



Spotted salamander



Southern flying squirrel



Alewife



Eastern screech owl

Chapter 2

Species of Greatest Conservation Need

2.1 District of Columbia's Wildlife Diversity

Despite being a highly urbanized city, the District of Columbia has high wildlife diversity, which is due, in part, to the wide variety of habitats found throughout the city and a large amount of undeveloped federal land. This chapter addresses Element 1 by describing the diversity of the District's animal wildlife and the process used to select and rank SGCN for SWAP 2015. Two hundred five animal species have been listed as SGCN in SWAP 2015 (see Table 1). Thirty-two species were removed and 90 species were added as SGCN as a result of the selection process described in this chapter, which is based on 10 years of wildlife inventory and monitoring projects.

Table 1 Revisions to the District's SGCN list by Taxa

| Taxa | SGCN 2005 | SGCN 2015 | Removed | Added |
|---------------------------|------------|------------|-----------|-----------|
| Birds | 35 | 58 | 4 | 27 |
| Mammals | 11 | 21 | 2 | 12 |
| Reptiles | 23 | 17 | 6 | 0 |
| Amphibians | 16 | 18 | 2 | 4 |
| Fish | 12 | 12 | 4 | 4 |
| Dragonflies & Damselflies | 9 | 27 | 2 | 19 |
| Butterflies | 13 | 10 | 6 | 3 |
| Bees | 0 | 4 | N/A | 4 |
| Beetles | 0 | 1 | N/A | 1 |
| Mollusks | 9 | 13 | 0 | 4 |
| Crustaceans | 19 | 22 | 6 | 9 |
| Sponges | 0 | 2 | N/A | 2 |
| Total | 147 | 205 | 32 | 90 |



2.1.1 Terrestrial Wildlife Diversity

The District has a substantial number of terrestrial animal species, and diverse natural communities provide an extensive variety of habitat settings for wildlife. Twenty-four Habitat Systems support the terrestrial animal species—including central Appalachian dry oak-pine forests, Potomac River ice-scour floodplains, and old-field meadows. Some species are habitat generalists, able to survive in many different conditions and to make use of many resources to meet their needs for survival. Other species are habitat specialists, needing specific habitat conditions and plant communities that can be rare in natural areas surrounded by urbanity.

The District’s vertebrate wildlife species include approximately 21 reptile species, 19 amphibian species, 240 bird species, and 32 mammal species. Invertebrate diversity is more difficult to quantify. More than 2,500 insect species have been identified in a local collection (Smithsonian 2002). A BioBlitz in Rock Creek Park in 2007 identified 154 insect



species and 44 other invertebrates (National Geographic 2007). Many of these species, including all of the amphibians and all Odonata (dragonflies and damselflies), use both aquatic and terrestrial habitats for parts of their life cycle.

The District has notable native fauna, including three nesting pairs of bald eagles, the rare and declining spotted turtle, the recently federally listed northern long-eared bat (listed as threatened), and recovering populations of American beaver. Recent reports of coyotes have also become prominent, as this predator begins to establish in urban settings.

2.1.2 Aquatic Wildlife Diversity

The District exhibits a wide range of aquatic habitats, which similarly drives the diversity of aquatic animals. Nine Habitat Systems support a diverse array of wildlife —including perennial rivers and creeks, ephemeral streams, vernal pools, tidal wetlands, and submerged aquatic vegetation. Two major rivers flow through the District: the Potomac River and the Anacostia River. Tidal and nontidal freshwater wetlands provide important wildlife habitat and critical ecological services by sequestering and transforming polluted runoff, controlling floods, moderating sediment delivery, promoting groundwater recharge, sequestering carbon, and protecting shorelines from erosion (Wohlgemuth1991). Some wetlands remain saturated year round; others may evaporate during the dry season. Vernal pools are one type of seasonal wetland that is important to the District’s wildlife. Many specially adapted crustaceans, amphibians, insects, and plants occur only in vernal pools.



The District's aquatic and transitional wildlife include 78 fish species, 19 amphibian species, and many other species of birds, mammals, and reptiles. Aquatic habitats are important to invertebrate diversity as well. Freshwater mussels and snails, crayfish, sponges, aquatic crustaceans, and aquatic insects are all represented on the District's list of SGCN.

Importantly, many of the species mentioned as notable native fauna make use of aquatic habitats as well as terrestrial habitats. Bald eagles and spotted turtles both nest on land, but use aquatic habitats to forage. Spotted turtles are primarily aquatic. Northern long-eared bats hunt for insects above streams in the evening. Beaver are ecosystem engineers that create ponds and forage on land. Other notable aquatic species include restored populations of American shad and the endangered Hay's Spring amphipod, which is endemic to the District.



Hickory Shad

2.1.3 Wildlife Ecology

Birds

Some bird species (e.g., gray catbird, northern cardinal) are adapting to the urban environment with nearly 20% of all known species living in cities (Aronson et al 2014). DOEE has recorded 256 bird species since 2005 and is home to an average of 240 species of birds annually. It is part of the Mid-Atlantic Flyway and serves as a stopover point for a large numbers during migration. More than 60 species breed in the District, and its rivers are wintering locations for thousands of waterfowl. The District became a U.S. Fish and Wildlife Service Urban Bird Treaty City in 2011.

Mammals

Thirty-two species of mammals have been observed in the District since 2005. Twenty-one species of mammals are listed as SGCN. Several taxonomic groups are represented, including bats. The northern long-eared bat has shown huge population declines as a result of white-nose syndrome (WNS) and was recently listed as threatened under the ESA. Some mammals found in the District are habitat generalists and are widespread, but even habitat generalists can be rare—Virginia opossum and Eastern chipmunk are both listed as SGCN. Habitat specialists are limited to locally appropriate habitat, which can make them more vulnerable to a host of threats. The whitetail deer is the only native mammal whose population is currently being managed in the District.



Reptiles and Amphibians

DOEE has observed and recorded 21 reptile species and 19 amphibian species since 2005. These unique groups of species occupy both terrestrial and aquatic habitats in the District, making the taxa vulnerable to threats within both systems. Species in both groups are most frequently found in forested and freshwater wetland habitats. Some reptiles and amphibians found in the District are generalists and utilize a variety of habitats, while others are more specialized, making them more vulnerable to a host of threats. Emerging diseases, such as ranavirus and snake fungal disease, threaten both amphibian and reptile species, making them one of the selection criterion for the new SGCN. In the revised SWAP, 17 reptiles and 18 amphibians were listed as SGCN.

Fish

Fish are a well-studied group of animals in the District. They use a wide variety of aquatic habitats from the deep channel in the Potomac River to shallow vegetated wetlands and steep streams. There are 78 species of fish documented in the District. Many species are actively monitored as game fish or for restoration projects. The District is the upper limit of tidal waters on the Potomac River. Several species of anadromous fish, including striped bass, white perch, American shad, hickory shad, gizzard shad, blueback herring, and alewife, spawn in the Potomac and Anacostia Rivers and their tributaries.

Invertebrates

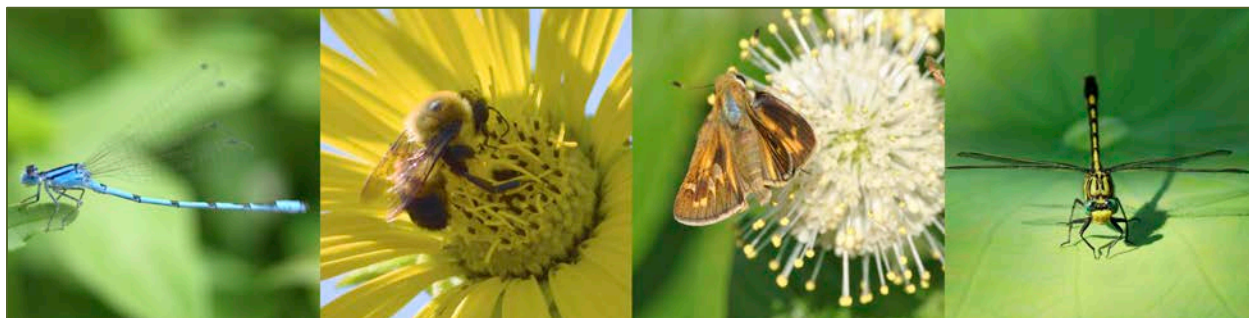
Invertebrates use a wide variety of habitats in the District: tree canopy, forest floor, soil, air, groundwater, mudflats, riverbeds, and more. DOEE has observed and recorded more than 65 species of invertebrates since 2005, and the NPS, U.S. Geological Survey, and other researchers have monitored many more. Forty-two insects, 13 mollusks, 22 crustaceans, and two sponges are listed as SGCN. The wide variety of invertebrate species makes it difficult to summarize their ecology, beyond mentioning their ubiquity in every habitat and their basis as the foundation of the food chain for most vertebrates.



Skimming bluets



2.2 What is an SGCN?



Element 1 requires that the District provide information on the distribution and abundance of species that are indicative of the diversity and health of the District's wildlife, including low and declining populations. As such, the following section lists the District's SGCN and indicates any known status and/or trend for those species.

As part of protecting the diversity of the District's wildlife, it is critical to conserve all types of native wildlife species, including birds, mammals, reptiles, amphibians, fish, and invertebrates. The District's wildlife also includes a variety of types including resident, breeding, migratory, endemic, and federally protected species. The District's resident and breeding species keep the nation's capital high in biodiversity and ecologically healthy. Many of these species are economically significant. For example, American shad (*Alosa sapidissima*) is a fish species of greatest conservation need that supported an important recreational fishery until it became over-harvested and one of the District's most threatened fish species. The District is located such that it is a stopover point for many migratory species. Maintaining the integrity of migratory stopover points benefits the entire migration path of the species. Conserving habitats located within the District is vital to supporting the efforts made by other states that share these migratory pathways.

Despite the District's limited area and urban character, it is home to two known endemic species. The Hay's Spring amphipod (*Stygobromus hayi*) and Kenk's amphipod (*Stygobromus kenki*) have been found only in the Rock Creek Valley. They have only been found in shallow groundwater habitats and springs in or near Rock Creek Park (Pavek 2002). As endemic species, the District has primary responsibility for ensuring their persistence. There are six federally threatened or endangered wildlife species (with current or historical ranges that include the District) that are protected by the U.S. Fish and Wildlife Service under the ESA. These are the northern long-eared bat (*Myotis septentrionalis*), bog turtle (*Glyptemys muhlenbergii*), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), shortnose sturgeon (*Acipenser brevirostrum*), dwarf wedgemussel (*Alasmidonta heterodon*), and Hay's Spring amphipod (*Stygobromus hayi*). The District has no regularly occurring federally threatened or endangered amphibian or avian SGCN.



2.3 Selection Process for SGCN



The selection of SGCN for SWAP 2005 was made using the best possible information and expertise at the time. Over the past 10 years, DOEE Fisheries and Wildlife Division biologists have inventoried and monitored species identified as SGCN in the original plan, as well as other non-game species in the District. The resulting data was used as the primary source of information to assess species population trends to select SGCN for SWAP 2015.

2.3.1 Millsap Process

Due to the variety of national, regional, and local data that was available for different taxa, technical committees used several selection processes to select SGCN. The backbone of qualitative selection for most taxa was based on the process described in *Setting Priorities for the Conservation of Fish and Wildlife Species in Florida* (Millsap et al 1990). This monograph (henceforth referred to as Millsap) describes a ranking process for wildlife species developed by the Florida Game and Fresh Water Fish Commission. Millsap uses Biological Variables, Action Variables, and Supplemental Variables to score and rank species.

Biological Variables

- Population size – Estimated number of adults throughout North America
- Population trend – Overall trend throughout the taxon’s range over the last two decades
- Range size – The area over which a species is distributed when most restricted
- Distribution trend – Percent change (since European settlement) in the range occupied by the taxon
- Population concentration – Degree to which populations congregate at specific locations
- Reproductive potential for recovery – Ability of a species to recover from serious population declines



- Ecological specialization – Degree to which the species is dependent upon environmental factors

Action Variables for the District

- Distribution in the District
- Population trend in the District
- District population limits
- Ongoing management activities in the District

Supplemental Variables

- Population trend and/or Percent of Occupied Area (POA) of taxon in the District
- Last documented
- Range size/concentration throughout the District/POA
- Impacted by known emerging disease
- Habitat specialization within the District

Due to the limited geographic size of the District, variables were added to the Millsap selection process, which relies on national and regional data, to balance the process with local observations and trends. The Millsap criteria were augmented with local variables such as “Most Recent Documentation in the District,” “Emerging Diseases,” and “Ongoing Management Activities in the District.” The Millsap ranking process was used for birds, herpetofauna, mammals, and fish. Invertebrate selection relied upon regional and state rankings, as well as element occurrence and Maryland’s draft 2015 SGCN list. See Appendices A–I for the variable scores and final ranks for birds, mammals, herpetofauna, and fish and for the criteria used to select dragonflies, damselflies, butterflies, bees, beetles, mussels, amphipods, copepods, and sponges.

2.3.3 Vertebrate SGCN Selection

Avian SGCN Selection

Species were sorted based on their aggregate Millsap score, ranging from the American woodcock (82) to the mallard (3) and Canada goose (3), which tied with the lowest scores. Ranked avian species were broken out into guilds based on habitat association. From these habitat guilds, those species with the highest ranking scores were selected as candidate SGCN for 2015.

Mammal SGCN Selection

Species were sorted based on their aggregate Millsap scores, ranging from the northern long-eared bat (85) to the southern bog lemming (32.7). Species with the highest



ranking scores were selected as SGCN for 2015, with the lowest score for selection as SGCN set at 40.

Herpetofauna SGCN Selection

Species were sorted based on their aggregate scores ranging from the queen snake (89.9) to the eastern hognose snake (29). Species with the highest ranking Millsap scores were selected as SGCN for 2015. The lowest score for inclusion as SGCN for reptiles was 40, and the lowest score for inclusion as SGCN for amphibians was 50.



Fish SGCN Selection

Species were scored individually by biological, action variables, and supplemental variables. Biological scores ranged from 2 (several species) to 41.3 (Atlantic sturgeon) with a median of 4. Action scores ranged from 0 to 31 with a median of 10. Supplemental scores ranged from 10 to 19 with a median of 13.

Species above the median Millsap biological score (4) were considered for inclusion as SGCN. Action and supplemental scores from Millsap were used to exclude or include certain species with a good historical record or those considered to be stable within the District of Columbia. Conversely, species that are considered highly vulnerable but could not be scored due to lack of data, such as the bowfin, were included as SGCN. Multiple conservation assessments (IUCN Red List, federal listings, and ranks) were used to further identify SGCN.

2.3.4 Invertebrate SGCN Selection

Dragonfly and Damselfly SGCN Selection

Species were selected based on five criteria: occurrence data in the District (three or fewer locations since 2005), the NatureServe state rank S3 or lower (NatureServe Explorer 2015, Faber-Langendoen et al 2012), the regional rank (R3 or lower) (White et al 2014), listing as SGCN in Maryland's 2015 SWAP update (unpublished, preliminary data), and listing as SGCN by the District in 2005. Species were listed if they met three of the five criteria. The NatureServe state rank is a conservation status assessment that indicates a species' risk of extinction. It uses eight core status rank factors that are organized into three categories that are relevant to risk assessments of extinction, elimination, or extirpation: rarity, threats, and trends. A few species were included as SGCN if they met only two of the above criteria. These were included, based on expert



opinion, as populations that are declining locally or are locally (but not regionally) rare or as species tied to rare endemic habitats with historical records in the District.

Butterfly SGCN Selection

Species were selected based on five criteria: occurrence data in the District (3 or fewer locations since 2005), the NatureServe District rank S3 or lower, the NatureServe Maryland state rank (S3 or lower), listing as SGCN in Maryland's 2015 SWAP update, or listing as SGCN by the District in 2005. Species were listed if they met two of the five criteria. A few species were included as SGCN based on regional or national decline, such as the monarch (*Danaus plexippus*), and species that are targeted for conservation by the Mid-Atlantic states, such as the Baltimore checkerspot (*Euphydryas phaeton*).

Bee SGCN Selection

Species were listed if they met three criteria: a contemporary record in the District, an estimated state rank of S3–S1 (Nature Serve rank adjusted by expert opinion), and proposed for listing as SGCN in Maryland in 2015 (only species whose range includes the District). Expanded inventory of bees is needed throughout the District.

Mollusk SGCN Selection

The list of freshwater mussels is unchanged from SWAP 2005. No recent occurrence data exists. Two terrestrial snails were added as SGCN. These were included based on recent discovery in the District (Steury and Pearce 2014), state rank in Maryland or Virginia, and proposed listing in Maryland in 2015. One aquatic snail, Appalachian springsnail (*Fontigens bottimeri*), remains listed. Further inventory of mussels is needed throughout the District.

Crustacean SGCN Selection

Amphipods were listed based on their global rank, state rank in the District and Maryland, the Maryland state endangered species list, species to be listed as SGCN by Maryland in 2015, and species listed as SGCN by the District in 2005. Copepods were listed if they were globally ranked G1–G3, District ranked S1–S3, a candidate species for listing under the ESA, listed as SGCN by Maryland in 2015, or if records showed the species was limited to certain habitats. Three crayfish are listed as SGCN. Crayfish were included based on range maps from Swecker (2010). One species, Acuminate crayfish (*Cambarus acuminatus*), is also listed as an SGCN in Maryland. Further inventory of crustaceans is needed throughout the District.

Beetle and Sponge SGCN Selection

One ground beetle and two freshwater sponge species were added to SWAP 2015 on the recommendation of NPS. The ground beetle species is found on Theodore Roosevelt Island and is at the northern extent of its range (Steury and Messer 2014, Steury, Messer and Cavey 2014). Freshwater sponges are extremely rare in the District, with a few recorded occurrences in Rock Creek Park. Inventory of freshwater sponges is needed throughout the District, and expanded inventory of beetles is needed throughout the District.



2.4 Prioritization Process for SGCN



Species selected as SGCN were ranked into a three-tiered system with the input from the technical committee members. The tiers are based on several factors, including the ability to implement species and habitat conservation strategies, available resources, estimated economic feasibility, and the expectation of a reasonable chance of improving conservation status.

Tier 1: Management Species

- Species observed in more than one location and/or in a variety of habitats
- Habitat can be improved with management or other conservation efforts
- Conservation efforts are economically feasible
- High probability of successful improvement of habitat and species population

Tier 2: Species Seen on Occasion

- Recent observations exist, but the species is rarely recorded in formal surveys
- Habitat may be improved with management or other conservation efforts
- Conservation efforts are not as economically feasible
- Lower probability of successful improvement of habitat and species population

Tier 3: Historical Species

- Reliable historical documentation, but there were no recent observations in the District
- Habitat requirements may be lacking or nonexistent
- Minimal probability of observation; species are listed mainly due to a case of incidental observation so that conservation actions can be applied if observed



2.5 SGCN Designations

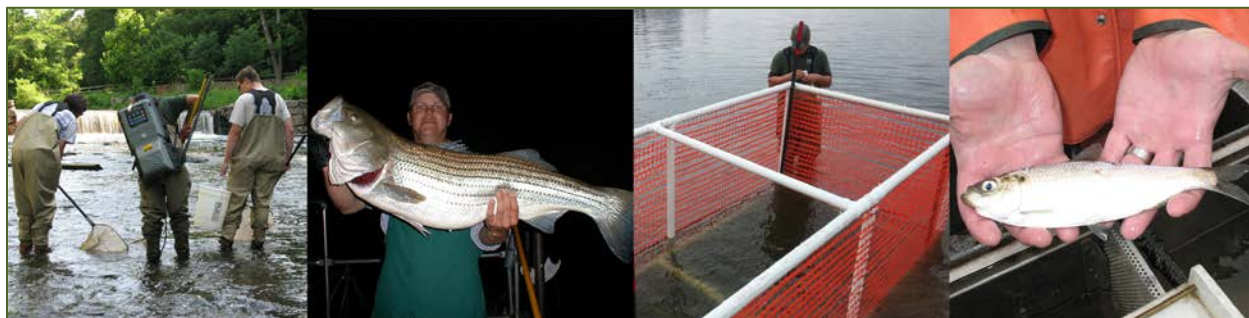


Table 2 lists SGCN for the District. Highlights from the species listing process are described by taxa in this section.

Bird SGCN

Out of 213 species of birds scored, 58 ranked high enough to be considered SGCN. Species were selected using the Millsap criteria, with additional variables, such as regional species of conservation needs status (RSGCN), *2nd Atlas of the Breeding Birds of Maryland and the District of Columbia* (Ellison 2010) population trends, management in the District, and the *State of the Birds 2014* (North American Bird Conservation Initiative 2014) report. The American woodcock (*Scolopax minor*) was the highest ranked SGCN. Top ranked species were divided into associated habitat guilds. Species that were well documented and had a high chance of positive impacts through economically sound conservation actions were listed as Tier 1. Eastern meadowlark (*Sturnella magna*), grasshopper sparrow (*Ammodramus savannarum*), and bobolink (*Dolichonyx oryzivorus*) are all Tier 1 species that can benefit from meadow creation. The eastern screech-owl (*Megascops asio*) and red-headed woodpecker (*Melanerpes erythrocephalus*) are both Tier 2 species. They have recent records in the District and should be targeted for inventory, but not any formal conservation actions at this time. The eastern whip-poor-will (*Caprimulgus vociferous*) is a cryptic goatsucker and Tier 3 species. Since there is only one record of detection since 2000, more research is needed to determine population status and trends.

Mammal SGCN

Out of the 32 species of mammals, 21 ranked high enough to be considered SGCN through the scoring in Section 2.3.3, with additional resources such as NatureServe and other historical species accounts from the Smithsonian Museum Collections (Smithsonian National Museum of Natural History, 2015). The highest ranked species was the northern long-eared bat, scoring 85. Overall, bat species scored high in the ranking process, largely in part due to WNS, which hit the Northeast U.S. in 2007, and has decimated bat populations. All selected SGCN were placed in Tier 1. With ongoing monitoring and management, attempts can be made to recover the bat populations. Other mammals such as the northern short-tailed shrew (*Blarina brevicauda*), meadow vole (*Microtus pennsylvanicus*) and eastern cottontail rabbit (*Sylvilagus floridanus*) can benefit from habitat restoration and meadow creation. Aquatic mammals such as the



northern river otter (*Lontra canadensis*) and American mink (*Neovison vison*) can be expected to benefit from wetland restorations and water quality improvement actions.

Reptile and Amphibian SGCN

Out of the 21 species of reptiles and 19 species of amphibians, 17 and 18, respectively, ranked high enough to be considered SGCN. Species were scored using the system described in Section 2.3.3., with additional resources such as NatureServe and other historical species accounts from the Smithsonian Museum Collections. The two highest ranked reptiles are the queen snake (*Regina septemvittata*) and the spotted turtle (*Clemmys guttata*). The highest ranked amphibians are the spotted salamander (*Ambystoma maculatum*) and the wood frog (*Lithobates sylvaticus*). The majority of the species were selected to be in Tier 1 because they were expected to benefit from habitat management and restoration, such as stream restorations (incorporating vernal pool designs) and meadow creations. Tier 2 species included the marbled salamander (*Ambystoma opacum*) and the wood turtle (*Glyptemys insculpta*). Both species have been documented in recent years, but not with enough numbers to consider them a strong candidate for recovery. Tier 3 species included the green tree frog (*Hyla cinerea*) and the bog turtle (*Glyptemys muhlenbergii*). The green tree frog was documented calling in 2013 on one occasion. As the climate continues to change and become further unstable, it is expected to see shifts in species ranges such as in the case of the green tree frog. The bog turtle has not been documented in the city in recent history, but given its federal status as endangered, it remains an SGCN on the chance it is sighted.

Fish SGCN

Out of 78 species of fish, 12 ranked high enough to be considered SGCN. Species were scored using the Millsap criteria. Fish species with a high biological score were classified as SGCN, and species with high action or complementary scores were reevaluated as to their inclusion/exclusion as SGCN. Commonly occurring species, such as American shad (*Alosa sapidissima*), striped bass (*Morone saxatilis*), and alewife (*Alosa pseudoharengus*), are listed as Tier 1 species. These species are the most likely to succeed from both conservation and a management aspects. Tier 2 included species that have rarely been encountered within the District. Bowfin (*Amia calva*) and shortnose sturgeon (*Acipenser brevirostrum*) are listed as Tier 2 species. The Atlantic sturgeon (*Acipenser oxyrinchus*), which is federally listed as endangered or threatened, received a Tier 3 rank due to its absence in the District. Species that have never been encountered but are not federally ranked were also included as Tier 3 species. These historical species include pearl dace (*Margariscus margarita*) and bridle shiner (*Notropis bifrenatus*). The inclusion of species that have never been encountered within the District was extrapolated from historical species maps of the area and expert opinion.



Invertebrate SGCN

Forty-two insects, 11 mollusks, 22 crustaceans, and two sponges are listed as SGCN. Species from several new taxa were added, including four bee species, four terrestrial snails, two freshwater sponges, and three crayfish. Federally listed species known to occur in the District were ranked as Tier 1 species. Species that are targeted



for regional conservation, such as the monarch (*Danaus plexippus*), and Baltimore checkerspot (*Euphydryas phaeton*) were also listed as Tier 1 species. Tier 2 included many species that should be targeted for inventory, but not any formal conservation actions. These include numerous dragonfly and damselfly species that have been observed rarely and many species in the newly added taxa (bees, beetles, snails, crayfish, and sponges). Several Tier 3 species have never been encountered within the District or have not been encountered in more than 75 years, but they were included in case of discovery.

Table 2 District of Columbia Species of Greatest Conservation Need 2015 (Additions to SWAP 2015 are shown in green.)

| Species | Common Name | Tier Priority |
|------------------------------|------------------------|---------------|
| Birds | | |
| <i>Aix sponsa</i> | Wood Duck | 1 |
| <i>Ammodramus savannarum</i> | Grasshopper Sparrow | 1 |
| <i>Anas rubripes</i> | American Black Duck | 1 |
| <i>Antrostomus vociferus</i> | Eastern Whip-poor-will | 3 |
| <i>Botaurus lentiginosus</i> | American Bittern | 2 |
| <i>Cardellina canadensis</i> | Canada Warbler | 2 |
| <i>Catharus fuscescens</i> | Veery | 1 |
| <i>Certhia americana</i> | Brown Creeper | 1 |
| <i>Chaetura pelagica</i> | Chimney Swift | 1 |
| <i>Chordeiles minor</i> | Common Nighthawk | 2 |
| <i>Cistothorus palustris</i> | Marsh Wren | 2 |
| <i>Coccyzus americanus</i> | Yellow-billed Cuckoo | 2 |
| <i>Colinus virginianus</i> | Northern Bobwhite | 3 |
| <i>Dolichonyx oryzivorus</i> | Bobolink | 1 |
| <i>Egretta caerulea</i> | Little Blue Heron | 1 |
| <i>Empidonax traillii</i> | Willow Flycatcher | 1 |



| Species | Common Name | Tier Priority |
|-----------------------------------|------------------------------|---------------|
| <i>Euphagus carolinus</i> | Rusty Blackbird | 1 |
| <i>Falco peregrinus</i> | Peregrine Falcon | 1 |
| <i>Falco sparverius</i> | American Kestrel | 1 |
| <i>Gallinago delicata</i> | Wilson's Snipe | 1 |
| <i>Geothlypis formosa</i> | Kentucky Warbler | 2 |
| <i>Haliaeetus leucocephalus</i> | Bald Eagle | 2 |
| <i>Helmitheros vermivorum</i> | Worm-eating Warbler | 2 |
| <i>Hylocichla mustelina</i> | Wood Thrush | 1 |
| <i>Icteria virens</i> | Yellow-breasted Chat | 2 |
| <i>Icterus galbula</i> | Baltimore Oriole | 1 |
| <i>Ixobrychus exilis</i> | Least Bittern | 3 |
| <i>Megascops asio</i> | Eastern Screech-Owl | 2 |
| <i>Melanerpes erythrocephalus</i> | Red-headed Woodpecker | 2 |
| <i>Mniotilta varia</i> | Black-and-white Warbler | 1 |
| <i>Nyctanassa violacea</i> | Yellow-crowned Night Heron | 1 |
| <i>Nycticorax nycticorax</i> | Black-crowned Night Heron | 1 |
| <i>Parkesia motacilla</i> | Louisiana Waterthrush | 1 |
| <i>Pipilo erythrophthalmus</i> | Eastern Towhee | 1 |
| <i>Piranga olivacea</i> | Scarlet Tanager | 1 |
| <i>Porzana carolina</i> | Sora | 2 |
| <i>Progne subis</i> | Purple Martin | 1 |
| <i>Protonotaria citrea</i> | Prothonotary Warbler | 1 |
| <i>Rallus limicola</i> | Virginia Rail | 2 |
| <i>Scolopax minor</i> | American Woodcock | 1 |
| <i>Seiurus aurocapilla</i> | Ovenbird | 1 |
| <i>Setophaga caerulescens</i> | Black-throated Blue Warbler | 1 |
| <i>Setophaga castanea</i> | Bay-breasted Warbler | 2 |
| <i>Setophaga cerulea</i> | Cerulean Warbler | 2 |
| <i>Setophaga citrina</i> | Hooded Warbler | 1 |
| <i>Setophaga discolor</i> | Prairie Warbler | 1 |
| <i>Setophaga fusca</i> | Blackburnian Warbler | 1 |
| <i>Setophaga pensylvanica</i> | Chestnut-sided Warbler | 2 |
| <i>Setophaga virens</i> | Black-throated Green Warbler | 1 |
| <i>Spizella pusilla</i> | Field Sparrow | 1 |
| <i>Sterna forsteri</i> | Forster's Tern | 2 |
| <i>Sturnella magna</i> | Eastern Meadowlark | 1 |
| <i>Toxostoma rufum</i> | Brown Thrasher | 1 |
| <i>Tringa flavipes</i> | Lesser Yellowlegs | 2 |
| <i>Vermivora chrysoptera</i> | Golden-winged Warbler | 2 |
| <i>Vermivora cyanoptera</i> | Blue-winged Warbler | 1 |



| Species | Common Name | Tier Priority |
|----------------------------------|-----------------------------|---------------|
| <i>Vireo flavifrons</i> | Yellow-throated Vireo | 2 |
| <i>Vireo griseus</i> | White-eyed Vireo | 1 |
| Mammals | | |
| <i>Myotis septentrionalis</i> | Northern Long-Eared Bat | 1 |
| <i>Myotis leibii</i> | Eastern Small-Footed Bat | 1 |
| <i>Myotis lucifugus</i> | Little Brown Bat | 1 |
| <i>Perimyotis subflavus</i> | Tri-colored Bat | 1 |
| <i>Lontra canadensis</i> | Northern River Otter | 1 |
| <i>Mephitis mephitis</i> | Striped Skunk | 2 |
| <i>Lasiurus cinereus</i> | Hoary Bat | 1 |
| <i>Nycticeius humeralis</i> | Evening Bat | 1 |
| <i>Neovison vison</i> | American Mink | 2 |
| <i>Lasiurus borealis</i> | Eastern Red Bat | 1 |
| <i>Ondatra zibethicus</i> | Muskrat | 1 |
| <i>Eptesicus fuscus</i> | Big Brown Bat | 1 |
| <i>Lasionycteris noctivagans</i> | Silver Haired Bat | 1 |
| <i>Castor canadensis</i> | Beaver | 2 |
| <i>Tamias striatus</i> | Eastern Chipmunk | 1 |
| <i>Glaucomys volans</i> | Southern Flying Squirrel | 1 |
| <i>Urocyon cinereoargenteus</i> | Gray Fox | 1 |
| <i>Didelphis virginiana</i> | Virginia Opossum | 1 |
| <i>Blarina brevicauda</i> | Northern Short-tailed Shrew | 1 |
| <i>Microtus pennsylvanicus</i> | Meadow Vole | 1 |
| <i>Sylvilagus floridanus</i> | Eastern Cottontail | 1 |
| Reptiles | | |
| <i>Agkistrodon contortrix</i> | Northern Copperhead | 1 |
| <i>Carphophis amoneous</i> | Eastern Worm Snake | 1 |
| <i>Chrysemys picta picta</i> | Eastern Painted Turtle | 1 |
| <i>Clemmys guttata</i> | Spotted Turtle | 1 |
| <i>Crotalus horridus</i> | Timber Rattlesnake | 3 |
| <i>Diadophis punctatus</i> | Northern Ringneck Snake | 1 |
| <i>Glyptemys insculpta</i> | Wood Turtle | 2 |
| <i>Glyptemys muhlenbergii</i> | Bog Turtle | 3 |
| <i>Kinosternon subrubrum</i> | Eastern Mud Turtle | 1 |
| <i>Opheodrys aestivus</i> | Rough Green Snake | 1 |
| <i>Plestiodon faciatus</i> | Five-lined Skink | 1 |
| <i>Pseudemys rubriventris</i> | Eastern Redbelly Turtle | 1 |
| <i>Regina septemvittata</i> | Queen Snake | 1 |
| <i>Sternotherus odoratus</i> | Common Musk Turtle | 1 |
| <i>Storeria dekayi dekayi</i> | Northern Brown Snake | 1 |



| Species | Common Name | Tier Priority |
|-------------------------------------|-------------------------------|---------------|
| <i>Terrepenne carolina carolina</i> | Eastern Box Turtle | 1 |
| <i>Thamnophis sirtalis</i> | Eastern Garter Snake | 1 |
| Amphibians | | |
| <i>Ambystoma maculatum</i> | Spotted Salamander | 1 |
| <i>Ambystoma opacum</i> | Marbled Salamander | 2 |
| <i>Anaxyrus americanus</i> | American Toad | 1 |
| <i>Anaxyrus fowleri</i> | Fowler's Toad | 1 |
| <i>Desomognathus fuscus</i> | Northern Dusky Salamander | 1 |
| <i>Eurycea bislineata</i> | Northern Two-lined Salamander | 1 |
| <i>Hyla chrysoscelis</i> | Cope's Gray Tree Frog | 1 |
| <i>Hyla cinerea</i> | Green Tree Frog | 3 |
| <i>Hyla versicolor</i> | Gray Tree Frog | 1 |
| <i>Lithobates clamitans</i> | Green Frog | 1 |
| <i>Lithobates palustris</i> | Pickerel Frog | 1 |
| <i>Lithobates sphenoccephalus</i> | Southern Leopard Frog | 1 |
| <i>Lithobates sylvaticus</i> | Wood Frog | 1 |
| <i>Notophthalmus viridescens</i> | Eastern Newt | 1 |
| <i>Plethodon cinereus</i> | Redback Salamander | 1 |
| <i>Pseudacris crucifer</i> | Northern Spring Peeper | 1 |
| <i>Pseudacris feriarum</i> | Upland Chorus Frog | 1 |
| <i>Pseudotriton ruber</i> | Northern Red Salamander | 1 |
| Fish | | |
| <i>Acipenser brevirostrum</i> | Shortnose Sturgeon | 2 |
| <i>Acipenser oxyrinchus</i> | Atlantic Sturgeon | 3 |
| <i>Alosa aestivalis</i> | Blueback Herring | 1 |
| <i>Alosa mediocris</i> | Hickory Shad | 1 |
| <i>Alosa pseudoharengus</i> | Alewife | 1 |
| <i>Alosa sapidissima</i> | American Shad | 1 |
| <i>Ameriurus nebulosus</i> | Brown Bullhead | 1 |
| <i>Amia calva</i> | Bowfin | 2 |
| <i>Anguilla rostrata</i> | American Eel | 1 |
| <i>Margariscus margarita</i> | Pearl Dace | 3 |
| <i>Morone saxatilis</i> | Striped Bass | 1 |
| <i>Notropis bifrenatus</i> | Bridle Shiner | 3 |
| Dragonflies and Damselflies | | |
| <i>Anax longipes</i> | Comet Darner | 2 |
| <i>Archilestes grandis</i> | Great Spreadwing | 1 |
| <i>Argia sedula</i> | Blue-ringed Dancer | 2 |
| <i>Arigomphus villosipes</i> | Unicorn Clubtail | 1 |
| <i>Cordulegaster erronea</i> | Tiger Spiketail | 1 |



| Species | Common Name | Tier Priority |
|----------------------------------|--------------------------------|---------------|
| <i>Enallagma aspersum</i> | Azure Bluet | 2 |
| <i>Enallagma basidens</i> | Double-striped Bluet | 2 |
| <i>Enallagma divagans</i> | Turquoise Bluet | 1 |
| <i>Enallagma traviatum</i> | Slender Bluet | 2 |
| <i>Erpetogomphus designatus</i> | Eastern Ringtail | 2 |
| <i>Gomphus exilis</i> | Lancet Clubtail | 2 |
| <i>Gomphus vastus</i> | Cobra Clubtail | 2 |
| <i>Hagenius brevistylus</i> | Dragonhunter | 1 |
| <i>Ischnura kellicotti</i> | Lilypad Forktail | 1 |
| <i>Ischnura ramburii</i> | Rambur's Forktail | 2 |
| <i>Lestes forcipatus</i> | Sweetflag Spreadwing | 2 |
| <i>Lestes inaequalis</i> | Elegant Spreadwing | 2 |
| <i>Nasiaeschna pentacantha</i> | Cyrano Darner | 1 |
| <i>Nehalennia gracilis</i> | Sphagnum Sprite | 3 |
| <i>Nehalennia irene</i> | Sedge Sprite | 3 |
| <i>Neurocordulia obsoleta</i> | Umber Shadowdragon | 2 |
| <i>Somatochlora filosa</i> | Fine-lined Emerald | 3 |
| <i>Somatochlora linearis</i> | Mocha Emerald | 1 |
| <i>Somatochlora tenebrosa</i> | Clamp-tipped Emerald | 2 |
| <i>Stylogomphus albistylus</i> | Eastern Least Clubtail | 2 |
| <i>Stylurus plagiatus</i> | Russet-tipped Clubtail | 1 |
| <i>Tachopteryx thoreyi</i> | Grey Petaltail | 3 |
| Butterflies | | |
| <i>Callophrys irus</i> | Frosted Elfin | 3 |
| <i>Danaus plexippus</i> | Monarch | 1 |
| <i>Euphyes dion</i> | Dion Skipper | 2 |
| <i>Euphydryas phaeton</i> | Baltimore Checkerspot | 1 |
| <i>Hesperia leonardus</i> | Leonard's Skipper | 1 |
| <i>Lycaena hyllus</i> | Bronze Copper | 2 |
| <i>Polites origenes</i> | Crossline Skipper | 1 |
| <i>Pompeius verna</i> | Little Glassywing | 3 |
| <i>Satyrium edwardsii</i> | Edwards' Hairstreak | 3 |
| <i>Speyeria cybele</i> | Great Spangled Fritillary | 2 |
| Bees | | |
| <i>Bombus affinis</i> | Rusty-patched Bumble Bee | 2 |
| <i>Lasioglossum michiganense</i> | A Sweat Bee | 2 |
| <i>Protandrena abdominalis</i> | A Mining Bee | 2 |
| <i>Pseudopanurgus virginicus</i> | A Slender Tri-color Mining Bee | 2 |
| Beetles | | |
| <i>Oodes americanus</i> | A Ground Beetle | 2 |



| Species | Common Name | Tier Priority |
|---|-----------------------------------|---------------|
| Mussels and Snails | | |
| <i>Alasmidonta heterodon</i> | Dwarf Wedgemussel | 3 |
| <i>Alasmidonta undulata</i> | Triangle Floater | 2 |
| <i>Alasmidonta varicosa</i> | Brook Floater | 2 |
| <i>Anguispira fergusonii</i> | Coastal-plain Tigersnail | 2 |
| <i>Anodonta implicata</i> | Alewife Floater | 2 |
| <i>Fontigens bottimeri</i> | Appalachian Springsnail | 3 |
| <i>Lampsilis cariosa</i> | Yellow Lampmussel | 2 |
| <i>Lasmigona subviridis</i> | Green Floater | 2 |
| <i>Leptodea ochracea</i> | Tidewater Mucket | 2 |
| <i>Ligumia nasuta</i> | Eastern Pondmussel | 2 |
| <i>Stenotrema barbatum</i> | Bristled Slitmouth | 2 |
| Crustaceans | | |
| <i>Acanthocyclops columbiensis</i> | Copepod sp. | 1 |
| <i>Attheyella (Mrazekiella) carolinensis</i> | Copepod sp. | 2 |
| <i>Attheyella (Mrazekiella) obatogamensis</i> | Copepod sp. | 2 |
| <i>Attheyella (Mrazekiella) spinipses</i> | A harpacticoid copepod | 2 |
| <i>Bryocamptus zschokkei alleganiensis</i> | Copepod sp. | 2 |
| <i>Bryocamptus (Bryocamptus) hutchinsoni</i> | Copepod sp. | 2 |
| <i>Bryocamptus (Bryocamptus) minutus</i> | Copepod sp. | 2 |
| <i>Bryocamptus (Limocamptus) nivalis</i> | Copepod sp. | 2 |
| <i>Cambarus acuminatus</i> | Acuminate crayfish | 2 |
| <i>Cambarus diogenes</i> | Devil Crawfish | 2 |
| <i>Cambarus dubius</i> | Upland Burrowing Crayfish | 2 |
| <i>Diacyclops harrisi</i> | Copepod sp. | 2 |
| <i>Diacyclops navus</i> | Copepod sp. | 2 |
| <i>Eucyclops elegans</i> | Copepod sp. | 2 |
| <i>Macrocyclops albidus</i> | Copepod sp. | 2 |
| <i>Paracyclops poppei</i> | Copepod sp. | 2 |
| <i>Skistodiaptomus pallidus</i> | A calanoid copepod | 2 |
| <i>Stygobromus hayi</i> | Hay's Spring Amphipod | 1 |
| <i>Stygobromus kenki</i> | Kenk's Amphipod | 1 |
| <i>Stygobromus pizzinii</i> | Pizzini's Cave Amphipod | 2 |
| <i>Stygobromus sextarius</i> | Capital Area groundwater amphipod | 2 |
| <i>Stygobromus tenuis potomacus</i> | Potomac Groundwater Amphipod | 1 |
| Sponges | | |
| <i>Ephydatia</i> sp. | A Freshwater Sponge | 2 |
| <i>Spongilla</i> sp. | A Freshwater Sponge | 2 |



2.6 Changes from SWAP 2005



The large amount of data collected from the surveying species in the District drove the addition and removal of a number of species to the 2015 SGCN list. Species were removed or added for a variety of reasons. Species were removed if recent occurrence data indicated that the species populations were secure or if historical and contemporary data showed that the species had been extirpated long-term. Other species were removed if there were no records of that species ever existing in the District. See Table 3 for a complete list of the species that were removed and why.

Species were scored based on the Millsap ranking criteria where recent local or regional data suggested declining populations or new data was available for species that were not assessed in 2005. Finally, some new taxa (bees, beetles, terrestrial snails, crayfish, and sponges) have been added based on local and regional data and conservation goals.

Table 3 SGCN Removed from SWAP 2015

| Species | Common Name | Reason for Removal |
|-----------------------------|----------------------|--|
| Birds | | |
| <i>Bubo virginianus</i> | Great Horned Owl | District and regional populations stable and increasing |
| <i>Buteo lineatus</i> | Red-shouldered Hawk | |
| <i>Buteo platypterus</i> | Broad-winged Hawk | No longer breeding in District, uncommon migrant |
| <i>Empidonax virescens</i> | Acadian Flycatcher | District and regional populations stable and increasing |
| Mammals | | |
| <i>Neotoma magister</i> | Allegheny Woodrat | No historical records of ever being documented in the city |
| <i>Synaptomys cooperi</i> | Southern Bog Lemming | No historical records of ever being documented in the city |
| Reptiles | | |
| <i>Thamnophis sauritus</i> | Eastern Ribbon Snake | No current records of occurrence |
| <i>Elaphe guttata</i> | Corn Snake | |
| <i>Cemophora coccinea</i> | Scarlet Snake | |
| <i>Sceloporus undulatus</i> | Eastern Fence Lizard | |



| Species | Common Name | Reason for Removal |
|---|------------------------------|--|
| <i>Heterodon platirhinos</i> | Eastern Hognose Snake | |
| <i>Coluber constrictor</i> | Black Racer | |
| Amphibians | | |
| <i>Acris crepitans</i> | Cricket Frog | No current records of occurrence |
| <i>Pseudotriton montanus</i> | Mud Salamander | No historical records of ever being documented in the city |
| Fish | | |
| <i>Campostoma anomalum</i> | Central Stoneroller | District and regional populations stable and increasing |
| <i>Ericymba buccata</i> | Silverjaw Minnow | |
| <i>Etheostoma blennioides</i> | Greenside Darter | |
| <i>Lepomis gulosus</i> | Warmouth | |
| Dragonflies and Damselflies | | |
| <i>Lestes dryasa</i> | Emerald Spreadwing | No historical records of ever being documented in the city |
| Butterflies | | |
| <i>Erynnis martialis</i> | Mottled Duskywing | No historical records of ever being documented in the city |
| <i>Euptoieta claudia</i> | Variegated Fritillary | District and regional populations stable and increasing |
| <i>Polygonia comma</i> | Eastern Comma | |
| <i>Polygonia interrogationis</i> | Question Mark | |
| <i>Pyrgu wyandot</i> | Appalachian Grizzled Skipper | No historical records of ever being documented in the city |
| <i>Speyeria idalia</i> | Regal Fritillary | District and regional populations stable and increasing |
| <i>Vanessa atalanta rubria</i> | Red Admiral | |
| Bees and Beetles | | |
| N/A | | |
| Mollusks | | |
| None removed | | |
| Crustaceans | | |
| <i>Acanthocyclops villosipes</i> | Copepods | Questions about taxonomy |
| <i>Attheyella villosipes</i> | | No recent or established trends or overall threats to this species/group |
| <i>Attheyella (Canthocamptus) illinoisensis</i> | | |
| <i>Attheyella (Mrazekiella) illinoisensis</i> | | |
| <i>Attheyella (Mrazekiella) obatogamen</i> | | |
| <i>Paracyclops fimbriatus chiltoni</i> | | |
| Sponges | | |
| None removed | | |

