



Chapter 6

Climate Change

APPENDICES



Chapter 6 Appendices

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Appendix 6a. Results of Maryland's Climate Change Vulnerability Assessment for 265 Species of Greatest Conservation Need

Common Name	Scientific Name	Status Group ¹	Climate Change Vulnerability Index (CCVI)
Flatworms			
A planarian	<i>Paraplanaria dactyligera</i>	B	Extremely Vulnerable
A planarian	<i>Phagocata dissimilis sp. nov.</i>	A	Moderately Vulnerable
A planarian	<i>Phagocata projecta sp. nov.</i>	A	Insufficient Evidence
A planarian	<i>Phagocata virilis</i>	A	Extremely Vulnerable
A planarian	<i>Procotyla typhlops</i>	A	Extremely Vulnerable
A planarian	<i>Sphalloplana buchanani</i>	A	Insufficient Evidence
A planarian	<i>Sphalloplana cava sp. nov.</i>	A	Insufficient Evidence
A planarian	<i>Sphalloplana pricei</i>	A	Insufficient Evidence
A planarian	<i>Sphalloplana sp 1</i>	A	Extremely Vulnerable
Hoffmaster's cave planarian	<i>Sphalloplana hoffmasteri</i>	A	Moderately Vulnerable
Freshwater Mussels			
Atlantic spike	<i>Elliptio producta</i>	A	Highly Vulnerable
Brook floater	<i>Alasmidonta varicosa</i>	A	Extremely Vulnerable
Creeper	<i>Strophitus undulatus</i>	B	Highly Vulnerable
Dwarf wedgemussel	<i>Alasmidonta heterodon</i>	A	Extremely Vulnerable
Eastern pondmussel	<i>Ligumia nasuta</i>	A	Extremely Vulnerable
Green floater	<i>Lasmigona subviridis</i>	A	Extremely Vulnerable
Tidewater mucket	<i>Leptodea ochracea</i>	A	Extremely Vulnerable
Triangle floater	<i>Alasmidonta undulata</i>	A	Extremely Vulnerable
Snails			
Angular disc	<i>Discus catskillensis</i>	A	Extremely Vulnerable
Appalachian springsnail	<i>Fontigens bottimeri</i>	A	Presumed Stable
Blue ridge springsnail	<i>Fontigens orolibas</i>	A	Moderately Vulnerable
Cherrystone drop snail	<i>Hendersonia occulta</i>	B	Extremely Vulnerable
Spruce knob threetooth	<i>Triodopsis picea</i>	A	Extremely Vulnerable
Striped whitelip	<i>Webbhelix multilineata</i>	A	Extremely Vulnerable
Crustaceans and Allies			
Acuminate crayfish	<i>Cambarus acuminatus</i>	B	Presumed Stable
Allegheny cave amphipod	<i>Stygobromus allegheniensis</i>	B	Presumed Stable
Allegheny spring isopod	<i>Caecidotea alleghenyensis</i>	A	Presumed Stable
Appalachian cave spider	<i>Porhomma cavernicola</i>	B	Presumed Stable
Barrelville amphipod	<i>Stygobromus sp 5</i>	A	Presumed Stable
Biggers' cave amphipod	<i>Stygobromus biggersi</i>	A	Presumed Stable



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Capital Area groundwater amphipod	<i>Stygobromus sextarius</i>	A	Presumed Stable
Cecil groundwater amphipod	<i>Stygobromus caecilius</i>	A	Presumed Stable
Devils Hole cave amphipod	<i>Stygobromus sp 6</i>	A	Presumed Stable
Feller's groundwater amphipod	<i>Stygobromus felleri</i>	A	Presumed Stable
Franz's cave amphipod	<i>Stygobromus franzi</i>	A	Presumed Stable
Franz's cave isopod	<i>Caecidotea franzi</i>	A	Presumed Stable
Friendly cave amphipod	<i>Stygobromus amicus</i>	A	Presumed Stable
Greenbrier cave amphipod	<i>Stygobromus emarginatus</i>	A	Presumed Stable
Holsinger's cave isopod	<i>Caecidotea holsingeri</i>	A	Presumed Stable
Maus' cave isopod	<i>Caecidotea mausi</i>	A	Presumed Stable
Pennsylvania cave crangonyctid	<i>Crangonyx dearolfi</i>	A	Presumed Stable
Pizzini's amphipod	<i>Stygobromus pizzinii</i>	A	Presumed Stable
Prettyboy groundwater amphipod	<i>Stygobromus paxillus</i>	A	Presumed Stable
Rappahannock spring amphipod	<i>Stygobromus foliatus</i>	A	Presumed Stable
Rock Creek groundwater amphipod	<i>Stygobromus kenki</i>	A	Presumed Stable
Roundtop amphipod	<i>Stygobromus sp 14</i>	A	Presumed Stable
Shenandoah Valley cave amphipod	<i>Stygobromus gracilipes</i>	A	Presumed Stable
Tidewater amphipod	<i>Stygobromus indentatus</i>	A	Presumed Stable
Vandel's cave isopod	<i>Caecidotea vandeli</i>	A	Presumed Stable
Dragonflies and Damselflies			
Allegheny river cruiser	<i>Macromia alleghaniensis</i>	B	Presumed Stable
Appalachian jewelwing	<i>Calopteryx angustipennis</i>	A	Presumed Stable
Appalachian snaketail	<i>Ophiogomphus incurvatus incurvatus</i>	A	Presumed Stable
Arrowhead spiketail	<i>Cordulegaster obliqua</i>	B	Presumed Stable
Atlantic bluet	<i>Enallagma doubledayi</i>	A	Presumed Stable
Banded spiketail	<i>Cordulegaster obliqua fasciata</i>	A	Presumed Stable
Black-tipped darner	<i>Aeshna tuberculifera</i>	B	Presumed Stable
Blackwater bluet	<i>Enallagma weewa</i>	B	Presumed Stable
Brush-tipped emerald	<i>Somatochlora walshii</i>	A	Presumed Stable
Burgundy bluet	<i>Enallagma dubium</i>	A	Presumed Stable
Canada darner	<i>Aeshna canadensis</i>	B	Presumed Stable
Chesapeake snaketail	<i>Ophiogomphus sp 1</i>	A	Presumed Stable
Coppery emerald	<i>Somatochlora georgiana</i>	A	Presumed Stable
Crimson-ringed whiteface	<i>Leucorrhinia glacialis</i>	A	Presumed Stable



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Double-ringed pennant	<i>Celithemis verna</i>	B	Presumed Stable
Duckweed firetail	<i>Telebasis byersi</i>	A	Presumed Stable
Dusky clubtail	<i>Gomphus spicatus</i>	A	Presumed Stable
Eastern ringtail	<i>Erpetogomphus designatus</i>	B	Presumed Stable
Elfin skimmer	<i>Nannothemis bella</i>	A	Presumed Stable
Fine-lined emerald	<i>Somatochlora filosa</i>	B	Presumed Stable
Frosted whiteface	<i>Leucorrhinia frigida</i>	A	Presumed Stable
Furtive forktail	<i>Ischnura prognata</i>	A	Presumed Stable
Green-faced clubtail	<i>Gomphus viridifrons</i>	A	Moderately Vulnerable
Green-striped darner	<i>Aeshna verticalis</i>	B	Presumed Stable
Harpoon clubtail	<i>Gomphus desertus</i>	A	Presumed Stable
Hudsonian whiteface	<i>Leucorrhinia hudsonica</i>	A	Presumed Stable
Laura's clubtail	<i>Stylurus laurae</i>	B	Presumed Stable
Little blue dragonlet	<i>Erythrodiplax minuscula</i>	A	Presumed Stable
Maine snaketail	<i>Ophiogomphus mainensis fastigiatus</i>	A	Presumed Stable
Martha's pennant	<i>Celithemis martha</i>	A	Presumed Stable
Midland clubtail	<i>Gomphus fraternus</i>	B	Presumed Stable
Mustached clubtail	<i>Gomphus adelphus</i>	A	Presumed Stable
Northern bluet	<i>Enallagma annexum</i>	A	Presumed Stable
Northern pygmy clubtail	<i>Lanthus parvulus</i>	B	Presumed Stable
Ocellated darner	<i>Boyeria grafiana</i>	A	Presumed Stable
Pale bluet	<i>Enallagma pallidum</i>	A	Presumed Stable
Pygmy snaketail	<i>Ophiogomphus howei</i>	A	Presumed Stable
Rainbow bluet	<i>Enallagma antennatum</i>	A	Presumed Stable
Rapids clubtail	<i>Gomphus quadricolor</i>	A	Moderately Vulnerable
Red-veined pennant	<i>Celithemis bertha</i>	A	Presumed Stable
Robust baskettail	<i>Epitheca spinosa</i>	A	Presumed Stable
Rusty snaketail	<i>Ophiogomphus rupinsulensis</i>	B	Presumed Stable
Sable clubtail	<i>Gomphus rogersi</i>	B	Presumed Stable
Selys' sundragon	<i>Helocordulia selysii</i>	B	Presumed Stable
Ski-tailed emerald	<i>Somatochlora elongata</i>	B	Presumed Stable
Southern pygmy clubtail	<i>Lanthus vernalis</i>	B	Presumed Stable
Southern sprite	<i>Nehalennia integricollis</i>	A	Presumed Stable
Sparkling jewelwing	<i>Calopteryx dimidiata</i>	B	Presumed Stable
Sphagnum sprite	<i>Nehalennia gracilis</i>	B	Presumed Stable
Spine-crowned clubtail	<i>Gomphus abbreviatus</i>	A	Presumed Stable
Splendid clubtail	<i>Gomphus lineatifrons</i>	A	Presumed Stable
Spring blue darner	<i>Rhionaeschna mutata</i>	A	Presumed Stable



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Stripe-winged baskettail	<i>Epitheca costalis</i>	A	Presumed Stable
Superb jewelwing	<i>Calopteryx amata</i>	A	Presumed Stable
Taper-tailed darner	<i>Gomphaeschna antilope</i>	B	Presumed Stable
Treetop emerald	<i>Somatochlora provocans</i>	A	Presumed Stable
Tule bluet	<i>Enallagma carunculatum</i>	A	Presumed Stable
White corporal	<i>Ladona exusta</i>	A	Presumed Stable
Yellow-sided skimmer	<i>Libellula flavida</i>	B	Presumed Stable
Zebra clubtail	<i>Stylurus scudderii</i>	A	Presumed Stable
Beetles			
A cave beetle	<i>Pseudanopthalmus sp 15</i>	A	Moderately Vulnerable
A tenebrionid beetle	<i>Helops cisteloides</i>	A	Highly Vulnerable
A tenebrionid beetle	<i>Schoenicus puberulus</i>	A	Highly Vulnerable
Appalachian tiger beetle	<i>Cicindela ancocisconensis</i>	A	Extremely Vulnerable
Eastern Pinebarrens tiger beetle	<i>Cicindela abdominalis</i>	A	Moderately Vulnerable
Ghost tiger beetle	<i>Cicindela lepida</i>	A	Extremely Vulnerable
Northeastern beach tiger beetle	<i>Cicindela dorsalis dorsalis</i>	A	Extremely Vulnerable
Northern Barrens tiger beetle	<i>Cicindela patruela</i>	A	Highly Vulnerable
Puritan tiger beetle	<i>Cicindela puritana</i>	A	Extremely Vulnerable
Seth forest water scavenger beetle	<i>Hydrochus spangleri</i>	A	Extremely Vulnerable
Six-banded longhorn beetle	<i>Dryobius sexnotatus</i>	A	Moderately Vulnerable
Splendid tiger beetle	<i>Cicindela splendida</i>	A	Highly Vulnerable
White tiger beetle	<i>Cicindela dorsalis media</i>	A	Extremely Vulnerable
Bees, Wasps, and Ants			
A cuckoo bee	<i>Nomada augustina</i>	B	Insufficient Evidence
A cuckoo bee	<i>Nomada rubicunda</i>	B	Insufficient Evidence
A hairy-tongue bee	<i>Lasioglossum arantium</i>	B	Insufficient Evidence
A hairy-tongue bee	<i>Lasioglossum nymphale</i>	B	Insufficient Evidence
A mason bee	<i>Osmia chalybea</i>	B	Insufficient Evidence
An oil-collecting bee	<i>Macropis ciliata</i>	A	Insufficient Evidence
Pearly-banded bee	<i>Nomia manei</i>	B	Insufficient Evidence
Stoneflies, Mayflies, and Caddisflies			
A Scalaris trichopteran	<i>Hydropsyche brunneipennis</i>	B	Insufficient Evidence
Other Insects			
Eastern sedge barrens leafhopper	<i>Limotettix minuendus</i>	A	Extremely Vulnerable
Pitcher-plant mosquito	<i>Wyeomyia smithii</i>	B	Extremely Vulnerable



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Butterflies and Moths			
A noctuid moth	<i>Zale curema</i>	A	Extremely Vulnerable
A noctuid moth	<i>Meropleon titan</i>	B	Highly Vulnerable
A noctuid moth	<i>Melanapamea mixta</i>	A	Insufficient Evidence
Atlantis fritillary	<i>Speyeria atlantis</i>	A	Highly Vulnerable
Baltimore checkerspot	<i>Euphydryas phaeton</i>	B	Extremely Vulnerable
Bog copper	<i>Lycaena epixanthe</i>	A	Extremely Vulnerable
Carolina satyr	<i>Hermeuptychia sosybius</i>	B	Moderately Vulnerable
Chermock's mulberry wing	<i>Poanes massasoit chermocki</i>	A	Extremely Vulnerable
Compton tortoiseshell	<i>Nymphalis vaualbum</i>	A	Highly Vulnerable
Curved halter moth	<i>Capis curvata</i>	A	Insufficient Evidence
Cypress sphinx moth	<i>Isoparce cupressi</i>	A	Extremely Vulnerable
Early hairstreak	<i>Erora laeta</i>	A	Highly Vulnerable
Edwards' hairstreak	<i>Satyrium edwardsii</i>	A	Highly Vulnerable
Franck's sphinx	<i>Sphinx franckii</i>	A	Moderately Vulnerable
Frosted elfin	<i>Callophrys irus</i>	A	Extremely Vulnerable
Giant swallowtail	<i>Papilio cresphontes</i>	B	Presumed Stable
Gray comma	<i>Polygonia progne</i>	B	Presumed Stable
Great purple hairstreak	<i>Atlides halesus</i>	A	Moderately Vulnerable
Harris's checkerspot	<i>Chlosyne harrisii</i>	B	Extremely Vulnerable
Hickory hairstreak	<i>Satyrium caryaevorum</i>	A	Presumed Stable
Hoary elfin	<i>Callophrys polios</i>	A	Extremely Vulnerable
King's hairstreak	<i>Satyrium kingi</i>	A	Highly Vulnerable
Leonard's skipper	<i>Hesperia leonardus</i>	B	Moderately Vulnerable
Mottled duskywing	<i>Erynnis martialis</i>	A	Moderately Vulnerable
Northern hairstreak	<i>Satyrium favonius ontario</i>	A	Presumed Stable
Northern metalmark	<i>Calephelis borealis</i>	A	Extremely Vulnerable
Olympia marble	<i>Euchloe olympia</i>	B	Extremely Vulnerable
Palamedes swallowtail	<i>Papilio palamedes</i>	A	Extremely Vulnerable
Pepper and salt skipper	<i>Amblyscirtes hegon</i>	B	Highly Vulnerable
Pine barrens zanclognatha	<i>Zanclognatha martha</i>	B	Extremely Vulnerable
Pink-edged sulphur	<i>Colias interior</i>	A	Extremely Vulnerable
Rare skipper	<i>Problema bulenta</i>	A	Extremely Vulnerable
Silvery blue	<i>Glaucopsyche lygdamus</i>	B	Highly Vulnerable
Sinuous lytrosis	<i>Lytrosis sinuosa</i>	B	Insufficient Evidence
Southern grizzled skipper	<i>Pyrgus wyandot</i>	A	Extremely Vulnerable
Two-spotted skipper	<i>Euphyes bimacula</i>	A	Moderately Vulnerable
Venus flytrap cutworm	<i>Hemipachnobia subporphyrea</i>	A	Extremely Vulnerable



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West Virginia white	<i>Pieris virginiensis</i>	A	Highly Vulnerable
Fish			
American brook lamprey	<i>Lethenteron appendix</i>	A	Extremely Vulnerable
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	A	Presumed Stable
Banded sunfish	<i>Enneacanthus obesus</i>	B	Moderately Vulnerable
Blackbanded sunfish	<i>Enneacanthus chaetodon</i>	A	Highly Vulnerable
Bowfin	<i>Amia calva</i>	A	Moderately Vulnerable
Checkered sculpin	<i>Cottus sp 7</i>	A	Extremely Vulnerable
Chesapeake logperch	<i>Percina bimaculata</i>	A	Moderately Vulnerable
Flier	<i>Centrarchus macropterus</i>	A	Presumed Stable
Glassy darter	<i>Etheostoma vitreum</i>	A	Presumed Stable
Hickory shad	<i>Alosa mediocris</i>	B	Presumed Stable
Ironcolor shiner	<i>Notropis chalybaeus</i>	A	Presumed Stable
Mud sunfish	<i>Acantharchus pomotis</i>	B	Presumed Stable
Pearl dace	<i>Margariscus margarita</i>	A	Extremely Vulnerable
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	A	Moderately Vulnerable
Spotfin killifish	<i>Fundulus luciae</i>	B	Presumed Stable
Stonecat	<i>Noturus flavus</i>	A	Extremely Vulnerable
Stripeback darter	<i>Percina notogramma</i>	A	Presumed Stable
Striped shiner	<i>Luxilus chrysocephalus</i>	A	Presumed Stable
Swamp darter	<i>Etheostoma fusiforme</i>	B	Moderately Vulnerable
Amphibians			
Barking treefrog	<i>Hyla gratiosa</i>	A	Extremely Vulnerable
Common mudpuppy	<i>Necturus maculosus</i>	A	Extremely Vulnerable
Eastern hellbender	<i>Cryptobranchus alleganiensis</i>	A	Extremely Vulnerable
Eastern mud salamander	<i>Pseudotriton montanus</i>	B	Extremely Vulnerable
Eastern narrow-mouthed toad	<i>Gastrophryne carolinensis</i>	A	Highly Vulnerable
Eastern tiger salamander	<i>Ambystoma tigrinum</i>	B	Highly Vulnerable
Green salamander	<i>Aneides aeneus</i>	A	Extremely Vulnerable
Mountain chorus frog	<i>Pseudacris brachyphona</i>	A	Extremely Vulnerable
Wehrle's salamander	<i>Plethodon wehrlei</i>	B	Extremely Vulnerable
Reptiles			
Bog turtle	<i>Glyptemys mühlenbergii</i>	A	Extremely Vulnerable
Eastern spiny softshell	<i>Apalone spinifera</i>	A	Extremely Vulnerable
Kemp's ridley seaturtle	<i>Lepidochelys kempii</i>	A	Vulnerable WWF*
Loggerhead seaturtle	<i>Caretta caretta</i>	A	Vulnerable WWF*
Mountain earthsnake	<i>Virginia valeriae pulchra</i>	A	Presumed Stable



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Northern coal skink	<i>Plestiodon anthracinus</i>	A	Moderately Vulnerable
Northern map turtle	<i>Graptemys geographica</i>	A	Extremely Vulnerable
Plain-bellied watersnake	<i>Nerodia erythrogaster</i>	B	Moderately Vulnerable
Rainbow snake	<i>Farancia erythrogramma</i>	A	Highly Vulnerable
Wood turtle	<i>Glyptemys insculpta</i>	A	Moderately Vulnerable
Birds			
Alder flycatcher	<i>Empidonax alnorum</i>	B	Presumed Stable
American bittern	<i>Botaurus lentiginosus</i>	A	Highly Vulnerable
American peregrine falcon	<i>Falco peregrinus anatum</i>	B	Presumed Stable
Barn owl	<i>Tyto alba</i>	B	Presumed Stable
Black rail	<i>Laterallus jamaicensis</i>	A	Highly Vulnerable
Black skimmer	<i>Rynchops niger</i>	A	Highly Vulnerable
Blue-winged teal	<i>Anas discors</i>	B	Highly Vulnerable
Brown pelican	<i>Pelecanus occidentalis</i>	A	Highly Vulnerable
Coastal Plain swamp sparrow	<i>Melospiza georgiana nigrescens</i>	A	Moderately Vulnerable
Common gallinule	<i>Gallinula galeata</i>	B	Presumed Stable
Common merganser	<i>Mergus merganser</i>	B	Increase Likely
Common nighthawk	<i>Chordeiles minor</i>	B	Presumed Stable
Common tern	<i>Sterna hirundo</i>	A	Highly Vulnerable
Forster's tern	<i>Sterna forsteri</i>	B	Highly Vulnerable
Gadwall	<i>Anas strepera</i>	B	Moderately Vulnerable
Golden eagle	<i>Aquila chrysaetos</i>	B	Presumed Stable
Golden-winged warbler	<i>Vermivora chrysoptera</i>	B	Presumed Stable
Greater yellowlegs	<i>Tringa melanoleuca</i>	B	Presumed Stable
Gull-billed tern	<i>Gelochelidon nilotica</i>	A	Moderately Vulnerable
Henslow's sparrow	<i>Ammodramus henslowii</i>	B	Presumed Stable
King rail	<i>Rallus elegans</i>	B	Moderately Vulnerable
Laughing gull	<i>Leucophaeus atricilla</i>	A	Moderately Vulnerable
Least bittern	<i>Ixobrychus exilis</i>	B	Moderately Vulnerable
Least tern	<i>Sternula antillarum</i>	B	Moderately Vulnerable
Lesser yellowlegs	<i>Tringa flavipes</i>	A	Presumed Stable
Loggerhead shrike	<i>Lanius ludovicianus</i>	A	Presumed Stable
Long-eared owl	<i>Asio otus</i>	A	Presumed Stable
Mourning warbler	<i>Geothlypis philadelphia</i>	A	Presumed Stable
Nashville warbler	<i>Oreothlypis ruficapilla</i>	A	Presumed Stable
Nelson's sparrow	<i>Ammodramus nelsoni</i>	A	Presumed Stable
Northern goshawk	<i>Accipiter gentilis</i>	A	Presumed Stable



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Northern harrier	<i>Circus cyaneus</i>	B	Moderately Vulnerable
Northern saw-whet owl	<i>Aegolius acadicus</i>	A	Presumed Stable
Northern waterthrush	<i>Parkesia noveboracensis</i>	B	Presumed Stable
Pied-billed grebe	<i>Podilymbus podiceps</i>	B	Presumed Stable
Pine siskin	<i>Spinus pinus</i>	B	Extremely Vulnerable
Piping plover	<i>Charadrius melodus</i>	A	Highly Vulnerable
Roseate tern	<i>Sterna dougallii</i>	A	Presumed Stable
Royal tern	<i>Thalasseus maximus</i>	A	Moderately Vulnerable
Ruddy turnstone	<i>Arenaria interpres</i>	B	Presumed Stable
Rusty blackbird	<i>Euphagus carolinus</i>	B	Presumed Stable
Saltmarsh sparrow	<i>Ammodramus caudacutus</i>	B	Highly Vulnerable
Sandwich tern	<i>Thalasseus sandvicensis</i>	A	Moderately Vulnerable
Sedge wren	<i>Cistothorus platensis</i>	A	Moderately Vulnerable
Sharp-shinned hawk	<i>Accipiter striatus</i>	B	Presumed Stable
Short-eared owl	<i>Asio flammeus</i>	A	Presumed Stable
Sora	<i>Porzana carolina</i>	A	Presumed Stable
Swainson's warbler	<i>Limnothlypis swainsonii</i>	A	Presumed Stable
Upland sandpiper	<i>Bartramia longicauda</i>	A	Moderately Vulnerable
Whimbrel	<i>Numenius phaeopus</i>	B	Moderately Vulnerable
White-winged scoter	<i>Melanitta fusca</i>	B	Vulnerable**
Wilson's plover	<i>Charadrius wilsonia</i>	A	Highly Vulnerable
Winter wren	<i>Troglodytes troglodytes</i>	B	Presumed Stable
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	A	Presumed Stable
Mammals			
Allegheny woodrat	<i>Neotoma magister</i>	A	Highly Vulnerable
Appalachian cottontail	<i>Sylvilagus obscurus</i>	A	Moderately Vulnerable
Delmarva fox squirrel	<i>Sciurus niger cinereus</i>	A	Moderately Vulnerable
Eastern small-footed myotis	<i>Myotis leibii</i>	A	Moderately Vulnerable
Eastern spotted skunk	<i>Spilogale putorius</i>	A	Increase Likely
Indiana myotis	<i>Myotis sodalis</i>	A	Moderately Vulnerable
Least weasel	<i>Mustela nivalis</i>	B	Presumed Stable
Little brown myotis	<i>Myotis lucifugus</i>	A	Moderately Vulnerable
Long-tailed shrew	<i>Sorex dispar</i>	B	Highly Vulnerable
Northern myotis	<i>Myotis septentrionalis</i>	A	Moderately Vulnerable
Smoky shrew	<i>Sorex fumeus</i>	B	Moderately Vulnerable
Southern pygmy shrew	<i>Sorex hoyi winnemana</i>	B	Highly Vulnerable
Southern rock vole	<i>Microtus chrotorrhinus carolinensis</i>	A	Extremely Vulnerable



Common Name	Scientific Name	Status Group ¹	Climate Change Vulnerability Index (CCVI)
Southern water shrew	<i>Sorex palustris punctulatus</i>	A	Extremely Vulnerable
Tricolored bat	<i>Perimyotis subflavus</i>	A	Moderately Vulnerable

¹ A = Highest conservation status, based on both Global and State conservation status

B = High conservation status, based on both Global and State conservation status

*Hawkes et al. 2009

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Appendix 6b. Results of Maryland's Climate Change Vulnerability Assessment for Globally Rare Plants

Common Name	Scientific Name	Global Rank	State Rank	Climate Change Vulnerability Index (CCVI)
Appalachian Blue Violet	<i>Viola appalachiensis</i>	G3	S2	Presumed Stable
Auricled Gerardia	<i>Agalinis auriculata</i>	G3	S1	Presumed Stable
Box Huckleberry	<i>Gaylussacia brachycera</i>	G3	S1	Highly Vulnerable
Canby's Bulrush	<i>Schoenoplectus etuberculatus</i>	G3G4	S1	Extremely Vulnerable
Canby's Dropwort	<i>Oxypolis canbyi</i>	G2	S1	Extremely Vulnerable
Canby's Mountain Lover	<i>Paxistima canbyi</i>	G2	S1	Highly Vulnerable
Chapman's Redtop	<i>Tridens flavus var. chapmanii</i>	G5T3	S1	Extremely Vulnerable
Coville's Phacelia	<i>Phacelia covillei</i>	G3	S2	Extremely Vulnerable
Creeping St. John's-wort	<i>Hypericum adpressum</i>	G3	S1	Extremely Vulnerable
Cypress-knee Sedge	<i>Carex decomposita</i>	G3	S1	Highly Vulnerable
Darlington's Spurge	<i>Euphorbia purpurea</i>	G3	S1	Extremely Vulnerable
Dwarf Trillium	<i>Trillium pusillum var. virginianum</i>	G3T2	S2	Moderately Vulnerable
Ginseng	<i>Panax quinquefolius</i>	G3G4	S2S3	Presumed Stable
Harperella	<i>Ptilimnium nodosum</i>	G2	S1	Highly Vulnerable
Harper's Fimbristylis	<i>Fimbristylis perpusilla</i>	G2	S2	Extremely Vulnerable
Jacob's Ladder	<i>Polemonium vanbruntiae</i>	G3G4	S2	Extremely Vulnerable
Kate's-mountain Clover	<i>Trifolium virginicum</i>	G3	S2S3	Presumed Stable
Long's Bittercress	<i>Cardamine longii</i>	G3	S1	Moderately Vulnerable
Marsh Wild Senna	<i>Chamaecrista fasciculatus var. macrosperma</i>	G5T3	S1	Highly Vulnerable
Maryland Bur-marigold	<i>Bidens bidentoides var. mariana</i>	G3T3	S3.1	Presumed Stable
Mountain Pimpernel	<i>Taenidia montana</i>	G3	S2	Presumed Stable
Nantucket Shadbush	<i>Amelanchier nantucketensis</i>	G3Q	S1	Highly Vulnerable
New Jersey Rush	<i>Juncus caesariensis</i>	G2	S1	Extremely Vulnerable
Nodding Pogonia	<i>Triphora trianthophora</i>	G3G4	S1	Presumed Stable
Northeastern Bulrush	<i>Scirpus ancistrochaetus</i>	G3	S1	Extremely Vulnerable
Nottoway's Brome	<i>Bromus nottowayanus</i>	G3G5	S3S4	Presumed Stable
Parker's Pipewort	<i>Eriocaulon parkeri</i>	G3	S2	Extremely Vulnerable
Pondspice	<i>Litsea aestivalis</i>	G3	S1	Extremely Vulnerable
Pursh's Ruellia	<i>Ruellia purshiana</i>	G3	S1	Highly Vulnerable
Riverbank Goldenrod	<i>Solidago simplex var. racemosa</i>	G5T3?	S1	Highly Vulnerable
Rock Skullcap	<i>Scutellaria saxatilis</i>	G3	S1	Presumed Stable
Rose Coreopsis	<i>Coreopsis rosea</i>	G3	S1	Extremely Vulnerable
Sand Grape	<i>Vitus rupestris</i>	G3	S1	Extremely Vulnerable
Sandplain Gerardia	<i>Agalinis acuta</i>	G1	S1	Extremely Vulnerable
Seabeach Amaranth	<i>Amaranthus pumilus</i>	G2	S1	Moderately Vulnerable
Seaside Alder	<i>Alnus maritima</i>	G3	S3.1	Highly Vulnerable
Seaside Knotweed	<i>Polygonum glaucum</i>	G3	S1	Highly Vulnerable
Sensitive Joint-vetch	<i>Aeschynomene virginica</i>	G2	S1	Extremely Vulnerable
Serpentine Aster	<i>Symphotrichum depauperatum</i>	G2	S1	Extremely Vulnerable
Shale-barren Primrose	<i>Oenothera argillicola</i>	G3G4	S3	Presumed Stable
Spreading Rockcress	<i>Arabis patens</i>	G3	S3	Highly Vulnerable



Common Name	Scientific Name	Global Rank	State Rank	Climate Change Vulnerability Index (CCVI)
Swamp Pink	<i>Helonias bullata</i>	G3	S2	Extremely Vulnerable
Sweet Pinesap	<i>Monotropsis odorata</i>	G3	S1	Moderately Vulnerable
Tall Larkspur	<i>Delphinium exaltatum</i>	G3	S1	Moderately Vulnerable
Torrey's Dropseed	<i>Muhlenbergia torreyana</i>	G3	S1	Extremely Vulnerable
Torrey's Mountain-mint	<i>Pycnanthemum torrei</i>	G2	S1	Highly Vulnerable
Virginia Mallow	<i>Sida hermaphrodita</i>	G3	S1	Presumed Stable



Appendix 6c. Climate Change Tree Atlas Adaptability Rankings for High Reliability Tree Models, Many of Which Occur in Maryland (adapted from Iverson et al. 2008; Landscape Change Research Group 2014)

Common Name	Scientific Name	Central Appalachians		Mid-Atlantic		Adapt ¹
		Mild Climate	Harsh Climate	Mild Climate	Harsh Climate	
American Beech	<i>Fagus grandifolia</i>	NC	LD	SD	LD	3.6
American Holly	<i>Ilex opaca</i>	NC	NC	NC	SD	4.5
Balsam Fir	<i>Abies balsamea</i>	SD	LD	LD	LD	2.7
Balsam Poplar	<i>Populus balsamifera</i>	n/a	n/a	SD	SD	4.0
Bigtooth Aspen	<i>Populus grandidentata</i>	LD	LD	NC	LD	5.1
Black Ash	<i>Fraxinus nigra</i>	LD	LD	LD	LD	1.7
Black Cherry	<i>Prunus serotina</i>	SD	LD	NC	LD	3.0
Black Gum	<i>Nyssa sylvatica</i>	NC	NC	SI	SI	5.9
Black Hickory	<i>Carya texana</i>	NC	LD	NH	NH	4.1
Black Oak	<i>Quercus velutina</i>	NC	LD	NC	LD	4.9
Black Spruce	<i>Picea mariana</i>	n/a	n/a	LD	LD	4.3
Chestnut Oak	<i>Quercus prinus</i>	NC	SD	NC	NC	6.1
Cucumbertree	<i>Magnolia acuminata</i>	NC	NC	SI	SD	3.6
Eastern White Pine	<i>Pinus strobus</i>	NC	LD	SD	LD	3.3
Eastern Hemlock	<i>Tsuga canadensis</i>	NC	SD	SD	LD	2.7
Flowering Dogwood	<i>Cornus florida</i>	NC	SD	SI	LD	5.0
Jack Pine	<i>Pinus banksiana</i>	n/a	n/a	LD	LD	5.2
Laurel Oak	<i>Quercus laurifolia</i>	n/a	n/a	NH	NH	4.5
Loblolly Pine	<i>Pinus taeda</i>	NC	LD	SI	LD	3.4
Longleaf Pine	<i>Pinus palustris</i>	n/a	n/a	NH	NH	4.2
Mockernut Hickory	<i>Carya tomentosa</i>	NC	SI	NC	LD	5.4
Mountain Maple	<i>Acer spicatum</i>	NC	NC	SD	LD	5.9
Northern Red Oak	<i>Quercus rubra</i>	NC	SD	NC	NC	5.4
Northern White-Cedar	<i>Thuja occidentalis</i>	SD	NC	LD	LD	4.2
Paper Birch	<i>Betula papyrifera</i>	SD	LD	LD	LD	3.4

¹ **Color coding system.** *Red*: species expected to adapt less successfully than the model indicates; *yellow*: species is expected to respond as the model indicates; *green*: species expected to adapt more successfully than the model indicates.



Common Name	Scientific Name	Central Appalachians		Mid-Atlantic		Adapt ¹
		Mild Climate	Harsh Climate	Mild Climate	Harsh Climate	
Pignut Hickory	<i>Carya glabra</i>	NC	NC	NC	SI	4.7
Pitch Pine	<i>Pinus rigida</i>	NC	NC	NC	NC	3.8
Pond Pine	<i>Pinus serotina</i>	n/a	n/a	LD	LD	2.4
Post Oak	<i>Quercus stellata</i>	LD	LD	LD	LD	5.7
Quaking Aspen	<i>Populus tremuloides</i>	LD	LD	SD	LD	4.7
Redbay	<i>Persea borbonia</i>	n/a	n/a	NH	n/a	6.3
Red Maple	<i>Acer rubrum</i>	NC	LD	NC	LD	8.5
Red Spruce	<i>Picea rubens</i>	NC	LD	LD	LD	2.9
Sassafras	<i>Sassafras albidum</i>	NC	SD	SI	SI	4.2
Scarlet Oak	<i>Quercus coccinea</i>	NC	SD	SI	SI	4.6
Shortleaf Pine	<i>Pinus echinata</i>	LD	LD	SI	LD	3.6
Slash Pine	<i>Pinus elliotii</i>	n/a	n/a	NH	NH	4.3
Striped Maple	<i>Acer pensylvanicum</i>	SD	LD	NC	LD	5.1
Sourwood	<i>Oxydendrum arboreum</i>	SI	SD	SI	NC	6.9
Southern Red Oak	<i>Quercus falcata</i> var. <i>falcata</i>	LD	LD	SI	LD	5.3
Sugar Maple	<i>Acer saccharum</i>	NC	LD	NC	SD	5.8
Swamp Tupelo	<i>Nyssa sylvatica</i> var. <i>biflora</i>	n/a	n/a	LD	SI	2.7
Sweetbay	<i>Magnolia virginiana</i>	n/a	n/a	SI	NC	5.1
Sweet Birch	<i>Betula lenta</i>	NC	LD	NC	LD	3.2
Sweetgum	<i>Liquidambar styraciflua</i>	LD	LD	SI	LD	4.1
Tamarack (native)	<i>Larix laricina</i>	SD	NC	SD	SD	3.1
Turkey Oak	<i>Quercus laevis</i>	n/a	n/a	NH	NH	6.0
Virginia Pine	<i>Pinus virginiana</i>	SI	NC	NC	NC	3.8
Water Oak	<i>Quercus nigra</i>	n/a	NH	NC	LD	3.7
White Ash	<i>Fraxinus americana</i>	NC	LD	NC	SD	2.7
White Oak	<i>Quercus alba</i>	NC	SI	NC	SI	6.1
Winged Elm	<i>Ulmus alata</i>	LD	LD	LD	LD	3.6
Yellow Birch	<i>Betula alleghaniensis</i>	SD	LD	NC	LD	3.4
Yellow Poplar	<i>Liriodendron tulipifera</i>	NC	LD	SI	SD	5.3

¹ **Color coding system.** Red: species expected to adapt less successfully than the model indicates; yellow: species is expected to respond as the model indicates; green: species expected to adapt more successfully than the model indicates.



Appendix 6d. Documentation of the Climate Change Effects on Maryland Invasive Species Council List of Selected Invasive Species of Concern in Maryland

Common Name	Scientific Name	Climate Change Reference
Insects		
Black Vine Weevil	<i>Otiorhynchus sulcatus</i>	Johnson et al. 2011
Emerald Ash Borer	<i>Agrilus planipennis</i>	DeSantis et al. 2013
Granulate Ambrosia Beetle	<i>Xylosandrus crassiusculus</i>	North Carolina State University 2011
Gypsy Moth	<i>Lymantria dispar</i>	Kretchun et al. 2014
Hemlock Woolly Adelgid	<i>Adelges tsugae</i>	Paradis et al. 2007
Japanese Beetle	<i>Popillia japonica</i>	Niziolek et al. 2012
Red Imported Fire Ant	<i>Solenopsis invicta</i>	Morrison et al. 2005
Other Invertebrates		
Asian Clam	<i>Corbicula fluminea</i>	Cooper et al. 2005
Chinese Mitten Crab	<i>Eriocheir sinensis</i>	Bluemenshine et al. 2011
Daphnia	<i>Daphnia lumholtzi</i>	Fischer et al. 2011
Spiny Water Flea	<i>Bythotrephes longimanus</i>	Yan et al. 2011
Virile Crayfish	<i>Orconectes virilis</i>	Martinez 2012
Zebra Mussel	<i>Dreissena polymorpha</i>	Jilek et al. 2009
Aquatic Plants		
Hydrilla	<i>Hydrilla verticillata</i>	EPA
Rock Snot	<i>Didymosphenia geminata</i>	Lavery et al. 2014
Water Hyacinth	<i>Eichhornia crassipes</i>	EPA
Terrestrial Plants		
Cogongrass	<i>Imperata cylindrica</i>	Bradley et al. 2009
Japanese Knotweed	<i>Fallopia japonica</i>	Bourchier and Hezewijk 2010
Kudzu	<i>Pueraria montana var. lobata</i>	Bradley et al. 2010
Purple Loosestrife	<i>Lythrum salicaria</i>	Middleton 2006
Fungus		
Beech Bark Disease Complex	<i>Nectria spp.</i>	Kasson and Livingston 2012



Appendix 6e. Predictions of Species-Specific Habitat Shift due to Climate Change in the Northeast (Modified from the Climate Change Bird Atlas, Matthews et al. 2007, <http://www.fs.fed.us/nrs/atlas/>)

Regional Predictions of Species-Specific Habitat Shift due to Climate Change ¹					
Common Name	Scientific Name	Model Predictions	Common Name	Scientific Name	Model Predictions
Common Loon*	<i>Gavia immer</i>	↓	Clay-colored Sparrow	<i>Spizella pallida</i>	↓
Mallard	<i>Anas platyrhynchos</i>	↓↓	Field Sparrow	<i>Spizella pusilla</i>	↑↑
Blue-winged Teal*	<i>Anas discors</i>	↑	Dark-eyed Junco*	<i>Junco hyemalis</i>	↓↓
Canada Goose	<i>Branta canadensis</i>	↓	Bachmans Sparrow	<i>Aimophila aestivalis</i>	↑
White Ibis	<i>Eudocimus albus</i>	↑	Song Sparrow	<i>Melospiza melodia</i>	↓↓
American Bittern*	<i>Botaurus lentiginosus</i>	↓	Lincolns Sparrow	<i>Melospiza lincolnii</i>	↓
Great Blue Heron*	<i>Ardea herodias</i>	↓	Swamp Sparrow*	<i>Melospiza georgiana nigrescens</i>	↓↓
Great Egret*	<i>Ardea alba</i>	↑↑	Eastern Towhee	<i>Pipilo erythrophthalmus</i>	↑
Snowy Egret*	<i>Egretta thula</i>	↑	Northern Cardinal	<i>Cardinalis cardinalis</i>	↑↑
Little Blue Heron*	<i>Egretta caerulea</i>	↑↑	Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	↓↓
Cattle Egret	<i>Bubulcus ibis</i>	↑↑	Blue Grosbeak	<i>Guiraca caerulea</i>	↑↑
Green Heron	<i>Butorides virescens</i>	↑↑	Indigo Bunting	<i>Passerina cyanea</i>	↑
Yellow-crowned Night-Heron*	<i>Nyctanassa violacea</i>	↑	Painted Bunting	<i>Passerina ciris</i>	↑↑

¹ Shaded Model Predictions arrow indicates agreement among the majority of the 8 model/scenarios considered (for more information see above title citation).

↑ **Moderate expected increase** of species-specific habitat abundance in the region

↓ **Moderate expected decrease** of species-specific habitat abundance in the region.

↓↓ **Large expected decrease** of species-specific habitat abundance in the region.

* Indicates Maryland GGCN.



Sora*	<i>Porzana carolina</i>	↓	Dickcissel*	<i>Spiza americana</i>	↑↑
American Coot	<i>Fulica americana</i>	↑	Summer Tanager	<i>Piranga rubra</i>	↑↑
Common Snipe	<i>Gallinago gallinago</i>	↓↓	Purple Martin	<i>Progne subis</i>	↑↑
Spotted Sandpiper*	<i>Actitis macularia</i>	↓	Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	↓↓
Killdeer	<i>Charadrius vociferus</i>	↑	Barn Swallow	<i>Hirundo rustica</i>	↑
Gray Partridge	<i>Perdix perdix</i>	↑	Tree Swallow	<i>Tachycineta bicolor</i>	↓↓
Northern Bobwhite*	<i>Colinus virginianus</i>	↑↑	Bank Swallow*	<i>Riparia riparia</i>	↓↓
Ruffed Grouse*	<i>Bonasa umbellus</i>	↓	Cedar Waxwing	<i>Bombycilla cedrorum</i>	↓↓
Ring-necked Pheasant	<i>Phasianus colchicus</i>	↓↓	Loggerhead Shrike*	<i>Lanius ludovicianus</i>	↑↑
Rock Dove	<i>Columba livia</i>	↓↓	Red-eyed Vireo	<i>Vireo olivaceus</i>	↓↓
Mourning Dove	<i>Zenaida macroura</i>	↑	Warbling Vireo	<i>Vireo gilvus</i>	↓
Common Ground-Dove	<i>Columbina passerina</i>	↑	Yellow-throated Vireo*	<i>Vireo flavifrons</i>	↑↑
Turkey Vulture	<i>Cathartes aura</i>	↑↑	Blue-headed Vireo	<i>Vireo solitarius</i>	↓↓
Black Vulture	<i>Coragyps atratus</i>	↑↑	White-eyed Vireo	<i>Vireo griseus</i>	↑↑
Mississippi Kite	<i>Ictinia mississippiensis</i>	↑↑	Black-and-white Warbler*	<i>Mniotilta varia</i>	↓↓
Northern Harrier*	<i>Circus cyaneus</i>	↓	Prothonotary Warbler*	<i>Protonotaria citrea</i>	↑↑
Red-tailed Hawk	<i>Buteo jamaicensis</i>	↑↑	Worm-eating Warbler*	<i>Helmitheros vermivorus</i>	↑
Red-shouldered Hawk	<i>Buteo lineatus</i>	↑↑	Blue-winged Warbler*	<i>Vermivora pinus</i>	↑

¹ Shaded Model Predictions arrow indicates agreement among the majority of the 8 model/scenarios considered (for more information see above title citation).

↑ **Moderate expected increase** of species-specific habitat abundance in the region

↓ **Moderate expected decrease** of species-specific habitat abundance in the region.

↓↓ **Large expected decrease** of species-specific habitat abundance in the region.

* Indicates Maryland SGCN.



Broad-winged Hawk*	<i>Buteo platypterus</i>	↑	Golden-winged Warbler*	<i>Vermivora chrysoptera</i>	↑
American Kestrel*	<i>Falco sparverius</i>	↓	Nashville Warbler*	<i>Vermivora ruficapilla</i>	↓↓
Great Horned Owl	<i>Bubo virginianus</i>	↑↑	Northern Parula	<i>Parula americana</i>	↑↑
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	↑↑	Yellow Warbler	<i>Dendroica petechia</i>	↓↓
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	↓↓	Black-throated Blue Warbler*	<i>Dendroica caerulescens</i>	↓↓
Downy woodpecker	<i>Picoides pubescens</i>	↑	Yellow-rumped Warbler	<i>Dendroica coronata</i>	↓↓
Yellow-bellied Sapsucker*	<i>Sphyrapicus varius</i>	↓↓	Magnolia Warbler*	<i>Dendroica magnolia</i>	↓↓
Pileated Woodpecker	<i>Dryocopus pileatus</i>	↑↑	Cerulean Warbler*	<i>Dendroica cerulea</i>	↑
Red-headed Woodpecker*	<i>Melanerpes erythrocephalus</i>	↑↑	Blackburnian Warbler*	<i>Dendroica fusca</i>	↓↓
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	↑↑	Yellow-throated Warbler	<i>Dendroica dominica</i>	↑↑
Chuck-Wills Widow*	<i>Antrostomus carolinensis</i>	↑↑	Black-throated Green Warbler*	<i>Dendroica virens</i>	↓↓
Whip-poor-will*	<i>Antrostomus vociferus</i>	↑↑	Pine Warbler	<i>Dendroica pinus</i>	↑↑
Common Nighthawk*	<i>Chordeiles minor</i>	↑↑	Prairie Warbler	<i>Dendroica discolor</i>	↑↑
Chimney Swift*	<i>Chaetura pelagica</i>	↑	Ovenbird*	<i>Seiurus aurocapillus</i>	↓↓

¹ Shaded Model Predications arrow indicates agreement among the majority of the 8 model/scenarios considered (for more information see above title citation).

↑ **Moderate expected increase** of species-specific habitat abundance in the region

↓ **Moderate expected decrease** of species-specific habitat abundance in the region.

↓↓ **Large expected decrease** of species-specific habitat abundance in the region.

* Indicates Maryland SGCN.



Ruby-throated Hummingbird	<i>Archilochus colubris</i>	↑↑	Northern Waterthrush*	<i>Seiurus noveboracensis</i>	↓↓
Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>	↑↑	Kentucky Warbler*	<i>Oporornis formosus</i>	↑↑
Eastern Kingbird	<i>Tyrannus tyrannus</i>	↑↑	Mourning Warbler*	<i>Oporornis philadelphia</i>	↓↓
Eastern Phoebe	<i>Sayornis phoebe</i>	↑↑	Common Yellowthroat	<i>Geothlypis trichas</i>	↓↓
Eastern Wood-Pewee	<i>Contopus virens</i>	↑↑	Yellow-breasted Chat*	<i>Icteria virens</i>	↑↑
Acadian Flycatcher	<i>Empidonax virens</i>	↑↑	Hooded Warbler*	<i>Wilsonia citrina</i>	↑↑
Willow Flycatcher	<i>Empidonax traillii</i>	↓	Canada Warbler*	<i>Wilsonia canadensis</i>	↓↓
Least Flycatcher*	<i>Empidonax minimus</i>	↓↓	American Redstart*	<i>Setophaga ruticilla</i>	↓↓
Horned Lark	<i>Eremophila alpestris</i>	↑↑	House Sparrow	<i>Passer domesticus</i>	↑
Blue Jay	<i>Cyanocitta cristata</i>	↑	Northern Mockingbird	<i>Mimus polyglottos</i>	↑↑
American Crow	<i>Corvus brachyrhynchos</i>	↑	Gray Catbird	<i>Dumetella carolinensis</i>	↓↓
Fish Crow	<i>Corvus ossifragus</i>	↑	Brown Thrasher	<i>Toxostoma rufum</i>	↑↑
European Starling	<i>Sturnus vulgaris</i>	↓	Carolina Wren	<i>Thryothorus ludovicianus</i>	↑↑
Bobolink*	<i>Dolichonyx oryzivorus</i>	↓↓	House Wren	<i>Troglodytes aedon</i>	↓↓
Brown-headed Cowbird	<i>Molothrus ater</i>	↑	Winter Wren*	<i>Troglodytes troglodytes</i>	↓↓
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	↑	Sedge Wren*	<i>Cistothorus platensis</i>	↑
Eastern Meadowlark*	<i>Sturnella magna</i>	↑↑	Brown Creeper*	<i>Certhia americana</i>	↓

¹ Shaded Model Predictions arrow indicates agreement among the majority of the 8 model/scenarios considered (for more information see above title citation).

↑ **Moderate expected increase** of species-specific habitat abundance in the region

↓ **Moderate expected decrease** of species-specific habitat abundance in the region.

↓↓ **Large expected decrease** of species-specific habitat abundance in the region.

* Indicates Maryland SGCN.



Orchard Oriole	<i>Icterus spurius</i>	↑↑	White-breasted Nuthatch	<i>Sitta carolinensis</i>	↑
Baltimore Oriole	<i>Icterus galbula</i>	↓↓	Red-breasted Nuthatch*	<i>Sitta canadensis</i>	↓↓
Brewers Blackbird	<i>Euphagus cyanocephalus</i>	↓	Brown-headed Nuthatch	<i>Sitta pusilla</i>	↑
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	↓	Tufted Titmouse	<i>Baeolophus bicolor</i>	↑↑
Purple Finch	<i>Carpodacus purpureus</i>	↓↓	Black-capped Chickadee	<i>Poecile atricapillus</i>	↓↓
House Finch	<i>Carpodacus mexicanus</i>	↓↓	Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	↑↑
American Goldfinch	<i>Carduelis tristis</i>	↓↓	Wood Thrush*	<i>Hylocichla mustelina</i>	↓↓
Vesper Sparrow*	<i>Poocetes gramineus</i>	↓↓	Veery*	<i>Catharus fuscescens</i>	↓↓
Savannah Sparrow*	<i>Passerculus sandwichensis</i>	↓↓	Swainsons Thrush*	<i>Catharus ustulatus</i>	↓↓
Grasshopper Sparrow*	<i>Ammodramus savannarum</i>	↑↑	Hermit Thrush	<i>Catharus guttatus</i>	↓↓
White-throated Sparrow	<i>Zonotrichia albicollis</i>	↓↓	American Robin	<i>Turdus migratorius</i>	↓↓
Chipping Sparrow	<i>Spizella passerina</i>	↓↓			

¹ Shaded Model Predications arrow indicates agreement among the majority of the 8 model/scenarios considered (for more information see above title citation).

↑ **Moderate expected increase** of species-specific habitat abundance in the region

↓ **Moderate expected decrease** of species-specific habitat abundance in the region.

↓↓ **Large expected decrease** of species-specific habitat abundance in the region.

* Indicates Maryland SGCN.

