

## Appendix D. Potential Habitat Mapping For Terrestrial and Aquatic Tier I Species

### Appendix D.1. Potential Habitat Mapping Details for Terrestrial Species

Species included here are only those for which potential habitat was mapped. If only confirmed habitat was displayed, it will not be listed here. Mapping was done within the species distribution, which was determined based on DGIF collections and expert opinion.

Species	Scientific Name	Species Distribution	Potential Habitat Mapping Parameters
Carolina northern flying squirrel	<i>Glaucomys sabrinus coloratus</i>	Mt. Rogers-Whitetop area in Grayson and Smyth counties (R. Reynolds, DGIF, pers. comm.)	Selected spruce-fir areas from SAA data
Virginia northern flying squirrel	<i>Glaucomys sabrinus fuscus</i>	Highland County (R. Reynolds, DGIF, pers. comm.)	Selected spruce-fir areas from SAA data and USFS-CISC data
Snowshoe hare	<i>Lepus americanus</i>	Within a 1 mile radius of Locust springs campground in Highland county (M. Fies, DGIF, pers. comm.).	Selected spruce-fir areas from USFS-CISC data within species distribution.
Black rail	<i>Laterallus jamaicensis</i>	Coastal Virginia (DGIF 2004a)	Selected patches $\geq$ 20 hectares that were listed as Class 2 (Saltmeadow Community), 3 (Black Needlerush Community), and 12 (Brackish Water Mixed Community) within Tidal Marsh Inventory data.
Wilson's plover	<i>Charadrius wilsonia</i>	Barrier islands and open facing beaches (R. Boettcher, DGIF, pers. comm.)	Within NLCD 2001 selected Barren areas (value = 31) and Row Crop (value = 82) on barrier islands, dredge spoils and mainland areas (Grandview beach and New Point Comfort). (Selected row crop after finding that Craney was classified as row crop instead of barren).
Piping plover	<i>Charadrius melodus</i>	Barrier islands and open facing beaches (R. Boettcher, DGIF, pers. comm.)	Within NLCD 2001 selected Barren areas (value = 31) and Row Crop (value = 82) on barrier islands, dredge spoils and mainland areas (Grandview beach and New Point Comfort). (Selected row crop after finding that Craney was classified as row crop instead of barren).

VIRGINIA'S COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY  
Appendix D — Details of Tier I Species Maps

Species	Scientific Name	Species Distribution	Potential Habitat Mapping Parameters
Gull-billed tern	<i>Sterna nilotica</i>	Barrier islands and Hampton Roads Bridge Tunnel Islands (B. Watts, CCB, pers. comm).	Within NLCD 2001, selected Emergent wetlands (value = 95), Barren areas (value = 31) and Row Crop (value = 82) on barrier islands, and Hampton Roads Bridge Tunnel Island
Appalachian yellow-bellied sapsucker	<i>Sphyrapicus varius appalachiensis</i>	High elevation within the Appalachian mountains (DGIF 2004a)	Selected rasters where Deciduous forest (value = 41) in NLCD 1992, and elevation was $\geq 1100\text{m}$ within the NED.
Red crossbill Type 1	<i>Loxia curvirostra</i>	Mt. Rogers-Whitetop area in Grayson and Smyth counties (M. Wilson, CCB, pers. comm.)	Selected rasters $\geq 1220\text{m}$ based on NED what were within spruce-fir areas according to SAA
Henslow's sparrow	<i>Ammodramus henslowii</i>	Coastal plain <sup>1</sup>	Selected patches $\geq 20$ hectares that were listed as Class 2 (Saltmeadow Community), 3 (Black Needlerush Community), and 12 (Brackish Water Mixed Community) within Tidal Marsh Inventory data.
Wayne's warbler	<i>Dendroica virens waynei</i>	Southeastern Virginia, Dismal Swamp is Western edge (M. Wilson, CCB, pers.comm).	Selected Palustrine Forested (PFO) areas from NWI
Bog turtle	<i>Clemmys muhlenbergii</i>	Along the Blue Ridge Parkway in Carroll, Floyd, Grayson, Patrick counties (M. Pinder, DGIF, pers.comm).	Selected areas within 250m of places with a Topographical Moisture Index $\geq 4$ (See Methods section 3.4.3.7 for details on TMI); $\geq 700\text{m}$ in elevation in NED; and categorized as Pasture (81), Forested (41-43) or Wetland (91-92) according to NLCD 1992. For confirmed habitat: selected potential areas within buffer of collection points.
Chicken turtle	<i>Deirochelys reticularia</i>	Virginia Beach, Isle of Wight county (J. Mitchell, UR, pers.comm.).	Selected forested and wetland areas (NLCD 2001 values = 41-43, 90,95)
Loggerhead sea turtle	<i>Caretta caretta</i>	Barrier islands and southeastern coast (R. Boettcher, DGIF, pers. comm.)	Within NLCD 2001 selected Barren Areas (Value = 31)

VIRGINIA'S COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY  
Appendix D — Details of Tier I Species Maps

Species	Scientific Name	Species Distribution	Potential Habitat Mapping Parameters
Wood turtle	<i>Clemmys insculpta</i>	Riparian areas and streams in Frederick, Senandoah, Loudon, Fairfax and Northern Rockingham <sup>2</sup>	Coastal Plain and Piedmont sections: selected reaches with link magnitude < 50, elevation < 100 and gradient < 50. Resulting reaches were overlaid with NLCD 1992 and Virginia's portion of the NWBD. Selected reaches in watersheds < 25% developed.  Blue Ridge and Ridge and Valley sections: selected reaches with link magnitude < 100, elevation > 100 and < 600, and gradient < 100. Resulting reaches were overlaid with NLCD 1992 and Virginia's portion of the NWBD. Selected reaches in watersheds < 25% developed
Shenandoah salamander	<i>Plethodon shenandoah</i>	Shenandoah National Park, within 3 mountains (D. Schwab, USFWS, pers.comm.).	Selected areas that were forested within NLCD 1992 (values = 41, 42, 43), above 800m (NED ≥ 800) and had a northerly aspect (derived from NED) defined as values between 292.5 and 67.5 degrees.

<sup>1</sup> Henslow's sparrows occur in other ecoregions; however, habitat requirements differ in the Coastal Plain, which is the only section in which potential habitat was mapped

<sup>2</sup> Potential habitat for the wood turtle was mapped differently for the Blue Ridge and Ridge and Valley sections than it was for the Piedmont and Coastal Plain because the stream reach attributes of confirmed reaches were somewhat dissimilar.

**Appendix D.2. Potential Habitat Mapping Details for Aquatic Species**

Potential habitat for the aquatic Tier 1 species was mapped within DGIF's aquatic habitat classification. For details see Methods Section 3.4.4 for details and Table 3.7 for categories of continuous variables. Species may occur in other EDU's, however those listed here represent EDU's in which potential habitat was mapped. Within drainages, species were mapped according to 8- and 14- digit hydrologic unit distributions. These distributions were developed using collections (DGIF 2004) along with expert review.

<b>Species</b>	<b>Scientific Name</b>	<b>Species Distribution by EDU</b>	<b>Detailed Model Parameters</b>
Roanoke logperch	<i>Percina rex</i>	Piedmont-Roanoke Ridge and Valley-Roanoke Blue Ridge-Roanoke  Coastal Plain-Chowan Piedmont-Chowan	Selected reaches with size class = 2,3,4; connectivity class = 2,3,4; gradient class = 1,2 and reach elevation > 175 and < 500. Removed Smith Mountain Lake and Philpott reservoir as potential habitat and Beaverdam Creek as potential (Jenkins and Burkhead 1994).  Selected reaches with size=2,3,4; connectivity=2,3,4; and gradient = 1,2.
Turquoise shiner (or spotfin chub)	<i>Cyprinella monacha</i>	Ridge and Valley-Holston Southern Cumberland-Holston	Selected reaches with size=3,4 and connectivity=3,4.
Yellowfin madtom	<i>Noturus flavipinnis</i>	Ridge and Valley-Clinch Southern Cumberland-Clinch	Selected reaches with link magnitude $\geq 8$ and $\leq 300$ ; downstream link magnitude $\geq 10$ and $\leq 300$ ; gradient $\leq 6$ and reach elevation $\leq 600$
Duskytail darter	<i>Etheostoma percnurum</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with link magnitude $\geq 20$ , reach elevation $\leq 550$ and gradient class = 1
Sharphead darter	<i>Etheostoma acuticeps</i>	Ridge and Valley-Holston	Selected reaches with size class = 3,4; connectivity class = 3,4 and gradient class = 1
Blackbanded sunfish	<i>Enneacanthus chaetodon</i>	Coastal Plain-Chowan	Selected reaches with a size class = 1,2; gradient class = 1, reach elevation $\leq 50$ , waterbody arc = 1 and a waterbody type $\langle \rangle$ stream/river

VIRGINIA'S COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY  
Appendix D — Details of Tier I Species Maps

Species	Scientific Name	Species Distribution by EDU	Detailed Model Parameters
Tennessee dace	<i>Phoxinus tennesseensis</i>	Ridge and Valley-Holston Blue Ridge-Holston	Selected reaches with a link magnitude $\leq 10$
James spiny mussel	<i>Pleurobema collina</i>	Piedmont-James Blue Ridge-James Ridge and Valley-James	Selected reaches with a size class = 2,3,4; connectivity class = 2,3,4 and gradient class = 1,2
		Piedmont-Roanoke Blue Ridge-Roanoke	Selected reaches with a size class = 2; connectivity class = 2,3 and gradient class = 1,2
Birdwing pearly mussel	<i>Lemiox rimosus</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a size class = 3,4 and connectivity class = 3,4
Fanshell	<i>Cyprogenia stegaria</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a link magnitude and downstream link magnitude $\geq 180$ and $\leq 550$
Dromedary pearly mussel	<i>Dromus dromas</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a size class = 3,4; connectivity class = 3,4 and gradient class = 1
Cumberland combshell	<i>Epioblasma brevidens</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a link magnitude and downstream link magnitude $\geq 140$ and $\leq 600$
Oyster mussel	<i>Epioblasma capsaeformis</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a link magnitude and downstream link magnitude $\geq 50$ and $\leq 600$ ; gradient $< 4.5$ and reach elevation $\geq 350$ and $\leq 600$
Green-blossom pearly mussel	<i>Epioblasma torulosa gubernaculum</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch Northern Cumberlands-Clinch	Selected reaches with a size class = 4 and a connectivity class = 4

VIRGINIA'S COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY  
Appendix D — Details of Tier I Species Maps

Species	Scientific Name	Species Distribution by EDU	Detailed Model Parameters
Tan riffleshell	<i>Epioblasma florentina walkeri</i>	Ridge and Valley-Clinch	Selected reaches with a link magnitude $\geq 10$ and $\leq 70$ ; a downstream link magnitude $\geq 50$ and $\leq 80$ ; and a gradient $< 10$
		Ridge and Valley-Holston	Selected reaches with size class = 3, connectivity class = 3 and a gradient = 1
Fine-rayed pigtoe	<i>Fusconaia cuneolus</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a link magnitude $\geq 30$ and $\leq 600$ ; a downstream link magnitude $\geq 40$ and $\leq 600$ ; and a gradient $< 4.5$
Shiny pigtoe	<i>Fusconaia cor</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a link magnitude and downstream link magnitude $\geq 35$ and $\leq 600$ and a gradient $< 4.5$
		Ridge and Valley-Holston Southern Cumberlands-Holston	Selected reaches with a size class = 3,4 and a connectivity class = 3,4
Cracking pearlymussel	<i>Hemistena lata</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a link magnitude and downstream link magnitude $\geq 175$ and $\leq 580$
Little-winged pearlymussel	<i>Pegias fabula</i>	Ridge and Valley-Clinch	Selected reaches with a link magnitude and downstream link magnitude $> 3$ and $< 199$ and a gradient $< 4.5$
		Ridge and Valley-Holston	Selected reaches with a size class = 3,4 and a gradient $< 6$
Rough rabbits foot	<i>Quadrula cylindrica strigillata</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a link magnitude $\geq 10$ and $\leq 600$ ; a downstream link magnitude $\geq 20$ and $\leq 600$ ; and a gradient $< 10$
Cumberland monkeyface	<i>Quadrula intermedia</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with size class = 3,4; connectivity class = 3,4 and gradient class = 1,2

VIRGINIA'S COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY  
Appendix D — Details of Tier I Species Maps

<b>Species</b>	<b>Scientific Name</b>	<b>Species Distribution by EDU</b>	<b>Detailed Model Parameters</b>
Appalachian monkeyface	<i>Quadrula sparsa</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a size class = 3,4 and a connectivity class = 3,4
Purple bean	<i>Villosa perpurpurea</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a link magnitude $\geq 10$ and $\leq 600$ and a downstream link magnitude $\geq 30$ and $\leq 600$
Cumberland bean	<i>Villosa trabalis</i>	Ridge and Valley-Clinch Southern Cumberlands-Clinch	Selected reaches with a size class = 3,4; connectivity class = 3,4; and grad = 1