) (<i>Oncorhynchus</i> (=Salmo) <i>keta</i>)	Threatened	Fish Brackish, Freshwater, Saltwater	Yes
Salmon, Coho (Southern OR/Northern CA Coast) (<i>Oncorhynchus</i> (=Salmo) <i>kisutch</i>)	Threatened	Fish Freshwater, Brackish, Saltwater	Yes
Salmon, Sockeye (Snake River population) (<i>Oncorhynchus</i> (=Salmo) <i>nerka</i>)	Endangered	Fish Brackish, Saltwater, Freshwater	No
Steelhead, (Lower Columbia River population) (<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)	Threatened	Fish Brackish, Freshwater, Saltwater	Yes
Steelhead, (Middle Columbia River population) (<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)	Threatened	Fish Freshwater, Saltwater, Brackish	Yes
Steelhead, (Snake River Basin population) (<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)	Threatened	Fish Freshwater, Brackish, Saltwater	Yes
Steelhead, (Upper Columbia River population) (<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)	Threatened	Fish Brackish, Saltwater, Freshwater	Yes
Steelhead, (Upper Willamette River population) (<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)	Threatened	Fish Brackish, Saltwater, Freshwater	Yes
Trout, Bull (<i>Salvelinus confluentus</i>)	Threatened	Fish Freshwater	No
Trout, Bull (Columbia River population) (<i>Salvelinus confluentus</i>)	Threatened	Fish Freshwater	Yes

Oregon (39) species:

- Trout, Bull (Klamath River population)
(*Salvelinus confluentus*)
Butterfly, Fender's Blue
(*Icaricia icarioides fenderi*)
Butterfly, Oregon Silverspot
(*Speyeria zerene hippolyta*)
Deer, Columbian White-tailed
(*Odocoileus virginianus leucurus*)
Sea-lion, Steller (eastern)
(*Eumetopias jubatus*)
Whale, Humpback
(*Megaptera novaeangliae*)
Fritillary, Gentner's
(*Fritillaria gentneri*)
Sea turtle, green
(*Chelonia mydas*)
Sea turtle, leatherback
(*Dermochelys coriacea*)
Sea turtle, loggerhead
(*Caretta caretta*)

Pennsylvania (8) species:

- Plover, Piping
(*Charadrius melodus*)
Mussel, Clubshell
(*Pleurobema clava*)
Riffleshell, Northern
(*Epioblasma torulosa rangiana*)
Bat, Indiana
(*Myotis sodalis*)
Squirrel, Delmarva Peninsula Fox
(*Sciurus niger cinereus*)
Bulrush, Northeastern (=Barbed Bristle)
(*Scirpus ancistrochaetus*)
Pogonia, Small Whorled
(*Isotria medeoloides*)
Turtle, Bog (Northern population)
(*Clemmys muhlenbergii*)

Rhode Island (11) species:

- Plover, Piping
(*Charadrius melodus*)
Gerardia, Sandplain
(*Agalinis acuta*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Fish	Yes
	Freshwater	
Endangered	Insect	No
	Terrestrial	
Threatened	Insect	Yes
	Terrestrial	
Endangered	Mammal	No
	Terrestrial	
Threatened	Marine mml	Yes
	Saltwater	
Endangered	Marine mml	No
	Saltwater	
Endangered	Monocot	No
	Terrestrial	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Threatened	Reptile	No
	Saltwater	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	
Endangered	Mammal	No
	Terrestrial	
Endangered	Monocot	No
	Terrestrial, Freshwater	
Threatened	Monocot	No
	Terrestrial	
Threatened	Reptile	No
	Terrestrial, Freshwater	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial	
Endangered	Dicot	No
	Terrestrial	

Rhode Island (11) species:

Sturgeon, Shortnose
(Acipenser brevirostrum)
 Beetle, American Burying
(Nicrophorus americanus)
 Whale, Finback
(Balaenoptera physalus)
 Whale, Humpback
(Megaptera novaeangliae)
 Whale, northern right
(Eubalaena glacialis (incl. australis))
 Sea turtle, hawksbill
(Eretmochelys imbricata)
 Sea turtle, Kemp's ridley
(Lepidochelys kempii)
 Sea turtle, leatherback
(Dermochelys coriacea)
 Sea turtle, loggerhead
(Caretta caretta)

South Carolina (37) species:

Salamander, Flatwoods
(Ambystoma cingulatum)
 Plover, Piping
(Charadrius melodus)
 Stork, Wood
(Mycteria americana)
 Woodpecker, Red-cockaded
(Picoides borealis)
 Mussel, Heelsplitter Carolina
(Lasmigona decorata)
 Amaranth, Seabeach
(Amaranthus pumilus)
 Amphianthus, Little
(Amphianthus pusillus)
 Chaffseed, American
(Schwalbea americana)
 Coneflower, Smooth
(Echinacea laevigata)
 Dropwort, Canby's
(Oxypolis canbyi)
 Gooseberry, Miccosukee
(Ribes echinellum)
 Harperella
(Ptilimnium nodosum)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Fish	No
	Saltwater, Freshwater	
Endangered	Insect	No
	Terrestrial	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	Yes
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Threatened	Reptile	No
	Saltwater	

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Amphibian	No
	Freshwater, Vernal pool, Terrestrial	
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bivalve	Yes
	Freshwater	
Threatened	Dicot	No
	Coastal (neritic)	
Threatened	Dicot	No
	Freshwater	
Endangered	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Terrestrial, Freshwater	
Threatened	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Freshwater	

South Carolina (37) species:

	<u>Taxa</u>	<u>Critical Habitat</u>
Heartleaf, Dwarf-flowered (<i>Hexastylis naniflora</i>)	Threatened Dicot Terrestrial	No
Loosestrife, Rough-leaved (<i>Lysimachia asperulaefolia</i>)	Endangered Dicot Terrestrial	No
Pitcher-plant, Mountain Sweet (<i>Sarracenia rubra ssp. jonesii</i>)	Endangered Dicot Freshwater, Terrestrial	No
Pondberry (<i>Lindera melissifolia</i>)	Endangered Dicot Terrestrial	No
Sunflower, Schweinitz's (<i>Helianthus schweinitzii</i>)	Endangered Dicot Terrestrial	No
Quillwort, Black-spored (<i>Isoetes melanospora</i>)	Endangered Ferns Vernal pool	No
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered Fish Saltwater, Freshwater	No
Lichen, Rock Gnome (<i>Gymnoderma lineare</i>)	Endangered Lichen Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered Mammal Subterranean, Terrestrial	Yes
Manatee, West Indian (<i>Trichechus manatus</i>)	Endangered Marine mml Saltwater	Yes
Whale, Finback (<i>Balaenoptera physalus</i>)	Endangered Marine mml Saltwater	No
Whale, Humpback (<i>Megaptera novaeangliae</i>)	Endangered Marine mml Saltwater	No
Whale, northern right (<i>Eubalaena glacialis (incl. australis)</i>)	Endangered Marine mml Saltwater	Yes
Arrowhead, Bunched (<i>Sagittaria fasciculata</i>)	Endangered Monocot Freshwater	No
Irisette, White (<i>Sisyrinchium dichotomum</i>)	Endangered Monocot Terrestrial	No
Pink, Swamp (<i>Helonias bullata</i>)	Threatened Monocot Terrestrial, Freshwater	No
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened Monocot Terrestrial	No
Trillium, Persistent (<i>Trillium persistens</i>)	Endangered Monocot Terrestrial	No
Trillium, Relict (<i>Trillium reliquum</i>)	Endangered Monocot Terrestrial	No
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered Reptile Saltwater	No
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered Reptile Saltwater	Yes

South Carolina (37) species:

- Sea turtle, Kemp's ridley
(*Lepidochelys kempii*)
- Sea turtle, leatherback
(*Dermochelys coriacea*)
- Sea turtle, loggerhead
(*Caretta caretta*)
- Snake, Eastern Indigo
(*Drymarchon corais couperi*)

South Dakota (8) species:

- Crane, Whooping
(*Grus americana*)
- Plover, Piping
(*Charadrius melodus*)
- Tern, Interior (population) Least
(*Sterna antillarum*)
- Shiner, Topeka
(*Notropis topeka (=tristis)*)
- Sturgeon, Pallid
(*Scaphirhynchus albus*)
- Beetle, American Burying
(*Nicrophorus americanus*)
- Ferret, Black-footed
(*Mustela nigripes*)
- Orchid, Western Prairie Fringed
(*Platanthera praeclara*)

Tennessee (83) species:

- Spider, Spruce-fir Moss
(*Microhexura montivaga*)
- Stork, Wood
(*Mycteria americana*)
- Tern, Interior (population) Least
(*Sterna antillarum*)
- Woodpecker, Red-cockaded
(*Picoides borealis*)
- Combshell, Upland
(*Epioblasma metastrata*)
- Fanshell
(*Cyprogenia stegaria*)
- Kidneyshell, Triangular
(*Ptychobranthus greenii*)
- Mucket, Pink (Pearlymussel)
(*Lampsilis abrupta*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Threatened	Reptile	No
	Saltwater	
Threatened	Reptile	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial, Freshwater	
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Fish	Yes
	Freshwater	
Endangered	Fish	No
	Freshwater	
Endangered	Insect	No
	Terrestrial	
Endangered	Mammal	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Arachnid	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bivalve	Yes
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	Yes
	Freshwater	
Endangered	Bivalve	No
	Freshwater	

Tennessee (83) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Alabama Moccasinshell (<i>Medionidus acutissimus</i>)	Threatened	Bivalve Freshwater	Yes
Mussel, Clubshell (<i>Pleurobema clava</i>)	Endangered	Bivalve Freshwater	No
Mussel, Coosa Moccasinshell (<i>Medionidus parvulus</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Cumberland Combshell (<i>Epioblasma brevidens</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Cumberland Elktoe (<i>Alasmidonta atropurpurea</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Cumberland Pigtoe (<i>Pleurobema gibberum</i>)	Endangered	Bivalve Freshwater	No
Mussel, Fine-lined Pocketbook (<i>Lampsilis altilis</i>)	Threatened	Bivalve Freshwater	Yes
Mussel, Fine-rayed Pigtoe (<i>Fusconaia cuneolus</i>)	Endangered	Bivalve Freshwater	No
Mussel, Ovate Clubshell (<i>Pleurobema perovatum</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Oyster (<i>Epioblasma capsaeformis</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Ring Pink (=Golf Stick Pearly) (<i>Obovaria retusa</i>)	Endangered	Bivalve Freshwater	No
Mussel, Rough Pigtoe (<i>Pleurobema plenum</i>)	Endangered	Bivalve Freshwater	No
Mussel, Shiny Pigtoe (<i>Fusconaia cor</i>)	Endangered	Bivalve Freshwater	No
Mussel, Southern Pigtoe (<i>Pleurobema georgianum</i>)	Endangered	Bivalve Freshwater	Yes
Pearlymussel, Alabama Lamp (<i>Lampsilis virescens</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Appalachian Monkeyface (<i>Quadrula sparsa</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Birdwing (<i>Conradilla caelata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cracking (<i>Hemistena lata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cumberland Bean (<i>Villosa trabalis</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cumberland Monkeyface (<i>Quadrula intermedia</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Dromedary (<i>Dromus dromas</i>)	Endangered	Bivalve Freshwater	No

Tennessee (83) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Pearlymussel, Green-blossom (<i>Epioblasma torulosa gubernaculum</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Little-wing (<i>Pegias fabula</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Orange-footed (<i>Plethobasus cooperianus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Pale Lilliput (<i>Toxolasma cylindrellus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Purple Cat's Paw (<i>Epioblasma obliquata obliquata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Tubercled-blossom (<i>Epioblasma torulosa torulosa</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Turgid-blossom (<i>Epioblasma turgidula</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, White Wartback (<i>Plethobasus cicatricosus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Yellow-blossom (<i>Epioblasma florentina florentina</i>)	Endangered	Bivalve Freshwater	No
Purple Bean (<i>Villosa perpurpurea</i>)	Endangered	Bivalve Freshwater	Yes
Rabbitsfoot, Rough (<i>Quadrula cylindrica strigillata</i>)	Endangered	Bivalve Freshwater	Yes
Riffleshell, Tan (<i>Epioblasma florentina walkeri</i> (=E. walkeri))	Endangered	Bivalve Freshwater	No
Crayfish, Nashville (<i>Orconectes shoupi</i>)	Endangered	Crustacean Freshwater	No
Aster, Ruth's Golden (<i>Pityopsis ruthii</i>)	Endangered	Dicot Terrestrial	No
Avens, Spreading (<i>Geum radiatum</i>)	Endangered	Dicot Terrestrial	No
Bladderpod, Spring Creek (<i>Lesquerella perforata</i>)	Endangered	Dicot Floodplain	No
Bluet, Roan Mountain (<i>Hedyotis purpurea var. montana</i>)	Endangered	Dicot Terrestrial	No
Chaffseed, American (<i>Schwalbea americana</i>)	Endangered	Dicot Terrestrial	No
Clover, Leafy Prairie (<i>Dalea foliosa</i>)	Endangered	Dicot Terrestrial	No
Coneflower, Tennessee Purple (<i>Echinacea tennesseensis</i>)	Endangered	Dicot Terrestrial	No
Goldenrod, Blue Ridge (<i>Solidago spithamaea</i>)	Threatened	Dicot Terrestrial	No

Tennessee (83) species:

Ground-plum, Guthrie's
(*Astragalus bibullatus*)

Pitcher-plant, Green
(*Sarracenia oreophila*)

Potato-bean, Price's
(*Apios priceana*)

Rock-cress, Large (=Braun's)
(*Arabis perstellata* E. L. Braun var. *ampla* Rollins)

Rosemary, Cumberland
(*Conradina verticillata*)

Sandwort, Cumberland
(*Arenaria cumberlandensis*)

Skullcap, Large-flowered
(*Scutellaria montana*)

Spiraea, Virginia
(*Spiraea virginiana*)

Fern, American hart's-tongue
(*Asplenium scolopendrium* var. *americanum*)

Chub, Slender
(*Erimystax cahni*)

Chub, Spotfin
(*Erimonax monachus*)

Dace, Blackside
(*Phoxinus cumberlandensis*)

Darter, Amber
(*Percina antesella*)

Darter, Bluemask (=jewel)
(*Etheostoma /*)

Darter, Boulder
(*Etheostoma wapiti*)

Darter, Duskytail
(*Etheostoma percnurum*)

Darter, Slackwater
(*Etheostoma boschungii*)

Darter, Snail
(*Percina tanasi*)

Logperch, Conasauga
(*Percina jenkinsi*)

Madtom, Pygmy
(*Noturus stanauli*)

Madtom, Smoky
(*Noturus baileyi*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Terrestrial, Freshwater	
Threatened	Dicot	No
	Terrestrial	
Endangered	Dicot	Yes
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Ferns	No
	Terrestrial	
Threatened	Fish	Yes
	Freshwater	
Threatened	Fish	Yes
	Freshwater	
Threatened	Fish	No
	Freshwater	
Endangered	Fish	Yes
	Freshwater	
Endangered	Fish	No
	Freshwater	
Endangered	Fish	No
	Freshwater	
Endangered	Fish	No
	Freshwater	
Endangered	Fish	Yes
	Freshwater	
Endangered	Fish	No
	Freshwater	
Endangered	Fish	Yes
	Freshwater	

Tennessee (83) species:

Madtom, Yellowfin
(*Noturus flavipinnis*)
Shiner, Blue
(*Cyprinella caerulea*)
Sturgeon, Pallid
(*Scaphirhynchus albus*)
Marstonia, Royal (=Royal Snail)
(*Pyrgulopsis ogmorhapse*)
Riversnail, Anthony's
(*Atheamia anthonyi*)
Snail, Painted Snake Coiled Forest
(*Anguispira picta*)
Lichen, Rock Gnome
(*Gymnoderma lineare*)
Bat, Gray
(*Myotis grisescens*)
Bat, Indiana
(*Myotis sodalis*)
Squirrel, Carolina Northern Flying
(*Glaucomys sabrinus coloratus*)
Grass, Tennessee Yellow-eyed
(*Xyris tennesseensis*)
Pogonia, Small Whorled
(*Isotria medeoloides*)

Texas (60) species:

Salamander, San Marcos
(*Eurycea nana*)
Salamander, Texas Blind
(*Typhlomolge rathbuni*)
Toad, Houston
(*Bufo houstonensis*)
Harvestman, Bee Creek Cave
(*Texella reddelli*)
Harvestman, Robber Baron Cave
(*Texella cokendolpheri*)
Meshweaver, Braken Bat Cave
(*Cicurina venii*)
Spider, Government Canyon Cave
(*Neoleptoneta microps*)
Spider, Madla's Cave
(*Cicurina madla*)
Spider, Robber Baron Cave
(*Cicurina baronia*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Fish	Yes
	Freshwater	
Threatened	Fish	No
	Freshwater	
Endangered	Fish	No
	Freshwater	
Endangered	Gastropod	No
	Terrestrial	
Endangered	Gastropod	No
	Freshwater	
Threatened	Gastropod	No
	Terrestrial	
Endangered	Lichen	No
	Terrestrial	
Endangered	Mammal	No
	Subterraneous, Terrestrial	
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	
Endangered	Mammal	No
	Terrestrial	
Endangered	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Amphibian	Yes
	Freshwater, Terrestrial	
Endangered	Amphibian	No
	Subterraneous, Freshwater	
Endangered	Amphibian	Yes
	Terrestrial, Freshwater	
Endangered	Arachnid	No
	Terrestrial, Subterraneous	
Endangered	Arachnid	Yes
	Subterraneous, Terrestrial	
Endangered	Arachnid	Yes
	Terrestrial, Subterraneous	
Endangered	Arachnid	No
	Subterraneous, Terrestrial	
Endangered	Arachnid	Yes
	Subterraneous, Terrestrial	
Endangered	Arachnid	Yes
	Terrestrial, Subterraneous	

Texas

(60) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Spider, Vesper Cave (<i>Cicurina vespera</i>)	Endangered	Arachnid Subterraneous, Terrestrial	No
Crane, Whooping (<i>Grus americana</i>)	Endangered	Bird Terrestrial, Freshwater	Yes
Curlew, Eskimo (<i>Numenius borealis</i>)	Endangered	Bird Terrestrial	No
Falcon, Northern Aplomado (<i>Falco femoralis septentrionalis</i>)	Endangered	Bird Terrestrial	No
Flycatcher, Southwestern Willow (<i>Empidonax traillii extimus</i>)	Endangered	Bird Terrestrial	Yes
Owl, Mexican Spotted (<i>Strix occidentalis lucida</i>)	Threatened	Bird Terrestrial	Yes
Pelican, Brown (<i>Pelecanus occidentalis</i>)	Endangered	Bird Terrestrial	No
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Prairie-chicken, Attwater's Greater (<i>Tympanuchus cupido attwateri</i>)	Endangered	Bird Terrestrial	No
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Vireo, Black-capped (<i>Vireo atricapilla</i>)	Endangered	Bird Terrestrial	No
Warbler (=Wood), Golden-cheeked (<i>Dendroica chrysoparia</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Amphipod, Peck's Cave (<i>Stygobromus (=Stygonectes) pecki</i>)	Endangered	Crustacean Subterraneous, Freshwater	No
Ambrosia, South Texas (<i>Ambrosia cheiranthifolia</i>)	Endangered	Dicot Terrestrial	No
Ayenia, Texas (<i>Ayenia limitaris</i>)	Endangered	Dicot Terrestrial	No
Bladderpod, Zapata (<i>Lesquerella thamnophila</i>)	Endangered	Dicot Terrestrial	Yes
Cactus, Black Lace (<i>Echinocereus reichenbachii</i> var. <i>albertii</i>)	Endangered	Dicot Terrestrial	No
Cactus, Sneed Pincushion (<i>Coryphantha sneedii</i> var. <i>sneedii</i>)	Endangered	Dicot Terrestrial	No
Cactus, Star (<i>Astrophytum asterias</i>)	Endangered	Dicot Terrestrial	No
Cactus, Tobusch Fishhook (<i>Ancistrocactus tobuschii</i>)	Endangered	Dicot Terrestrial	No

Texas (60) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Dawn-flower, Texas Prairie (=Texas Bitterweed) (<i>Hymenoxys texana</i>)	Endangered	Dicot Terrestrial	No
Dogweed, Ashy (<i>Thymophylla tephroleuca</i>)	Endangered	Dicot Terrestrial	No
Frankenia, Johnston's (<i>Frankenia johnstonii</i>)	Endangered	Dicot Terrestrial	No
Manioc, Walker's (<i>Manihot walkerae</i>)	Endangered	Dicot Terrestrial	No
Phlox, Texas Trailing (<i>Phlox nivalis</i> ssp. <i>texensis</i>)	Endangered	Dicot Terrestrial	No
Sand-verbena, Large-fruited (<i>Abronia macrocarpa</i>)	Endangered	Dicot Terrestrial	No
Snowbells, Texas (<i>Styrax texanus</i>)	Endangered	Dicot Terrestrial	No
Darter, Fountain (<i>Etheostoma fonticola</i>)	Endangered	Fish Freshwater	Yes
Gambusia, San Marcos (<i>Gambusia georgei</i>)	Endangered	Fish Freshwater	Yes
Shiner, Arkansas River (<i>Notropis girardi</i>)	Threatened	Fish Freshwater	Yes
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No
Beetle, Comal Springs Dryopid (<i>Stygoparnus comalensis</i>)	Endangered	Insect Subterranean, Freshwater	No
Beetle, Comal Springs Riffle (<i>Heterelmis comalensis</i>)	Endangered	Insect Subterranean, Freshwater	No
Beetle, Helotes Mold (<i>Batrisodes venyivi</i>)	Endangered	Insect Subterranean	Yes
Rhadine exilis (ncn) (<i>Rhadine exilis</i>)	Endangered	Insect Terrestrial, Subterranean	Yes
Rhadine infernalis (ncn) (<i>Rhadine infernalis</i>)	Endangered	Insect Terrestrial, Subterranean	Yes
Bear, Louisiana Black (<i>Ursus americanus luteolus</i>)	Threatened	Mammal Terrestrial	No
Jaguarundi, Gulf Coast (<i>Herpailurus (=Felis) yagouaroundi cacomitli</i>)	Endangered	Mammal Terrestrial	No
Jaguarundi, Sinaloa (<i>Herpailurus (=Felis) yagouaroundi tolteca</i>)	Endangered	Mammal Terrestrial	No
Ocelot (<i>Leopardus (=Felis) pardalis</i>)	Endangered	Mammal Terrestrial	No
Whale, Finback (<i>Balaenoptera physalus</i>)	Endangered	Marine mml Saltwater	No

Texas (60) species:

Whale, Humpback
(*Megaptera novaeangliae*)
Ladies'-tresses, Navasota
(*Spiranthes parksii*)
Wild-rice, Texas
(*Zizania texana*)
Sea turtle, green
(*Chelonia mydas*)
Sea turtle, hawksbill
(*Eretmochelys imbricata*)
Sea turtle, Kemp's ridley
(*Lepidochelys kempii*)
Sea turtle, leatherback
(*Dermochelys coriacea*)
Sea turtle, loggerhead
(*Caretta caretta*)
Snake, Concho Water
(*Nerodia paucimaculata*)

Utah (5) species:

Cactus, Wright Fishhook
(*Sclerocactus wrightiae*)
Milk-vetch, Heliotrope
(*Astragalus montii*)
Townsendia, Last Chance
(*Townsendia aprica*)
Trout, Lahontan Cutthroat
(*Oncorhynchus clarki henshawi*)
Prairie Dog, Utah
(*Cynomys parvidens*)

Vermont (3) species:

Mussel, Dwarf Wedge
(*Alasmidonta heterodon*)
Milk-vetch, Jesup's
(*Astragalus robbinsii* var. *jesupi*)
Bat, Indiana
(*Myotis sodalis*)

Virginia (59) species:

Salamander, Shenandoah
(*Plethodon shenandoah*)
Plover, Piping
(*Charadrius melodus*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Marine mml	No
	Saltwater	
Endangered	Monocot	No
	Terrestrial	
Endangered	Monocot	Yes
	Freshwater	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Threatened	Reptile	No
	Saltwater	
Threatened	Reptile	Yes
	Freshwater, Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Dicot	No
	Terrestrial	
Threatened	Dicot	Yes
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Fish	No
	Freshwater	
Threatened	Mammal	No
	Terrestrial, Subterraneous	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bivalve	No
	Freshwater	
Endangered	Dicot	No
	Terrestrial	
Endangered	Mammal	Yes
	Subterraneous, Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Amphibian	No
	Freshwater, Terrestrial	
Endangered	Bird	Yes
	Terrestrial	

Virginia

(59) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Mussel, Cumberland Combshell (<i>Epioblasma brevidens</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Dwarf Wedge (<i>Alasmidonta heterodon</i>)	Endangered	Bivalve Freshwater	No
Mussel, Fine-rayed Pigtoe (<i>Fusconaia cuneolus</i>)	Endangered	Bivalve Freshwater	No
Mussel, Oyster (<i>Epioblasma capsaeformis</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Shiny Pigtoe (<i>Fusconaia cor</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Appalachian Monkeyface (<i>Quadrula sparsa</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Birdwing (<i>Conradilla caelata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cracking (<i>Hemistena lata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cumberland Bean (<i>Villosa trabalis</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cumberland Monkeyface (<i>Quadrula intermedia</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Dromedary (<i>Dromus dromas</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Little-wing (<i>Pegias fabula</i>)	Endangered	Bivalve Freshwater	No
Purple Bean (<i>Villosa perpurpurea</i>)	Endangered	Bivalve Freshwater	Yes
Rabbitsfoot, Rough (<i>Quadrula cylindrica strigillata</i>)	Endangered	Bivalve Freshwater	Yes
Riffleshell, Tan (<i>Epioblasma florentina walkeri</i> (=E. walkeri))	Endangered	Bivalve Freshwater	No
Spinymussel, James River (<i>Pleuroberma collina</i>)	Endangered	Bivalve Freshwater	No
Isopod, Lee County Cave (<i>Lirceus usdagalun</i>)	Endangered	Crustacean Freshwater	No
Isopod, Madison Cave (<i>Antrolana lira</i>)	Threatened	Crustacean Freshwater	No
Amaranth, Seabeach (<i>Amaranthus pumilus</i>)	Threatened	Dicot Coastal (neritic)	No
Birch, Virginia Round-leaf (<i>Betula uber</i>)	Threatened	Dicot Floodplain	No

Virginia

(59) species:

	<u>Taxa</u>	<u>Critical Habitat</u>
Bittercress, Small-anthered (<i>Cardamine micranthera</i>)	Endangered Dicot Terrestrial	No
Chaffseed, American (<i>Schwalbea americana</i>)	Endangered Dicot Terrestrial	No
Coneflower, Smooth (<i>Echinacea laevigata</i>)	Endangered Dicot Terrestrial	No
Harperella (<i>Ptilimnium nodosum</i>)	Endangered Dicot Freshwater	No
Joint-vetch, Sensitive (<i>Aeschynomene virginica</i>)	Threatened Dicot Terrestrial, Brackish	No
Rock-cress, Shale Barren (<i>Arabis serotina</i>)	Endangered Dicot Terrestrial	No
Sneezeweed, Virginia (<i>Helenium virginicum</i>)	Threatened Dicot Vernal pool	No
Spiraea, Virginia (<i>Spiraea virginiana</i>)	Threatened Dicot Terrestrial	No
Sumac, Michaux's (<i>Rhus michauxii</i>)	Endangered Dicot Terrestrial	No
Sunflower, Schweinitz's (<i>Helianthus schweinitzii</i>)	Endangered Dicot Terrestrial	No
Chub, Slender (<i>Erimystax cahni</i>)	Threatened Fish Freshwater	Yes
Chub, Spottfin (<i>Erimonax monachus</i>)	Threatened Fish Freshwater	Yes
Dace, Blackside (<i>Phoxinus cumberlandensis</i>)	Threatened Fish Freshwater	No
Logperch, Roanoke (<i>Percina rex</i>)	Endangered Fish Freshwater	No
Madtom, Yellowfin (<i>Noturus flavipinnis</i>)	Threatened Fish Freshwater	Yes
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered Fish Saltwater, Freshwater	No
Snail, Virginia Fringed Mountain (<i>Polygyriscus virginianus</i>)	Endangered Gastropod Terrestrial	No
Beetle, Northeastern Beach Tiger (<i>Cicindela dorsalis dorsalis</i>)	Threatened Insect Terrestrial	No
Butterfly, Mitchell's Satyr (<i>Neonympha mitchellii mitchellii</i>)	Endangered Insect Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered Mammal Subterranean, Terrestrial	Yes

Virginia

(59) species:

Bat, Virginia Big-eared (<i>Corynorhinus (=Plecotus) townsendii virginianus</i>)
Squirrel, Delmarva Peninsula Fox (<i>Sciurus niger cinereus</i>)
Squirrel, Virginia Northern Flying (<i>Glaucomys sabrinus fuscus</i>)
Whale, Finback (<i>Balaenoptera physalus</i>)
Whale, Humpback (<i>Megaptera novaeangliae</i>)
Whale, northern right (<i>Eubalaena glacialis (incl. australis)</i>)
Bulrush, Northeastern (=Barbed Bristle) (<i>Scirpus ancistrochaetus</i>)
Orchid, Eastern Prairie Fringed (<i>Platanthera leucophaea</i>)
Pink, Swamp (<i>Helonias bullata</i>)
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)
Sea turtle, green (<i>Chelonia mydas</i>)
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)
Sea turtle, loggerhead (<i>Caretta caretta</i>)

Washington

(16) species:

Salmon, Chinook (Snake River Fall Run) (<i>Oncorhynchus (=Salmo) tshawytscha</i>)
Salmon, Chinook (Snake River spring/summer) (<i>Oncorhynchus (=Salmo) tshawytscha</i>)
Salmon, Chinook (Upper Columbia River Spring) (<i>Oncorhynchus (=Salmo) tshawytscha</i>)
Salmon, Sockeye (Snake River population) (<i>Oncorhynchus (=Salmo) nerka</i>)
Steelhead, (Middle Columbia River population) (<i>Oncorhynchus (=Salmo) mykiss</i>)
Steelhead, (Snake River Basin population) (<i>Oncorhynchus (=Salmo) mykiss</i>)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Mammal	Yes
	Terrestrial, Subterraneous	
Endangered	Mammal	No
	Terrestrial	
Endangered	Mammal	No
	Terrestrial	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	No
	Saltwater	
Endangered	Marine mml	Yes
	Saltwater	
Endangered	Monocot	No
	Terrestrial, Freshwater	
Threatened	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial, Freshwater	
Threatened	Monocot	No
	Terrestrial	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	
Threatened	Reptile	No
	Saltwater	
	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Fish	No
	Freshwater, Saltwater, Brackish	
Threatened	Fish	Yes
	Brackish, Saltwater, Freshwater	
Endangered	Fish	Yes
	Freshwater, Saltwater, Brackish	
Endangered	Fish	No
	Brackish, Saltwater, Freshwater	
Threatened	Fish	Yes
	Freshwater, Saltwater, Brackish	
Threatened	Fish	Yes
	Freshwater, Brackish, Saltwater	

Washington (16) species:

Steelhead, (Upper Columbia River population)
(Oncorhynchus (=Salmo) mykiss)
 Steelhead, Puget Sound
(Oncorhynchus mykiss)
 Trout, Bull
(Salvelinus confluentus)
 Trout, Bull (Columbia River population)
(Salvelinus confluentus)
 Trout, Bull (Klamath River population)
(Salvelinus confluentus)
 Rabbit, Pygmy
(Brachylagus idahoensis)
 Sea-lion, Steller (eastern)
(Eumetopias jubatus)
 Whale, Humpback
(Megaptera novaeangliae)
 Sea turtle, green
(Chelonia mydas)
 Sea turtle, leatherback
(Dermochelys coriacea)

West Virginia (11) species:

Salamander, Cheat Mountain
(Plethodon nettingi)
 Mucket, Pink (Pearlymussel)
(Lampsilis abrupta)
 Clover, Running Buffalo
(Trifolium stoloniferum)
 Harperella
(Ptilimnium nodosum)
 Rock-cress, Shale Barren
(Arabis serotina)
 Snail, Flat-spined Three-toothed
(Triodopsis platysayoides)
 Bat, Gray
(Myotis grisescens)
 Bat, Indiana
(Myotis sodalis)
 Bat, Virginia Big-eared
(Corynorhinus (=Plecotus) townsendii virginianus)
 Squirrel, Virginia Northern Flying
(Glaucomys sabrinus fuscus)
 Bulrush, Northeastern (=Barbed Bristle)
(Scirpus ancistrochaetus)

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Fish	Yes
	Brackish, Saltwater, Freshwater	
Threatened	Fish	No
Threatened	Fish	No
	Freshwater	
Threatened	Fish	Yes
	Freshwater	
Threatened	Fish	Yes
	Freshwater	
Endangered	Mammal	No
	Terrestrial	
Threatened	Marine mml	Yes
	Saltwater	
Endangered	Marine mml	No
	Saltwater	
Endangered	Reptile	No
	Saltwater	
Endangered	Reptile	Yes
	Saltwater	

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Amphibian	No
	Freshwater, Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Endangered	Dicot	No
	Terrestrial	
Endangered	Dicot	No
	Freshwater	
Endangered	Dicot	No
	Terrestrial	
Threatened	Gastropod	No
	Terrestrial	
Endangered	Mammal	No
	Subterranean, Terrestrial	
Endangered	Mammal	Yes
	Subterranean, Terrestrial	
Endangered	Mammal	Yes
	Terrestrial, Subterranean	
Endangered	Mammal	No
	Terrestrial	
Endangered	Monocot	No
	Terrestrial, Freshwater	

Wisconsin (15) species:

Crane, Whooping
(*Grus americana*)
Plover, Piping
(*Charadrius melodus*)
Warbler (=Wood), Kirtland's
(*Dendroica kirtlandii*)
Mussel, Winged Mapleleaf
(*Quadrula fragosa*)
Pearlymussel, Higgins' Eye
(*Lampsilis higginsii*)
Clover, Prairie Bush
(*Lespedeza leptostachya*)
Locoweed, Fassett's
(*Oxytropis campestris* var. *chartacea*)
Monkshood, Northern Wild
(*Aconitum noveboracense*)
Thistle, Pitcher's
(*Cirsium pitcheri*)
Butterfly, Karner Blue
(*Lycæides melissa samuelis*)
Dragonfly, Hine's Emerald
(*Somatochlora hineana*)
Lynx, Canada
(*Lynx canadensis*)
Wolf, Gray
(*Canis lupus*)
Iris, Dwarf Lake
(*Iris lacustris*)
Orchid, Eastern Prairie Fringed
(*Platanthera leucophaea*)

Wyoming (6) species:

Butterfly Plant, Colorado
(*Gaura neomexicana* var. *coloradensis*)
Yellowhead, Desert
(*Yermo xanthocephalus*)
Bear, Grizzly
(*Ursus arctos horribilis*)
Ferret, Black-footed
(*Mustela nigripes*)
Mouse, Preble's Meadow Jumping
(*Zapus hudsonius preblei*)
Wolf, Gray
(*Canis lupus*)

	<u>Taxa</u>	<u>Critical Habitat</u>
Endangered	Bird	Yes
	Terrestrial, Freshwater	
Endangered	Bird	Yes
	Terrestrial	
Endangered	Bird	No
	Terrestrial	
Endangered	Bivalve	No
	Freshwater	
Endangered	Bivalve	No
	Freshwater	
Threatened	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Threatened	Dicot	No
	Terrestrial	
Endangered	Insect	No
	Terrestrial	
Endangered	Insect	No
	Freshwater, Terrestrial	
Threatened	Mammal	No
	Terrestrial	
Endangered	Mammal	Yes
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	
Threatened	Monocot	No
	Terrestrial	

	<u>Taxa</u>	<u>Critical Habitat</u>
Threatened	Dicot	Yes
	Terrestrial	
Threatened	Dicot	Yes
	Terrestrial	
Threatened	Mammal	No
	Terrestrial	
Endangered	Mammal	No
	Terrestrial	
Threatened	Mammal	Yes
	Terrestrial	
Endangered	Mammal	Yes
	Terrestrial	