Chapter 4 - Threats

Threat Prioritization

This chapter outlines the major threats to the District's species of greatest conservation needs and their habitats. The District's species of greatest conservation need and their habitats face considerable threats and they are all important. However, it would be virtually impossible to address them all in a 10-year plan. Furthermore, some threats are not feasible to mitigate due to the District's size and urban character. Thus, it was necessary to prioritize the threats and to target the top five highest-ranking threats. Threats were ranked by expert opinion, as described in Chapter 1.

The development phase of the WAP included a threat selection and prioritization process. The implementation phase will include a threat reassessment and reprioritization process. As conservation actions are implemented, the status and trends of species, habitats, and threats are expected to change. These changes will be measured by the District's monitoring plan (Chapter 8). Furthermore, conservation technologies will improve, and the District's approach to conservation will have to adapt to remain effective. Therefore, the District has a plan to reassess and reprioritize threats and subsequently revise the WAP. For example, a revised WAP may prioritize a threat that is currently ranked low on the table. This process will include the entire Working Group, with the collaboration of monitoring data from the DC Fisheries and Wildlife Division, the National Park Service, the US Geological Survey, the National Arboretum, the US Fish and Wildlife Service, MD Department of Natural Resources, and others.

National, International and Global Threats

Global

The conservation of many of the District's species of greatest conservation need is unfortunately outside the scope of the District's conservation actions alone. These species face threats that are outside of the District's sphere of influence because the threats originate outside of the District. These threats are regional, national, international, or even global in character. One overarching global threat may be climate change. Climate change can lead to increased precipitation in some regions and more arid conditions in others. More precipitation can lead to increased erosion and sedimentation and thus adversely affect priority habitats such as submerged aquatic vegetation in the District as well as species of greatest conservation need that are dependent on them such as alewife, blueback herring, American shad and hickory shad. It could also lead to erosion which could scour out potential spawning areas for Atlantic and shortnosed sturgeon. A decrease in precipitation could be just as disastrous for certain species as an increase is for others. If drought conditions caused certain springs and seeps to dry-up then the only available habitat for species such as the Hay's Spring amphipod could be lost. Whether caused by too much or too little rain, any additional loss of habitat for

populations which are already stressed could prevent them from recovering. Conservation actions should attempt to address all scales of threats whenever possible.

International

Certain international threats can be more easily addressed than others because the origin of the threat can be identified, as in the case of rainforest destruction. While rainforests may not at first appear important to species in our area, several species migrate to these regions during the winter and return to the District during spring migration. Since certain countries such as Brazil are known to be suffering from deforestation, international conservation actions could be directed at these specific locations. While it may be in a countries' immediate financial interest to allow the destruction of its rainforest, through fostering worldwide environmental stewardship, and implementing environmentally friendly ecotourism types of activities, it could be possible to prevent some of the rainforest loss and thus help the District's species of greatest conservation need. While international cooperation is not always easy, long term partnerships could pay off with truly rewarding outcomes.

National

Another group of migratory species affected by threats originating outside of the District are fish. Migratory species are very difficult to manage during the parts of their lives that they are spending outside of the District. They are living in a different habitat under a different jurisdiction. Attempting to partner with these jurisdictions is a strategy of this WAP. Species of greatest conservation need, including alewife, blueback herring, hickory shad, American shad, Atlantic sturgeon and shortnosed sturgeon are all vulnerable to fishing pressure, both targeted and as bycatch, when they are out of District jurisdiction. While the District has no commercial fishery, since these species are migratory and move in and out of different jurisdictional waters, they do encounter commercial fishing pressure as well as additional recreational pressure. In addition to the legal catch the commercial and recreational fisheries provide, there is also bycatch mortality and a poaching threat to each fishery. Taken together, the threats faced by these species when they are outside of the District are probably greater than those faced when they are within the District's jurisdictional waters.

Threat Tables

The following tables (Tables 10 & 11) show the threats in order of priority divided by habitat. The score on the right column represents the overall rank of each threat for terrestrial and aquatic habitats. Following the tables, the top five overall highest priority threats for terrestrial and aquatic habitats are described in detail. Then, there are descriptions for threats for which this WAP targets conservation actions.

Table 10. Threats to Terrestrial Habitats

Threat	Habitat Type				Priority Rank
	Hardwood Forest	Early successional/ Shrub-scrub/ Edge	Grasslands/ Managed meadows	Urban Landscapes	
Invasive/ alien species	3	2.9	2.4	1.8	**2.5**
Recreation	2.3		1.7	2.4	**1.6**
Fragmentation	2.5	2.1	1.7		**1.6**
Dumping	2.1	2.1	1	0.8	**1.5**
Contaminants	1	1.6	1.3	2.2	**1.5**
Noise pollution	1.9	1.9	1.3	1	**1.5**
Habitat loss	1.6	1.8	2		**1.4**
Parasites/ pathogens	1.5	1.4	0.1	2	**1.3**
Overbrowsing	1.8	1.1	0.8	1	**1.2**
Stormwater erosion	2			2	**1**
Air pollution	1		1	2	**1**
Poaching	0.4	1	0.8	1.4	**0.9**
Roads/ utility			1.3	2.2	**0.9**
Park facilities/ operations/			1.8	1.6	**0.9**
Erosion	0.4	1		1.8	**0.8**
Light pollution		0.5	0.2	2.2	**0.7**
Development		2			**0.5**
Change in land use/ ownership			1.4		**0.4**

Key to table:

3— high threat
2— medium threat
1— low threat
(blank)— not a threat to each habitat

Table 11. Threats to Aquatic Habitats

Threat	Habitat Type									Priority Rank
	Rivers & streams	Emergent Non-tidal Wetlands	Forested wetlands, riparian, floodplain	Emergent Tidal Wetland	Tidal Mudflats	Springs & seeps	SAV	Vernal Pools	Ponds & pools	
Invasive/ alien species	2.3	2.9	3	2.5	2.8	2	2.2		1.5	**2.1**
Sedimentation	3	2.1	0.9	2.8	2.6	3	2.1	1.1	1.5	**2.1**
Changes to hydrologic regimes	3	2.1	1.8	1.5	2	2	1.1	2.7	1.5	**2**
Stormwater erosion	3	1.9	2.2	1.8	2.2	2	2.4		1.6	**1.9**
Pollution	2.5	2.1		2.7	2.6	2	2.1	1.4	1.8	**1.9**
Erosion	2.9	2		1.3	1.8	1			1.6	**1.2**
Habitat loss		2.1	1.6	1.8		1	2.6			**1**
Over-browsing		0.8	1.5	2			1.3		1.4	**0.9**
Parasites/ pathogens		0.5	1.4	1.5		1	1.6		1.1	**0.8**
Poaching	1.6	0.4	1.2	0.7		1		1.1	0.4	**0.7**
Recreation	1		1.6				1	1		**0.6**
Hardened shorelines	1.9	0.5		1.3						**0.5**
Contaminants			1.5			3				**0.5**
Park facilities/ operation/ maintenance			1.5			2		1.3		**0.4**

Change in land use/ ownership			1.9				1.6			**0.4**
Fragmentation			2.4			1				**0.4**
Migration barriers	1.4							0.9		**0.3**
Piped streams/ channelization	2.4									**0.3**
Private property encroachment			2							**0.3**
Roads/ utility corridors			1.6			1				**0.3**
Dumping			1.2			1				**0.2**
Noise pollution			1.9							**0.2**
Air pollution			1.4							**0.2**
Overharvesting	1.3									**0.2**
Light pollution			1.3							**0.2**

Key to table:

3— high threat
2— medium threat
1— low threat
(blank)—not a threat to each habitat

The Top Five Threats

Terrestrial Habitats

1. **Invasive and alien species**— Invasive species are species that are not native to the area and are likely to threaten the native biodiversity of the habitat. Invasive and alien species could have been brought to habitats either intentionally or unintentionally by human disruptions of natural processes or by lack of management. Habitats can also be susceptible to invasive and alien species if they are suffering other stresses, such as nutrient loading, hydrological change, or soil compaction. They become established in habitats because they lack the predators and diseases that kept them at stable populations in their native environments (CRBC 1999).

   Invasive and alien plant and animal species are the overall biggest threat across both terrestrial and aquatic habitat types within the District. Invasive and alien species can include both plant and animal species. An example of an invasive plant species is lesser celandine, *Ranunculus ficaria*, which is a threat targeted by this WAP. Examples of invasive animal species are rats and raccoons. They have become invasive due to reasons associated with human development, resulting in increased predation on some of the District's species of greatest conservation need. Populations of these predators have reached historic highs and have reduced productivity for many species across all habitat types.

   While the threat of invasive and alien species is not unique to the District, the District does have a unique dilemma. Because all wildlife species are protected by District regulation- Water Pollution Control Act of 1984, wildlife agencies are extremely limited in management actions for animal invasive and alien species. For example, there are few options for managing the destructive overpopulation of resident Canada Geese, as discussed earlier.

2. **Recreation**— The demand for outdoor recreation amongst the urban setting has led recreationalists to the only remaining natural areas in the District. The DC Office of Planning says that much of the District's parkland is inaccessible to the public, resulting in high pressure on the parks that are accessible (DC OP draft). For example, Rock Creek Park contains some of the largest unfragmented natural areas in and around the District, so it is expectedly inundated with recreationalists. It is also home to the spotted salamander, which is a species of greatest conservation need. The salamander requires vernal pools during the spring for breeding success and Rock Creek Park is a priority location for vernal pools. However, the pools are disturbed and damaged by recreational activities and pets off leash. Despite signs and other enforcement efforts taken by the park, the salamander continues to be threatened by recreation. While recreation is not one of the top five highest ranking threats for vernal pools, it is a strategy of this WAP to prevent recreation from becoming a bigger threat to this habitat and the species of greatest conservation need that are dependent upon it.

3. **Fragmentation**— Fragmentation is caused by many forms of human development, such as roads and residences. Much of the original forest in the District has been developed and fragmented. When habitats are fragmented, gene flow alters, predation increases, and opportunities for invasive species increases. Fragmentation is a significant threat to animal species that require large, contiguous habitat blocks, such as grassland and forests species. Often, these species need these habitat blocks to breed or forage successfully. Less obvious forms of fragmentation, such as power lines through forests, may fragment habitat for insects and other invertebrate species (CRBC 1999). As such, almost all of the District's terrestrial species of greatest conservation need are impacted by fragmentation.

   This makes managing land use changes while simultaneously preserving the environment one of the greatest conservation challenges. Because of the high rate of urbanization, the District has a large responsibility for conserving the species that are impacted by urbanization.

4. **Dumping**— Dumping is a threat to all terrestrial habitats, as well as for forested wetlands/ riparian woodlands/ floodplains and springs and seeps.

5. **Contaminants**— Although the District was never a major industrial center, it still has Brownfields, or areas that are, or are perceived to be, polluted from past activities. Contamination on these sites impacts wildlife and their habitats and needs to be addressed before new uses can be developed (DC OP draft).

Aquatic Habitats

1. **Invasive and alien species**— See Terrestrial Habitats

2. **Sedimentation**— Sedimentation in the District is mainly a function of activities occurring in jurisdictions bordering the Potomac and Anacostia Rivers outside of the District. Due to land disturbance caused by housing and road construction, changes in the hydrologic regime caused by development, and the concurrent increase in impervious surfaces, stormwater runoff during rain events move large quantities of soil from land surfaces into the waterways. Once the rivers begin to widen and slow in the District, the sediment which had been transported downstream with the swift upstream currents begins to settle out as sediment. Sedimentation is also caused by water moving soil from disturbed sites in the District.

3. **Changes to hydrologic regimes**— Changes to hydrologic regimes have a number of sources. Urban development with associated draining, paving, topography changes, and other changes in land use can either increase or decrease the quantity of water flow. Converting forests to lawns, roadways, driveways or rooftops changes the hydrologic regime by removing the effect of water uptake and transpiration by the trees. The water not normally taken up and transpired by the

trees then has to go somewhere and may flow overland and directly into a receiving waterbody. Changing hydrologic regimes in the District are generally leading to reduced recharging of the aquifers and more runoff directly into creeks, streams and rivers. The runoff also tends to lead to increased rates of erosion, increased pollutant loads, and sedimentation.

Low-lying habitats, such as emergent non-tidal wetlands, emergent tidal wetlands, tidal mud flats, springs and seeps are impacted by changes in hydrologic regimes when their associated upland habitats are developed (CRBC 1999). Riparian woodlands are impacted by changes in hydrologic regimes when the channelization of streams lowers the water table. This eliminates the connection between streams and riparian woodlands, except during floods. This, in turn, increases sedimentation in floodplain forests due to floods (CRBC 1999).

4. **Stormwater erosion**— Increases in stormwater erosion occur concurrently with increases in impervious surfaces and changes in land use which occur during development. Due to the highly developed character of the District, stormwater has a tendency to produce a lot of erosion even in naturally vegetated areas. When stormwater is unregulated, or improperly directed to a receiving pond, it leads to sedimentation, the transport of pollutants, and dramatic changes in water temperature in the District's creeks, streams and rivers into which the water flows. Stormwater erosion thus leads to a degradation of those habitats into which it is deposited.

5. **Pollution**— Pollution can enter a habitat in a variety of ways ranging from urban runoff to air pollution. Nutrient loading can create conditions in which native plants cannot compete with invasive and alien species. Airborne pollutants, such as nitrogen and carbon dioxide, can contribute to this excess nutrient loading (CRBC 1999).

   The District, as an urban center, is especially vulnerable to both point and non-point source water pollution. Point source pollution includes municipal wastewater and stormwater discharges. For example, millions of gallons of raw sewage are released into the Anacostia River every year (DC OP draft). Non-point source pollution results from vast urban development and road construction. For example, urban development in the District and upstream in Maryland brings pollutants from buildings and streets into the Anacostia River (DC OP draft).

Additional Threats Prioritized

Terrestrial

1. **Stormwater erosion of Hardwood Forests.** Hardwood forests in the District are susceptible to stormwater erosion from urban area storm/sewer pipe outflows that empty into the streams or creeks running through such habitat. During periods of

heavy rainfall, such outflows may have sufficient volume and may generate the requisite erosive force to wash away stream-side vegetation.

2. **Habitat loss of Hardwood Forests.** Hardwood forests in the District face constant threat from the myriad effects of ever-increasing urbanization. Loss and degradation of such habitat from development projects such as roads, power lines, etc. is an ongoing process. The insidious effects on hardwood forest ecology of over-browsing by a burgeoning Whitetail Deer population, is another significant management issue.

3. **Park facilities, operations and maintenance in Grasslands/ Managed Meadows.** Laying of roads and trails and other infrastructure by park and municipal managers are a source of stress on grasslands/ managed meadows as well as urban landscapes. Mowing of grasslands and meadows at inappropriate times can alter critical habitat for associated species.

4. **Development on Early Successional/ Shrub-scrub/ Edge habitat.** The laying of trails and roads, as well as construction of infrastructure (e.g. buildings) is a constant threat to early successional/ shrub-scrub/ edge habitat within the District. Such habitat has a tendency to not get the same level of concern and respect by the layperson as some other habitat types, e.g. hardwood forest.

5. **Noise pollution in Early Successional/ Shrub-scrub/ Edge habitat.** Noise can be very disruptive to behavior patterns of animals that are required for their reproduction and survival. Little is known of the potential effects of sources of constant and substantial noise pollution on terrestrial species within metro areas. Basic research is needed to better understand the precise nature of the effects of this pervasive phenomenon within urban DC.

6. **Light pollution in Urban Landscapes.** The excessive use of street illumination and other sources of light throughout much of the urban landscapes of the District have the potential of being a source of disturbance for nocturnal species. Bright lights from tall buildings within the DC metro area are a source for mortality for bird species during migration seasons. Brightly lit buildings tend to disorient migrating birds thus causing them to collide into such structures.

7. **Roads/ utility corridors through Urban Landscapes.** See #1.

8. **Parasites/ pathogens in Urban Landscapes.** Parasites and pathogens have the potential for seriously impacting resident populations of a range of species within the District. Recent outbreaks of the West Nile virus have severely depleted bird populations within the metro area. Rabies and canine distemper are an ever-present threat for some of the District's priority bat and canine species.

9. **Poaching (terrestrial and aquatic) vs. Overharvesting (aquatic).** Poaching is an illegal form of removing wildlife. Overharvesting occurs when the removal of the species is not illegal, but is ecologically unsustainable.

Aquatic

1. **Erosion of Rivers and Streams** is caused both by high flows, typically caused by heavy rains, in the spring falling on frozen ground incapable of absorbing the precipitation, and in the summer and fall associated with passing hurricanes or other large scale meteorological events. It can also occur in the winter, caused by the scouring of river and stream bottoms and banks by ice flows. This type of erosion is believed to be partially responsible for the loss of submerged aquatic vegetation in the District.

2. **Habitat loss of Emergent Non-tidal Wetlands** is associated with both natural sedimentation and developmentally induced filling-in. Since land for development is at such a premium in the District, developers have great incentives to try and make these areas suitable for development.

3. **Overbrowsing of Emergent Tidal Wetlands** is a threat most closely linked to resident Canada geese. The overly abundant resident geese enter these wetlands to feed, but due their numbers, end up destroying the habitat.

4. **Contaminants entering Springs and Seeps** are associated with both overland flow into these habitats as well as groundwater contamination. Contaminants include airborne pollutants, and terrestrial pollutants such as runoff from roadways, and manicured and maintained lawns and gardens.

5. **Park facilities, operations and maintenance effects on Springs and Seeps** include activities as innocuous as vehicular traffic in-and-out of maintenance facilities, and maintenance of parkland. These operations allow for additional air-born and terrestrial contamination to occur due to the close proximity of facilities to these habitats.

6. **Habitat loss of Submerged Aquatic Vegetation** is caused by poor water quality and physical erosion and scouring. High turbidity, often caused by wind and wave induced erosion in aquatic systems, and overland stormwater erosion in terrestrial environments, prohibits light penetration needed for vegetative growth. Physical erosion and scouring of stream and river bottoms by either high flows or ice can cause the uprooting of established plants. All of these processes are negatively affecting our submerged aquatic vegetation habitats in the District.

7. **Park facilities, operations and maintenance effects on Vernal Pools** include activities as innocuous as vehicular traffic in-and-out of maintenance facilities, and maintenance of parkland. These operations allow for additional air-born and

terrestrial contamination to occur due to the close proximity of facilities to these habitats.

8. **Poaching in Vernal Pools** is associated with people visiting these habitats and removing organisms, either for display in their own homes or for sale in retail businesses.

9. **Erosion of Ponds & Pools** is generally caused by wind induced wave action cutting at shorelines and to some extent the shallow bottom areas. Erosion in these habitats can lead to a decrease in water quality by increasing the suspended solids found in these waters. The increased suspended solids in turn cuts down on the amount of light capable of sustaining aquatic vegetation.

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Chapter 5 – Conservation Actions – Habitats

This chapter details the District's actions for conserving its wildlife species of greatest conservation need. It is possible for the District to continue growing while minimizing the depletion of its natural treasures. Many of the threats can be mitigated with coordinated and comprehensive conservation planning.

Some species face unique threats and need to be addressed by actions specific to that species. Other species share the same threats. In other words, some species share similar habitat requirements and would all benefit from improvements to that habitat. For example, conserving tidal mudflats has the mutual benefit of potentially benefiting the American mink, northern river otter, and the common musk turtle. Therefore, the DC Fisheries and Wildlife Division staff used a two-pronged approach to develop a conservation plan for wildlife species of greatest conservation need:

- species approach
- habitat approach

This chapter deals with the habitat approach. Chapter 6 deals with the species approach.

Overarching Actions

While many threats are associated with specific habitats and species, other threats are District-wide or impact more than one habitat. For those threats, actions must be taken on the appropriate scale. These are overarching actions and can span the District across all or most habitats and species. The list of these actions is as follows:

1. **Prevent habitat loss**
   Due to threats such as urbanization and private property encroachment, significant habitat loss occurs District-wide. As such, while some populations of amphibian species of greatest conservation need are currently stable, they may decrease in the future because their habitat is threatened. In response, the District seeks to protect all habitats through acquisitions and easements programs and through 'best management practices' wherever possible.

2. **Reduce and control invasive and alien species**
   Invasive and alien species are one of the biggest threats to species of greatest conservation need across all habitats of the District. The Exotic Plants Management Team (EPMT) is based out of the Center for Urban Ecology of the National Park Service and removes and monitors a limited number of invasive plants for parks within the National Capital Region. Potential actions for this team could be to identify current and potential locations of specific invasive species using GPS.

3. **Reduce overbrowser populations**

Overbrowsing is a threat to many habitats, specifically to hardwood forests by white-tailed deer and emergent tidal wetlands by Canada Geese. Overbrowsing can destroy and change the structure of habitats. The National Park Service is currently researching the identification of deer and geese as a source of overbrowsing and the management options for those species. Implementing deer and goose management plans is a conservation action of this WAP. Other partners include the Anacostia Watershed Society, the US Geological Survey, and many others.

4. **Reduce and control predation**
   There are several predators of the District's species of greatest conservation need that are invasive including pets, feral animals, raccoons and rats. Strategies to reduce this predation include controlling feral cats and dogs, enforcing leash laws, and minimizing the human disturbances that create habitat for raccoons and rats. Another plan is to implement 'integrated pest management' District-wide.

5. **Participate in the planning process**
   It is strategic to use smart growth by aligning conservation principles with development goals during the District planning process. The DC Office of Planning produces a Comprehensive Plan that provides guidance for future land use, planning, and development (DC OP draft). The Division of Fisheries and Wildlife Division staff will keep abreast of proposed plans that would impact species of greatest conservation need and their habitats and become involved in the planning process wherever possible.

6. **Congressional and mayoral involvement**
   Support for wildlife conservation must be enlisted at both the federal and local level. This can be done in a variety of ways, ranging from establishing wildlife conservation laws to inviting congressional staff to participate in fieldwork. The support of elected officials could help secure funding for the adequate implementation of this WAP.

7. **Involve the public**
   Public involvement in the implementation of the District's WAP is an integral part of the Plan. The public will be involved in a variety of ways ranging from volunteering in fieldwork to participating in NGOs. This will increase awareness about the value of wildlife and the appropriate use of resources, as well as capture the power that groups of citizens have when they work together for the common goal of conserving wildlife. A detailed description of the public education and outreach plan is the heart of Chapter 7.

8. **Coordinate District land managers**
   Coordination among land managers in the District is an integral part of the implementation of this WAP. The Working Group is composed of partners that manage land in the District and are already implementing conservation actions on

those lands. A strategy of this WAP is to enhance the ability of the partners to protect the District's wildlife and habitats by facilitating data flow, reducing redundancy, and continuing the partnerships.

9. **Coordinate regional land managers**
   While coordination among land managers at the local level is crucial, it is also important to coordinate at the regional level. Due to the District's size and location, it shares many priority species and habitats with its surrounding states and the mid-Atlantic region. There are also threats to the District's species of greatest conservation need that originate from outside of the District's borders that must therefore be addressed at the regional level. Thus, coordination among land managers at the regional level would help ensure the effectiveness of conservation actions. Also, one of the major strategies of this WAP is to enhance the effectiveness of existing conservation actions, including regional plans. This would, for example, enhance the status and trends of migratory species that commute across the region.

10. **Enforce regulations**
    There are many threats addressed in this WAP that are already targeted by regulations. For example, regulations regarding pets on leashes in Rock Creek Park or recreation within the National Arboretum were established to prevent harm to wildlife. These regulations need to be better enforced.

11. **Continue research**
    Some of the District's species of greatest conservation need and their habitats have not been sufficiently surveyed to determine their status, trend, threats or needs, resulting in the inability to determine the most effective conservation actions. Some of these habitats are specific to the District, such as urban landscapes, ponds and pools. These habitats have a local dimension that has not been sufficiently explored to determine the most effective conservation actions. These locations have the potential to house or provide food for species of greatest conservation need, but more research is needed. As such, research and surveys are required to develop conservation actions for many species of greatest conservation need and their priority habitats. The most effective WAP possible is a major goal that requires ongoing research and monitoring of the status and trend of species of greatest conservation need and their habitats. Continued research and surveys will help prioritize species and habitats so that the most urgent threats are targeted as conditions change over time.

Conservation Actions by Habitat

The following set of conservation actions are organized by habitat type and are targeted to specific threats to those habitats. For each threat, partners for implementation are identified. Below are the acronyms for those partners:

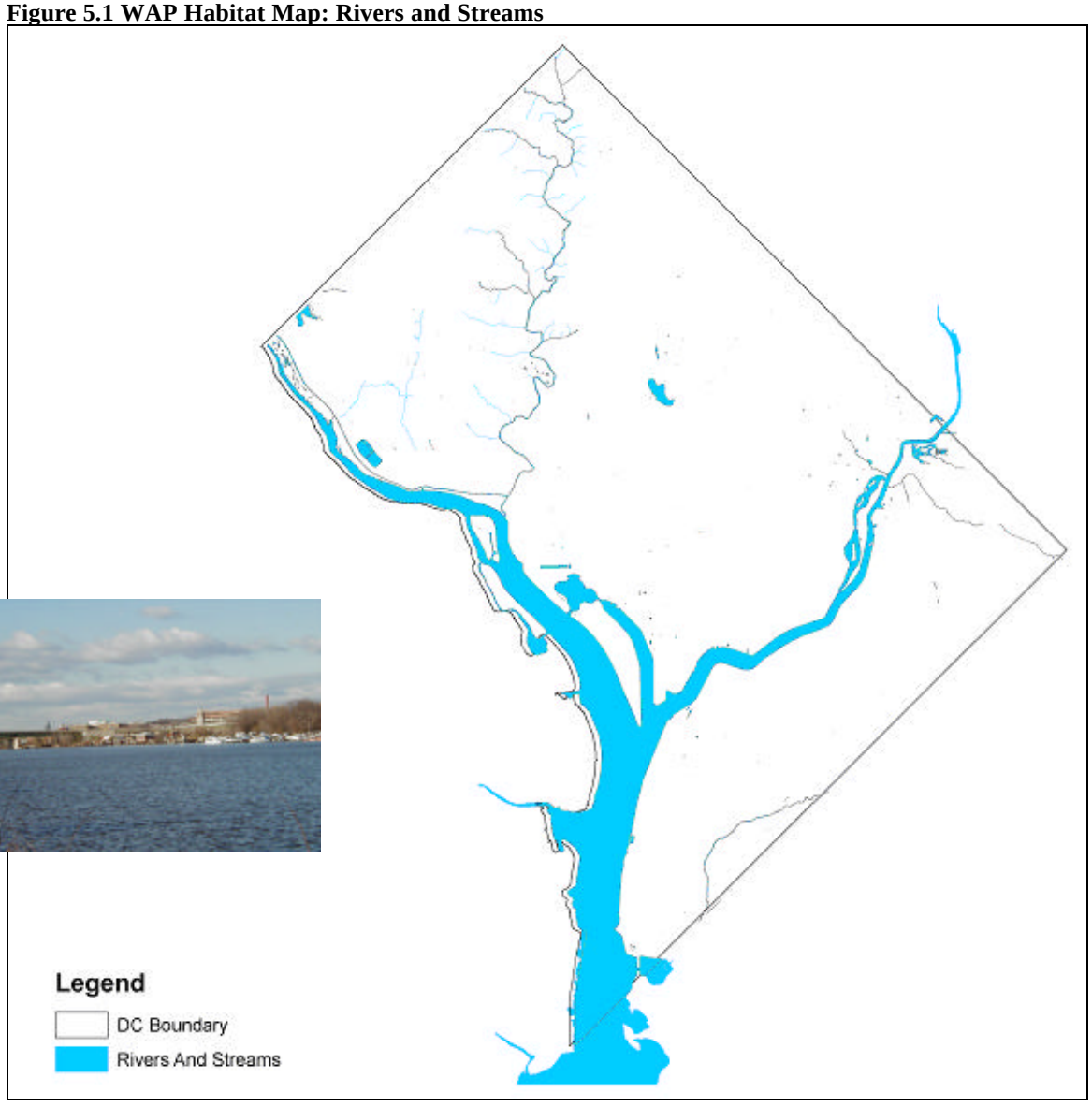
Partners for Implementation

ACD	Animal Control Division
AWS	Anacostia Watershed Society
BEQ	Bureau of Environmental Quality
COE	Corps of Engineers
DCW	DC Woodlands
DED	Department of Economic Development
DOT	Department of Transportation
DOW	Defenders of Wildlife
DPR	Department of Parks and Recreation
DPW	Department of Public Works
ECC	Earth Conservation Corps
ECU	Environmental Crimes Unit (Police Department)
MNPS	Maryland Native Plant Society
NA	National Arboretum
NPS	National Park Service
NZ	National Zoo
OOP	Office of Planning
USFWS	U. S. Fish and Wildlife Service
WASA	Water and Sewer Authority
WPD	Watershed Protection Division
WQD	Water Quality Division

Habitat 1 – Rivers and Streams

The Potomac and Anacostia rivers and several streams provide habitat for 62 species of greatest conservation need, making them the highest priority habitat. They form corridors to connect habitats and carry sediment and pollution downstream. However, the reliance on rivers and streams as conduits for storm and wastewater, among other uses, has resulted in erosion, degraded water quality and flooding (CRBC 1999).

Figure 5.1 WAP Habitat Map: Rivers and Streams



Conservation Actions for Rivers and Streams	
Threat: Sedimentation	**Rank: High**
Conservation Plan: Reduce Sedimentation	**Actions:** 1. Develop and implement a sediment control plan 2. Promote 'best management practices' for all DC projects. 3. Create or enhance buffers of vegetation along rivers for bank stabilization. Sub-action 1. Support the US Fish and Wildlife Service plan in regard to sedimentation in Hickey Creek and its tributaries.
Partners in Implementation: NPS, WPD, DPW, WASA	
Threat: Changes to Hydrologic Regimes	**Rank: High**
Conservation Plan: Reduce or eliminate activities that cause changes to hydrologic regimes	**Actions:** 1. Preserve groundwater recharge areas and avoid creating impervious surfaces, and where possible, remove impervious surfaces. 2. Preserve the pH of the groundwater. 3. Minimize disturbance in upstream watersheds. 4. Maximize the effects of stormwater management projects on maintaining the hydrologic regime. 5. Eliminate pollution and sediment from stormwater outfalls through facilities such as swirl concentrators. 6. Monitor the planning process from the beginning of all DC projects and, where possible, require 'low impact development.' 7. Promote 'best management practices' for all DC projects to increase the quality of runoff. 8. Where feasible, return streams to their natural conditions using techniques such as 'daylighting.' 9. Work with outside agencies and developers to mitigate impacts to the watershed.
Partners in Implementation: NPS, COE, DPW, WASA	
Threat: Stormwater Erosion	**Rank: High**
Conservation Plan: Reduce or eliminate stormwater runoff	**Actions:** 1. Implement the District's stormwater control plan District-wide, as developed by the Water Quality Division. 2. Promote 'best management practices' for all new DC development projects. 3. Work with contractors and designers during the planning process to mitigate stormwater runoff.
Partners in Implementation: WSP, OOP	

Conservation Actions for Rivers and Streams	
Threat: Erosion	**Rank: High**
Conservation Plan: Reduce or eliminate erosion	**Actions:** 1. Promote 'best management practices' for all new DC development projects; perform stream bank restoration. 2. Regularly maintain trails to keep erosion control structures functioning properly and reduce runoff. 3. Clean catch basins on roads to reduce runoff. Sub-action 1. Support the US Fish and Wildlife Service plan in regard to erosion in Hickey Creek, Watts Branch and Oxon Run.
Partners in Implementation: DPW, WPD, NPS, NA, FWS	
Threat: Pollution	**Rank: High**
Conservation Plan: Reduce or eliminate pollution	**Actions:** 1. Where applicable, install new trash traps at the stormwater outfalls to rivers and streams. 2. Promote separating stormwater and sanitary sewers when retrofitting. 3. Regular inspections of outfall structures and sanitary sewers; mitigate illegal discharges as soon as possible. Sub-action 1. Install oil/grit separators on catch basins at the Maintenance Yard.
Partners in Implementation: WASA, WSD, DPW, COE, ECU	

Associated Species of Greatest Conservation Need

Birds	**Fish**	**Invertebrates**
Acadian Flycatcher	Alewife	Alewife Floater
American Black Duck	American Eel	Brook Floater
Bald Eagle	American Shad	Dwarf Wedgemussel
Black-crowned Night Heron	Atlantic Sturgeon	Emerald Spreadwing
Great Horned Owl	Blueback Herring	Fine-lined Emerald
Louisiana Waterthrush	Bowfin	Gray Petaltail
Wood Duck	Central Stoneroller	Lilypad Forktail Damselfly
	Greenside Darter	Regal Fritillary Butterfly
Mammals	Hickory Shad	Sedge Sprite
American Mink	Shortnosed Sturgeon	Sphagnum Sprite
Gray Fox	Silverjaw Minnow	Spiny-foot Copepod
N. River Otter	Warmouth	Tidewater Mucket
S. Bog Lemming		Tiger Spiketail Dragonfly
Virginia Opossum	**Reptiles**	Triangle Floater
	Common Musk Turtle	Unicorn Clubtail Dragonfly
Amphibians	E. Mud Turtle	Yellow Lampmussel
American Toad	E. Painted Turtle	14 Copepod species
Bullfrog	Redbelly Turtle	
	Spotted Turtle	

	Wood Turtle	

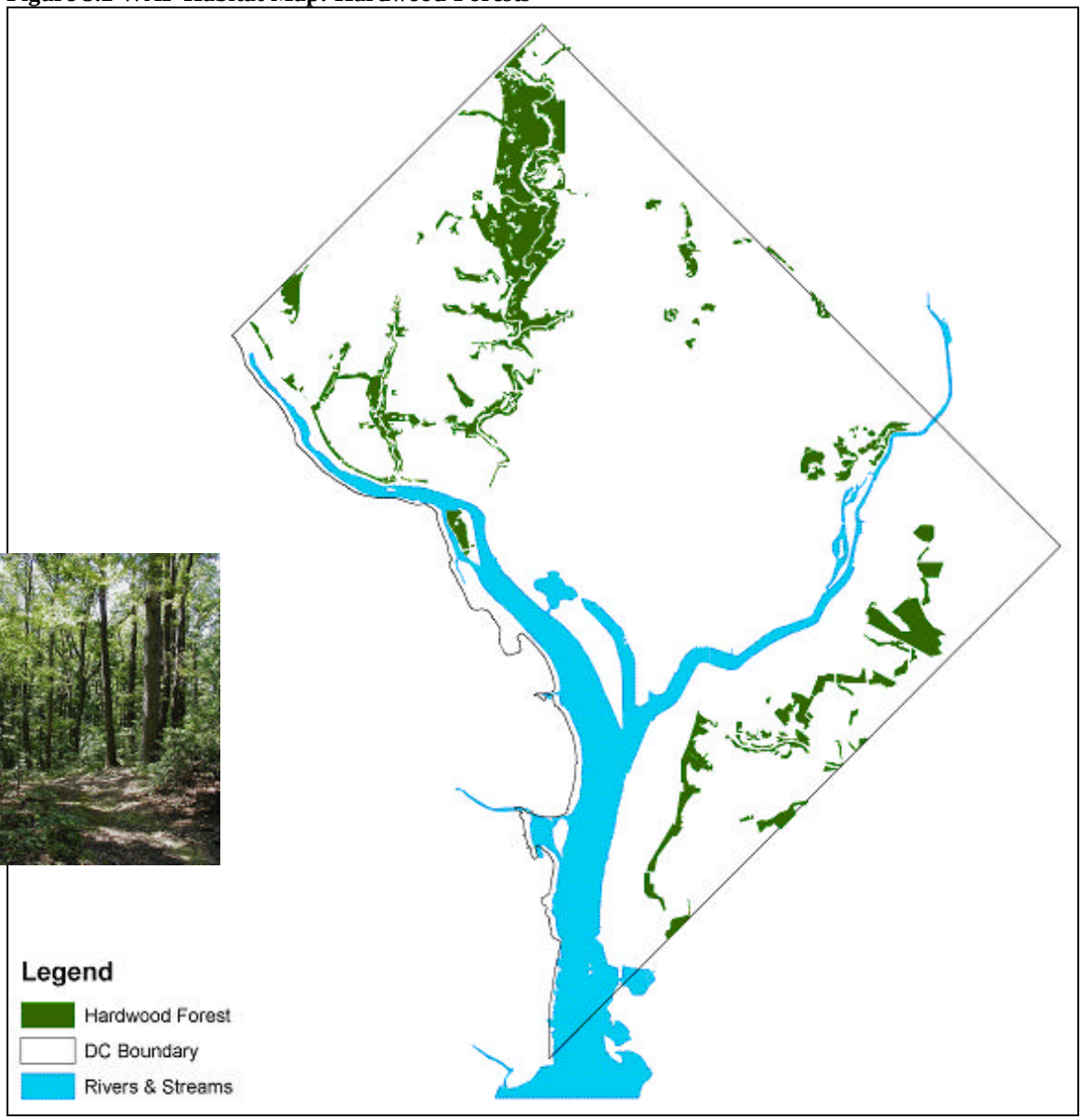
Priority Locations

Potomac River
Anacostia River
Rock Creek and tributaries
Oxon Run
Hickey Run
Fort Dupont
Pope's Branch
Watts Branch

Habitat 2 – Hardwood Forests

Hardwood forests are of priority conservation significance within the District because of their complex composition and vegetation structure. For example, many species of breeding birds require this habitat type. The species composition of these forests exhibits elements of both the mid-Atlantic Coastal Plain and the mid-Atlantic Piedmont ecoregions. Urbanization and browsing by white-tailed deer have contributed to significant fragmentation and degradation of this critical forest habitat within the District.

Figure 5.2 WAP Habitat Map: Hardwood Forests



Conservation Actions for Hardwood Forests

Threat: Invasive/ Alien Species — **Rank: High**

Conservation Plan:
Reduce, eliminate, and/or control populations of invasive/ alien species

Actions for Plants:

1. Fully fund the Exotic Plants Management Team (EPMT) exotics removal team and implement District-wide.
2. Implement control and management of invasive species District-wide.

Sub-action 1. National Arboretum has invasive species contract for areas that are not curated. Staff sprays or manually removes invasive species from their areas for which they are responsible.

Sub-action 2. A partnership between the Anacostia Watershed Society and Maryland Native Plant Society trains volunteers to identify and control exotic invasive plants, generally using mechanical methods.

Sub-action 3. Rock Creek Park monitors and treats forest pests such as gypsy moth and Dutch elm disease.

Sub-action 4. Fully fund Rock Creek Park's non-native plant management plan.

Actions for Animals:

1. 'Integrated pest management' program for rat and feral animal control.
2. Implement Rock Creek Park's deer management plan District-wide to address the overabundant deer population that is affecting habitat quality within the District.

Partners in Implementation: NPS, NA, NPR, ECC, AWS

Threat: Recreation — **Rank: High**

Conservation Plan:
Reduce the impacts of recreation

Actions:

1. Maximize use of existing recreational areas.
2. Establish and enforce laws and regulations to prohibit or limit recreational activities in hardwood forests.
3. Develop planning documents that designate management areas for long-term use.
4. Implement covenant on natural areas/riparian zones when these areas are transferred to DC/Sports and Entertainment at Kenilworth Park/North.

Sub-action 1. Support the National Arboretum's mission statement and grounds rules prohibit most recreation, with 24-7 security forces to enforce rules.

Partners in Implementation: NPS, DPR, NA, DED

Conservation Actions for Hardwood Forests	
Threat: Dumping	**Rank: High**
Conservation Plan: Stop dumping	**Actions:** 1. Increase surveillance and increase enforcement District-wide. 2. The District Environmental Crimes Unit and US Park Police will prosecute dumping/dumpers to the fullest extent of the law. 3. Public education using methods such as signs that have police contact numbers at popular dumping sites in the District. 4. Collect trash from dumping sites. Tires and rims are a considerable expense as they are considered hazardous waste and have a per/unit disposal fee. 5. Expand volunteer programs for park and river clean-ups, especially for floatable trash on the Anacostia River.
Partners in Implementation: DPW, NPS, ECU	
Threat: Storm-water Erosion	**Rank: High**
Conservation Plan: Reduce stormwater runoff	**Actions:** 1. Require 'best management practices' for all new DC projects. 2. Promote 'low impact development' and rain gardens District-wide. 3. Install riparian buffer plantings where appropriate. 4. Remove down trees in waterways that divert flows causing excessive bank erosion. Sub-action 1. The FWS is developing a plan to help mitigate erosion in Hickey Creek and its tributaries. Erosion problems within plant collections are dealt with by the National Arboretum staff responsible for that area. Sub-action 2. Riparian buffer plantings along the Anacostia River and Park.
Partners in Implementation: NPS, DPR, WPD, ECC, AWS	
Threat: Fragmentation	**Rank: High**
Conservation Plan: Reduce or eliminate fragmentation	**Actions:** 1. Protect hardwood forests through land purchases and easements. 2. Prepare a plan to identify and protect important natural areas prior to building trails, roads, etc. **3.** Use land transfers to prevent utility corridors and DC right-of-ways from becoming developed causing fragmentation of habitat.
Partners in Implementation: OOP, DED, NPS	

Associated Species of Greatest Conservation Need

Birds	**Mammals**	**Amphibians**
Acadian Flycatcher	Allegheny Woodrat	American Toad
American Woodcock	E. Chipmunk	Fowler's Toad
Bald Eagle	E. Red Bat	N. Spring Peeper
Broad-winged Hawk	E. Small-footed Myotis	Pickerel Frog
Brown Creeper	S. Bog Lemming	Spotted Salamander
Brown Thrasher	Gray Fox	Wood Frog
Cerulean Warbler	S. Flying Squirrel	
Chimney Swift		**Invertebrates**
Eastern Towhee	**Reptiles**	Appalachian Grizzled Skipper
Great-horned Owl	E. Box Turtle	Frosted Elfin
Hooded Warbler	E. Hognose Snake	Mottled Duskywing
Kentucky Warbler	E. Painted Turtle	
Louisiana Waterthrush	Five-lined Skink	
Ovenbird	N. Copperhead Snake	
Prothonotary Warbler	N. Ringneck Snake	
Red-shouldered Hawk	Rough Green Snake	
Scarlet Tanager	Timber Rattlesnake	
Wood Thrush	Wood Turtle	
Worm-eating Warbler		
Yellow-throated Vireo		

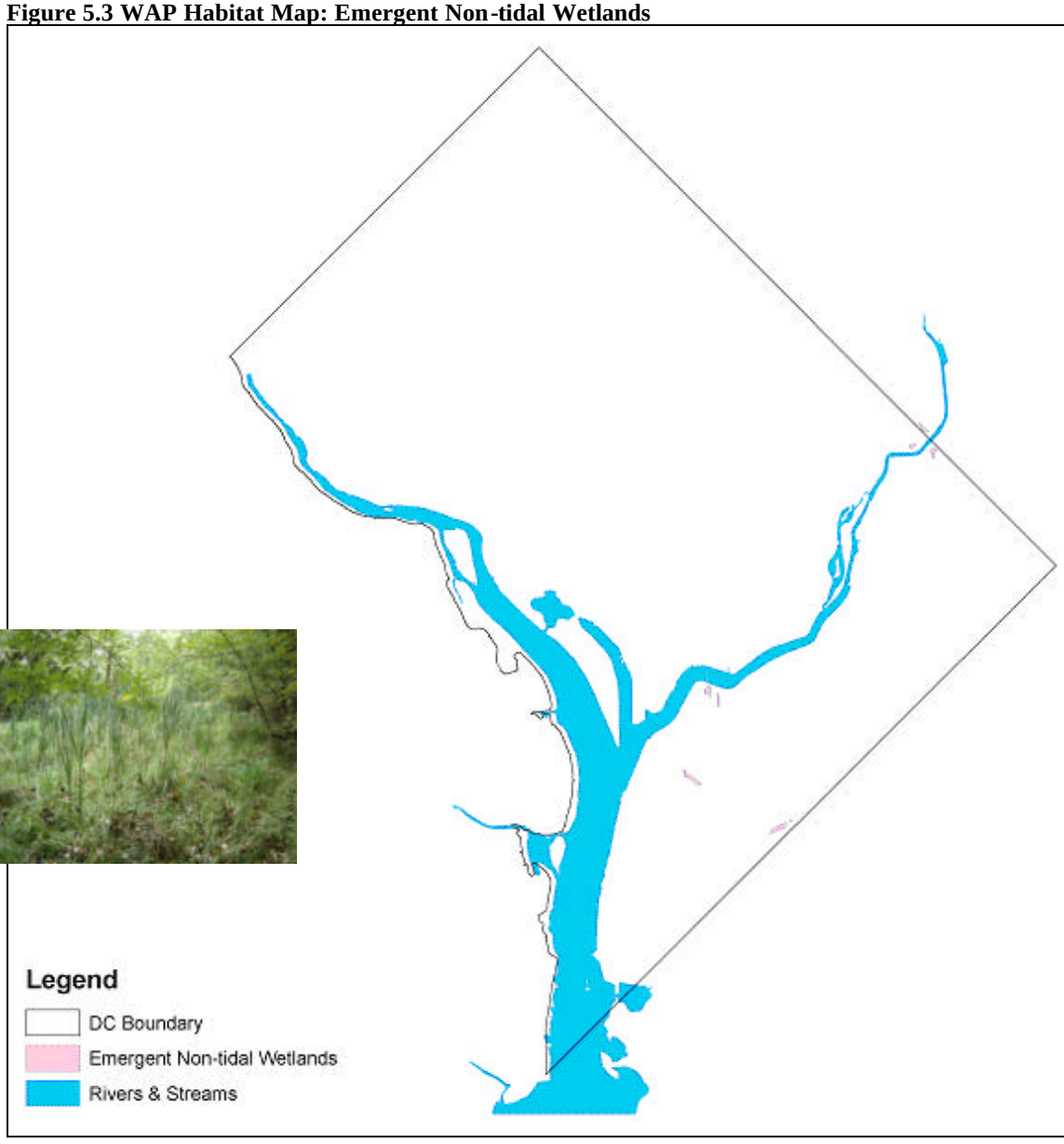
Priority Locations

Glover-Archbold Park
Rock Creek Park
National Arboretum
All Fort Circle sites
Kenilworth Park (River Trail)
Oxon Run Parkway
Shepherd Parkway
Suitland Parkway
Lincoln Wetland Complex
Veteran's Hospital area
Catholic University
National Zoo
Oxon Cove Park
St. Elizabeth's Hospital

Habitat 3 – Emergent Non-tidal Wetlands

Emergent non-tidal wetlands are newly-formed wetlands that are not subject to tides. They include wet meadows and forb-dominated herbaceous areas in ponds, streams, and marshes. While this type of wetland does not support fish populations because it does not become inundated with water, it is habitat for invertebrate species that live in the substrate and the reptile, amphibian and the bird species that feed on those invertebrates.

Figure 5.3 WAP Habitat Map: Emergent Non-tidal Wetlands



Conservation Actions for Emergent Non-tidal Wetlands	
Threat: Invasive/ Alien Species	**Rank: High**
Conservation Plan: Reduce, eliminate, and/or control populations of invasive/ alien species	**Actions:** 1. Fully fund the Exotic Plants Management Team (EPMT) exotics removal team and implement District-wide. 2. Control invasive species and prevent their establishment. 3. Provide sources to spray and manually remove plants, such as lesser celandine, *Ranunculus ficaria*. 4. Conduct 'integrated pest management' to remove rats and feral animals. Sub-action 1. Rock Creek Park monitors and treats forest pests such as gypsy moth and Dutch elm disease. Sub-action 2. Fully fund Rock Creek Park's non-native plant management plan.
Partners in Implementation: NPS, DPW, DPR, ECC, AWS	
Threat: Sedimentation	**Rank: High**
Conservation Plan: Reduce sedimentation	**Actions:** 1. Develop and implement a sediment control plan. 2. Promote 'best management practices' for all DC projects. Sub-action 1. Support the US Fish and Wildlife Service plan in regard to sedimentation in Hickey Creek and its tributaries.
Partners in Implementation: NPS, DPW, FWS	
Threat: Changes to Hydrologic Regimes	**Rank: High**
Conservation Plan: Reduce or eliminate activities that cause changes to hydrologic regimes	**Actions:** 1. Preserve groundwater recharge areas and avoid creating impervious surfaces, and where possible, remove impervious surfaces. 2. Preserve the pH of the groundwater. 3. Minimize disturbance in upstream watersheds. 4. Maximize the effects of stormwater management projects on maintaining the hydrologic regime. 5. Monitor the planning process from the beginning of all DC projects and, where possible, require 'low impact development.' 6. Where feasible, return streams to their natural conditions using techniques such as 'daylighting.' 7. Enhance the function of the wetland by restoring native plants and sustaining mitigation that has been done. 8. Work with outside agencies and developers to mitigate impacts to the watershed.
Partners in Implementation: DPW, WASA, COE, NPS	

Conservation Actions for Emergent Non-tidal Wetlands	
Threat: Pollution	**Rank: High**
Conservation Plan: Reduce or eliminate pollution	**Actions:** 1. Where applicable, install new trash collectors and at the inlets of emergent non-tidal wetlands. 2. Implement 'best management practices' District-wide.
Partners in Implementation: DPW, NPS, COE	
Threat: Habitat Loss	**Rank: High**
Conservation Plan: Prevent habitat loss	**Actions:** **1.** Protect wetlands through acquisition and easements.
Partners in Implementation: NPS, OOP, DED	

Associated Species of Greatest Conservation Need

Birds	**Amphibians**	**Reptiles**
American Bittern	American Toad	Queen Snake
American Black Duck	Bullfrog	Common Musk Turtle
Black-crowned Night Heron	Fowler's Toad	Eastern Box Turtle
Least Bittern	Marbled Salamander	Eastern Mud Turtle
Marsh Wren	Mud Salamander	Eastern Painted Turtle
Sora	N. Cricket Frog	Redbelly Turtle
Virginia Rail	N. Dusky Salamander	Spotted Turtle
Wilson's Snipe	N. Spring Peeper	Wood Turtle
	N. Two-lined Salamander	
Mammals	N. Red Salamander	**Invertebrates**
American Mink	Pickerel Frog	Lilypad Forktail Damselfly
N. River Otter	Redback Salamander	Mocha Emerald Dragonfly
S. Bog Lemming	Red-spotted Newt	Tiger Spiketail Dragonfly
Virginia Opossum	Salamander	Unicorn Clubtail Dragonfly
	Spotted Salamander	
	Upland Chorus Frog	
	Wood Frog	

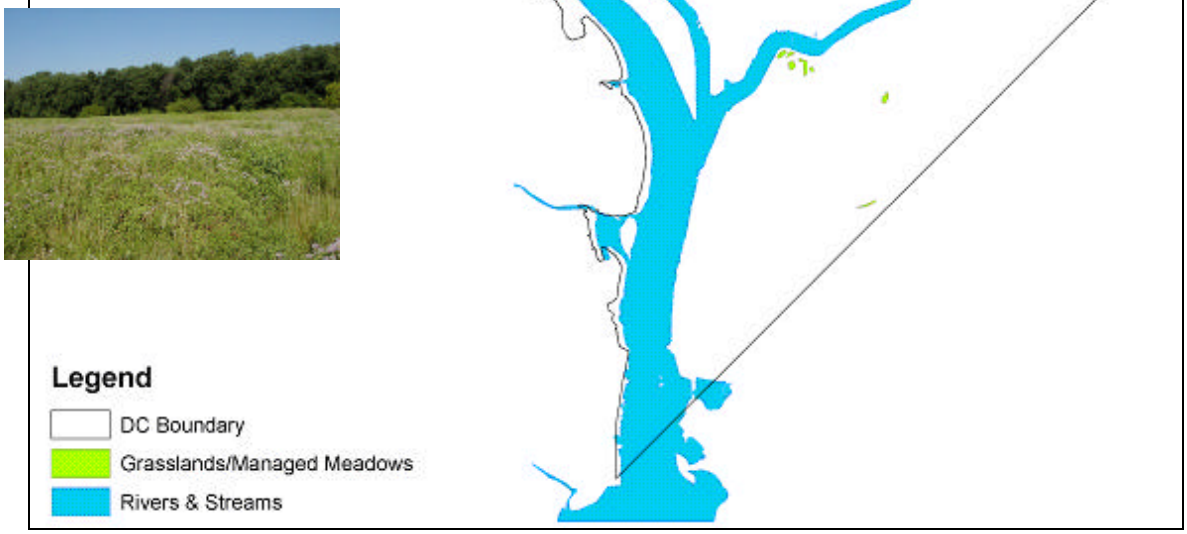
Priority Locations

Poplar Point
Lincoln Wetland Complex
National Arboretum
Kenilworth Aquatic Gardens
Oxon Run Parkway
Fort Dupont
C&O Canal

Habitat 4 – Grasslands/Managed Meadows

Grasslands are composed of vegetation that does not mature into successional growth or shrubland. They are primarily composed of grasses and can sometimes support scattered shrubs and trees. Species that rely on grasslands for breeding are among the species with the highest rates of population decline, such as the Bobolink (*Dolichonyx orizivorus*). Pervasive threats to grassland habitat come from secondary succession and their conversion to other human uses.

Figure 5.4 WAP Habitat Map: Grasslands/Managed Meadows



<table>
<tr><th colspan="2">Conservation Actions for Grasslands/Managed Meadows</th></tr>
<tr><td colspan="2">Threat: Invasive/ Alien Species Rank: High</td></tr>
<tr><td>Conservation Plan:
Reduce, eliminate, and/or control populations of invasive/ alien species</td><td>Actions for Plants:
1. Fully fund the Exotic Plants Management Team (EPMT) exotics removal team and implement District-wide.
2. Implement control and management of invasive species District-wide.
3. Collect and plant native seeds from meadow plants to use in restoration efforts.
Sub-action 1. National Arboretum has invasive species contract for areas that are not curated. Staff sprays or manually removes invasive species from their areas for which they are responsible.
Sub-action 2. A partnership between the Anacostia Watershed Society and Maryland Native Plant Society trains volunteers to identify and control exotic invasive plants, generally using mechanical methods.
Actions for Animals:
1. Trapping of feral cats and dogs.</td></tr>
<tr><td colspan="2">Partners in Implementation: NPS, NA, ECC, AWS, ACD</td></tr>
<tr><td colspan="2">Threat: Habitat Loss Rank: High</td></tr>
<tr><td>Conservation Plan:
Stop or slow habitat loss</td><td>Actions:
2. Land exchanges, acquisitions, and easements.
3. Prepare a plan to identify and protect grasslands and managed meadows across the District.
4. Require NEPA compliance.
5. National park management will conduct state and local planning activities for projects impact grasslands and managed meadows.
Sub-action 1. The National Arboretum has Woodland and Wildlife Management Plans that encourage habitat restoration and biodiversity within the woodland plant community. There are plans (such as an educational Flowering tree walk and a new Classical Chinese Garden) that will have some impact on meadows. However, the Arboretum is letting some other areas become meadows.</td></tr>
<tr><td colspan="2">Partners in Implementation: NPS, OOP, DED</td></tr>
</table>

Conservation Actions for Grasslands/Managed Meadows	
Threat: Park Facilities/ Operations/ Maintenance	**Rank:Medium**
Conservation Plan: Reduce the impact of park facilities, operation and management	**Actions:** 1. Enforce policies that reduce the impact of park facilities, operation and management. 2. Educate staff in regard to the impact of the park on grasslands and managed meadows. 3. Cut managed meadows to reduce growth of woody plants.
Partners in Implementation: NPS, NA, DPR	
Threat: Recreation	**Rank:Medium**
Conservation Plan: Reduce the impacts of recreation	**Actions:** 1. Maximize use of existing recreational areas. 2. Prepare a plan that designates management areas for long-term use. Sub-action 1. The National Arboretum's mission statement and grounds rules prohibit most recreation, with 24-7 security forces to enforce rules.
Partners in Implementation: DPR, NPS, NA	
Threat: Fragmentation	**Rank:Medium**
Conservation Plan: Reduce or eliminate fragmentation	**Actions:** 1. Protect through land purchases and easements. 2. Prepare a plan to identify and protect important natural areas prior to building trails, roads, etc. **3.** Managed meadows management plans to protect habitat diversity.
Partners in Implementation: OOP, DED, NPS	

Associated Species of Greatest Conservation Need

Birds	**Reptiles**	**Invertebrates**
Bobolink Wilson's Snipe Eastern Meadowlark Field Sparrow Grasshopper Sparrow Northern Bobwhite **Mammals** Eastern Cottontail	E. Box Turtle E. Fence Lizard E. Hognose Snake E. Worm Snake N. Black Racer Snake Rough Green Snake	Appalachian Grizzled Skipper Crossline Skipper Butterfly Edward's Hairstreak Frosted Elfin Great Spangled Fritillary Butterfly Imported Cabbage Butterfly Monarch Butterfly Mottled Duskywing Regal Fritillary Butterfly Variegated Fritillary Butterfly

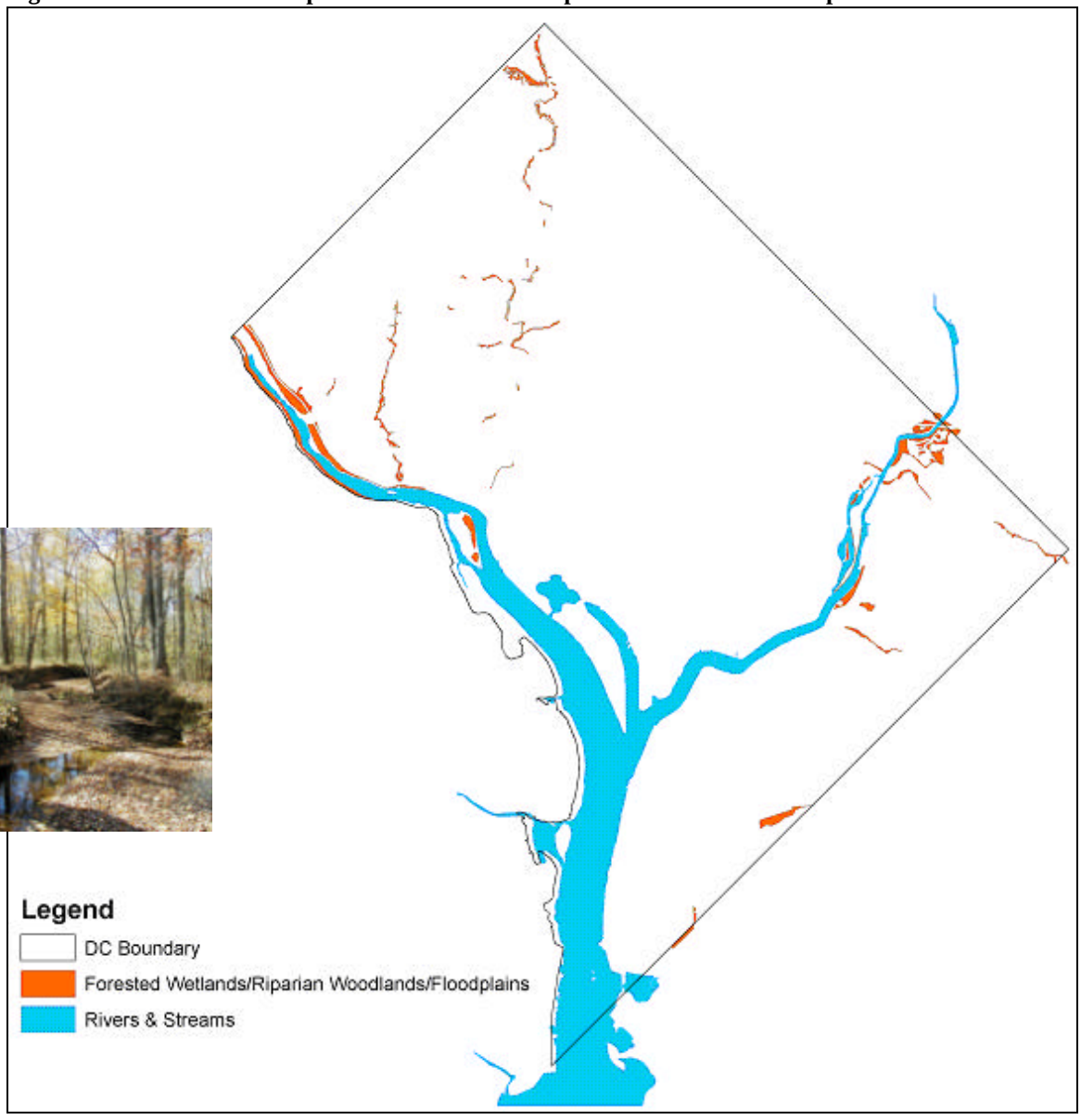
Priority Locations

Oxon Cove
Poplar Point
Kenilworth Park
National Arboretum
Anacostia Park
Oxon Run Parkway
Military Road area (RCNP)
Fort Circle Parks
Veteran's Hospital area

Habitat 5 – Forested Wetlands / Riparian Woodlands / Floodplains

Forested wetlands support vegetation with roots that are adapted to saturation during the growing season. The boundaries of forested wetlands can be difficult to delineate because forests with short hydroperiods are very similar to upland hardwood forests. Nationwide, forested wetlands account for the greatest amount of wetland loss and are experiencing changes in plant composition. Forested wetlands are important to many species in greatest conservation need. For example, the Yellow-throated Vireo reaches its highest densities in forested wetlands of the coastal plain.

Figure 5.5 WAP Habitat Map: Forested Wetlands/Riparian Woodlands/Floodplains



Conservation Actions for Forested Wetlands / Riparian Woodlands / Floodplains	
Threat: Invasive/ Alien Species	**Rank: High**
Conservation Plan: Reduce, eliminate, and/or control populations of invasive/ alien species	**Actions:** 1. Fully fund the Exotic Plants Management Team (EPMT) exotics removal team and implement District-wide. 2. Control invasive species and prevent their establishment. 3. Provide sources to spray and manually remove plants, such as lesser celandine, *Ranunculus ficaria*. 4. Conduct 'integrated pest management' to remove rats and feral animals. Sub-action 1. Rock Creek Park monitors and treats forest pests such as gypsy moth and Dutch elm disease. Sub-action 2. Fully fund Rock Creek Park's non-native plant management plan.
Partners in Implementation: NPS, NA, ECC, AWS	
Threat: Fragmentation	**Rank: High**
Conservation Plan: Reduce or eliminate fragmentation	**Actions:** 1. Conserve forested wetlands/ riparian woodlands/ floodplains. 2. Restore forested wetlands/ riparian woodlands/ floodplains, particularly where there are opportunities to connect forests that are currently separated by development or degraded habitat. 3. Encourage developers and property owners to preserve forested wetlands/ riparian woodlands/ floodplains during regulatory review. 4. Conduct planning efforts in parks before projects are initiated to determine impacts to natural resources. Projects will be avoided or altered in cases of impacts to natural resources. Areas with sensitive resources will be avoided.
Partners in Implementation: OOP, DEP, NPS	

Conservation Actions for Forested Wetlands / Riparian Woodlands / Floodplains	
Threat: Stormwater Erosion	**Rank: High**
Conservation Plan: Reduce or eliminate stormwater runoff	**Actions:** 1. Implement the District's stormwater control plan District-wide, as developed by the Water Quality Division. The District will enforce stormwater controls on construction sites vigorously. Regular inspections of sites will be necessary to prevent uncontrolled runoff. 2. Promote 'best management practices' for all new DC development projects. 'Low impact development' to reduce stormwater runoff and improve the quality of runoff to include fewer contaminants and sediment. 3. Pursue other opportunities to restore streams, reduce runoff, and reduce the amount of impervious surface.
Partners in Implementation: WASA, WPD, NPS, OOP	
Threat: Private Property Encroachment	**Rank: High**
Conservation Plan: Reduce or limit private property encroachment	**Actions:** 1. Enforce property boundaries via cooperation among parties, regular inspections, and restoration of sites. 2. Educate private property owners on impact of encroachment on species of greatest conservation need. Encroachments cause impacts on species of greatest conservation need by altering habitat and introducing non-native species. 3. Encourage property owners to restore, protect, and provide buffers for forested wetlands/riparian woodlands/floodplains.
Partners in Implementation: NPS	
Threat: Change in Land Use/ Ownership	**Rank:Medium**
Conservation Plan: Reduce or limit impact	**Actions:** 1. Work with landowners to use management practices that benefit species of greatest conservation need. 2. Encourage developers and property owners to preserve these areas during regulatory review. 3. Encourage property owners to restore, protect and provide buffers for these areas. 4. Designate areas as 'critical or special protection areas' to protect critical habitat from certain types of development, such as the cutting of trees by private landowners.
Partners in Implementation: NPS	

Associated Species of Greatest Conservation Need

Birds	**Amphibians**	**Invertebrates**
Acadian Flycatcher	American Toad	E. Comma Butterfly
American Black Duck	Fowler's Toad	Mocha Emerald Dragonfly
American Woodcock	Marbled Salamander	Red Admiral Dragonfly
Bald Eagle	N. Spring Peeper	
Black-crowned Night Heron	Spotted Salamander	
Cerulean Warbler		
Chimney Swift	**Reptiles**	
Kentucky Warbler	E. Box Turtle	
Louisiana Waterthrush		
Prothonotary Warbler		
Red-shouldered Hawk		
Wood Duck		
Yellow-throated Vireo		

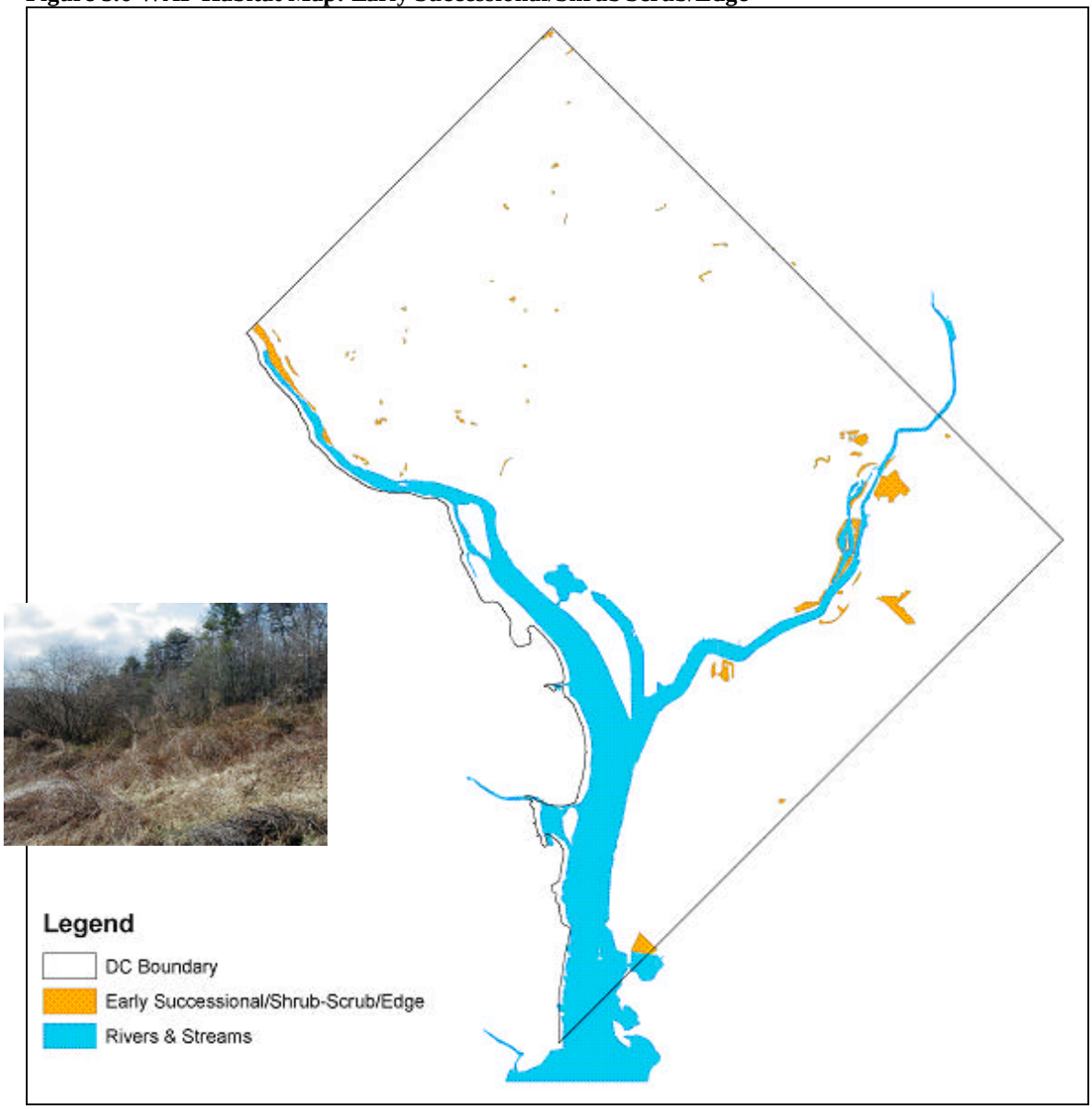
Priority Locations

Watt's Branch
Kingman Island
Oxon Run Parkway
National Arboretum
Oxon Cove
Anacostia Park
Kenilworth Park
C&O Canal
Rock Creek National Park
Theodore Roosevelt Island
Lincoln Wetland Complex

Habitat 6 – Early Successional / Shrub-Scrub / Edge

Early successional/shrub-scrub/edge habitats are habitats that have not matured into forest because of periodic natural or human disturbance. They are characterized by natural or semi-natural woody vegetation with aerial stems, usually less than six meters tall. Shrubs dominate this habitat, with shrub canopy accounting for 25-100 percent of the cover. Shrub cover is generally greater than 25 percent when tree cover is less than 25 percent. The vegetation characteristics provide unique habitat required by many species.

Figure 5.6 WAP Habitat Map: Early Successional/Shrub-Scrub/Edge



Conservation Actions for Early Successional / Shrub-Scrub / Edge	
Threat: Invasive/ Alien Species	**Rank: High**
Conservation Plan: Reduce, eliminate, and/or control populations of invasive/ alien species	**Actions:** 1. Fully fund the Exotic Plants Management Team (EPMT) exotics removal team and implement District-wide. 2. Control invasive species and prevent their establishment. 3. Provide sources to spray and manually remove plants, such as lesser celandine, *Ranunculus ficaria*. 4. Conduct 'integrated pest management' to remove rats and feral animals. Sub-action 1. Support Rock Creek Park in monitoring and treating forest pests such as gypsy moth and Dutch elm disease. Sub-action 2. Fully fund Rock Creek Park's non-native plant management plan.
Partners in Implementation: DPW, DPR, NPS, NA, ECC, AWS	
Threat: Fragmentation	**Rank: High**
Conservation Plan: Reduce or eliminate fragmentation	**Actions:** 1. Protect early successional/ shrub-scrub/ edge habitat through land purchases and easements. 2. Prepare a plan to identify and protect important natural areas prior to building trails, roads, etc. Sub-action 1. Encourage PEPCO electric service to manage its Right-of-Ways for early successional/ shrub-scrub/ edge habitat.
Partners in Implementation: OOP, DED, NPS	
Threat: Dumping	**Rank: High**
Conservation Plan: Stop dumping	**Actions:** 1. Increase surveillance and increase enforcement District-wide. 2. Support prosecution of dumpers by District and US Park Police to the fullest extent of the law. 3. Public education using methods such as signs that have police contact numbers at popular dumping sites in the District. 4. Collect trash from dumping sites. Tires and rims are a considerable expense as they are considered hazardous waste and have a per/unit disposal fee. 5. Expand volunteer programs for park and river clean-ups, especially for floatable trash on the Anacostia River.
Partners in Implementation: DPW, NPS, ECU	

Conservation Actions for Early Successional / Shrub-Scrub / Edge	
Threat: Development	**Rank: High**
Conservation Plan: Reduce development or the impact of development	**Actions:** 1. Be involved in the planning process for development projects. 2. Require 'best management practices' for all DC projects, using smart development strategies such as rain gardens, impervious surfaces, and native species plantings. **3.** Reserve portions of the land to be used for parkland instead of remaining idle.
Partners in Implementation: OOP, DED	
Threat: Noise Pollution	**Rank:Medium**
Conservation Plan: Reduce noise pollution	**Actions:** 1. Study/research the effects of noise pollution on species. 2. Add the effects of noise pollution on wildlife to existing research projects. **3.** Create and maintain buffers around the habitat.
Partners in Implementation: OOP	

Associated Species of Greatest Conservation Need

Birds	**Mammals**	**Invertebrates**
American Woodcock	Allegheny Woodrat	Frosted Elfin
Brown Thrasher	E. Chipmunk	Little Glassywing Butterfly
Eastern Towhee	Gray Fox	Mottled Duskywing
Field Sparrow		Question Mark Butterfly
Northern Bobwhite	**Reptiles**	
Ovenbird	Corn Snake	
White-eyed Vireo	E. Box Turtle	
	E. Fence Lizard	
	E. Worm Snake	
	N. Black Racer Snake	

Priority Locations

Kingman Island
National Arboretum
Poplar Point
Fort Dupont (along Old Golf Course Fairways)
Fort Lincoln
Anacostia Park (East Bank)
Right-of-Ways
Kenilworth Aquatic Gardens

Habitat 7 – Emergent Tidal Wetlands

Emergent tidal wetlands are lands that are inundated by tidal waters. They can be seasonally, temporarily, and semi-permanently flooded. Emergent vegetation is important for water quality because it acts as a filter for sediment and other substances. Common plant species include wild rice, duck potato, American lotus, *Polygonum* species, soft rush, pickerelweed, sedges, bulrush, nuphar, common boneset, spikerush, wool-grass, spatterdock, swamp milkweed, and stiff march bedstraw.

Figure 5.7 WAP Habitat Map: Emergent Tidal Wetlands

Conservation Actions for Emergent Tidal Wetlands	
Threat: Sedimentation	**Rank: High**
Conservation Plan: Reduce sedimentation	**Actions:** 1. Develop and implement a sediment control plan. 2. Promote 'best management practices' for all DC projects
Partners in Implementation: NPS, WPD, NA	
Threat: Pollution	**Rank: High**
Conservation Plan: Reduce or eliminate pollution	**Actions:** 1. Where applicable, install new trash traps at the outfalls to emergent tidal wetlands. 2. Implement 'best management practices' District-wide.
Partners in Implementation: WPD, DPW	
Threat: Invasive/ Alien Species	**Rank: High**
Conservation Plan: Reduce, eliminate, and/or control populations of invasive/ alien species	**Actions:** 1. Fully fund the Exotic Plants Management Team (EPMT) exotics removal team and implement District-wide. *2.* Control invasive species and prevent their establishment. 3. Provide resources to spray and manually remove plants, such as lesser celandine, *Ranunculus ficaria*. 4. Conduct 'integrated pest management' to remove rats and feral animals.
Partners in Implementation: NPS, ECC, AWS	
Threat: Overbrowsing	**Rank: High**
Conservation Plan: Reduce overbrowsing	**Actions:** 1. Reduce browser populations. 2. Implement deer management plan. 3. Implement goose management plan.
Partners in Implementation: AWS, NPS, NA	
Threat: Stormwater Erosion	**Rank:Medium**
Conservation Plan: Reduce or eliminate stormwater runoff	**Actions:** 1. Implement the District's stormwater control plan District-wide, as developed by the Water Quality Division. 2. Promote 'best management practices' for all new DC development projects.
Partners in Implementation: WPD, DPW, WASA	

Priority Locations

Anacostia River
Kingman Island
Theodore Roosevelt Island
Kenilworth Marsh

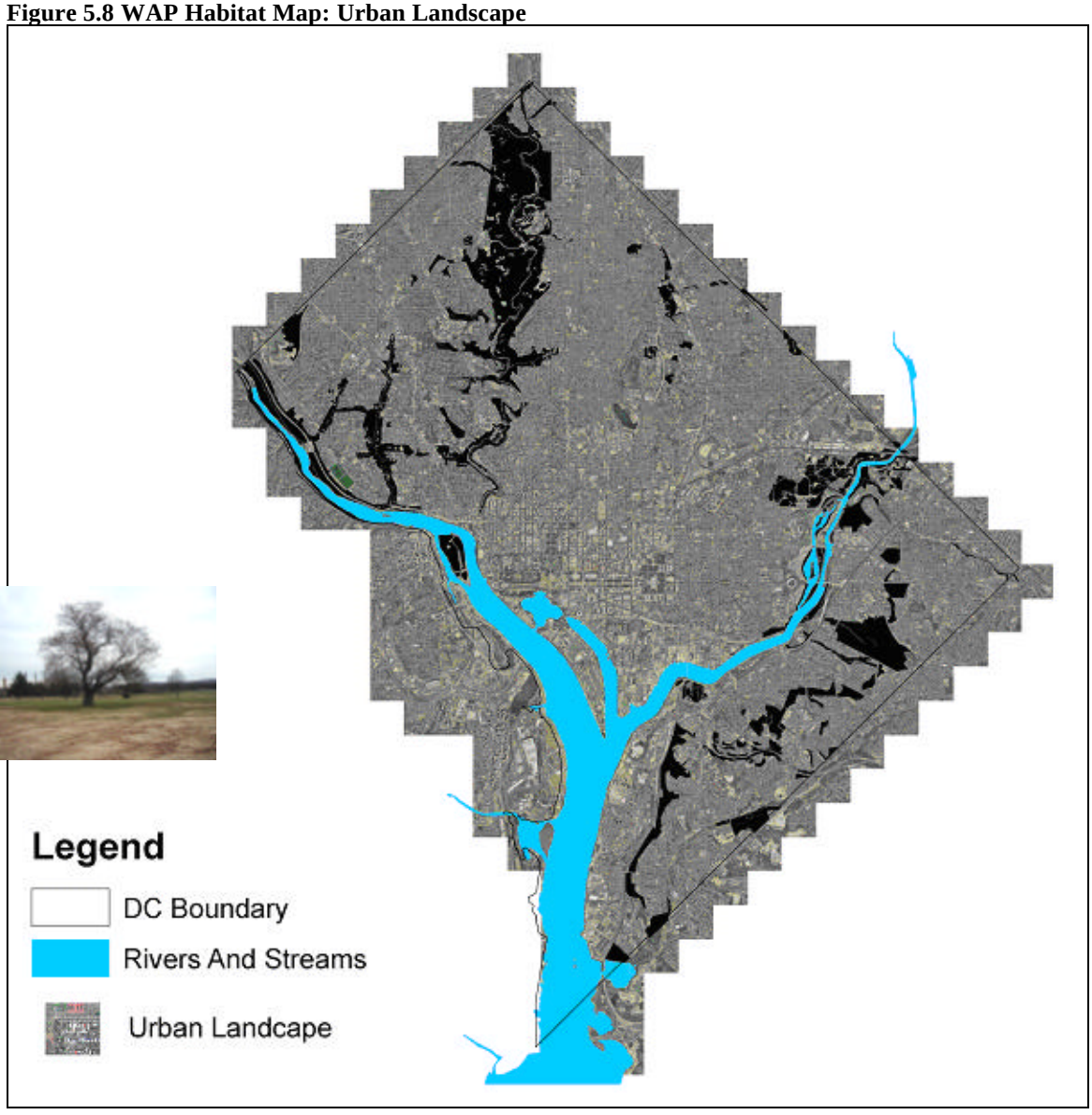
Associated Species of Greatest Conservation Need

Birds	**Mammals**	**Fish**
American Black Duck	American Mink	American Eel
American Bittern	N. River Otter	Warmouth
Black-crowned Night Heron	S. Bog Lemming	
Least Bittern	Virginia Opossum	**Invertebrates**
Sora		Research is needed
Virginia Rail		
Wilson's Snipe		

Habitat 8 – Urban Landscape

Urban landscapes include both developed and natural areas that are managed for human use. Usually these areas are mowed, trimmed, experience a great deal of foot traffic, and are exposed to wind because they are cleared. Because the District has an extremely urbanized setting, the natural areas within the urban landscapes could provide important wildlife habitat and migratory corridors. While there is little scientific information regarding the species of greatest conservation need that use these areas, urban landscapes represent a large portion of the District's land use and has a high potential for providing habitat and management opportunities.

Figure 5.8 WAP Habitat Map: Urban Landscape



Conservation Actions for Urban Landscape	
Threat: Recreation	**Rank: High**
Conservation Plan: Reduce the impacts of recreation	**Actions:** 1. Maximize use of existing recreational areas. 2. Actively participate in land use planning committee. 3. Prepare a plan that designate management areas for long-term use. 4. Implement covenant on natural areas/riparian zones when these areas are transferred to DC Sports and Entertainment at Kenilworth Park North. Sub-action 1. Support the National Arboretum's mission statement and grounds rules prohibit most recreation, with 24-7 security forces to enforce rules.
Partners in Implementation: DPR, OOP, DPW, DED	
Threat: Contaminants	**Rank: High**
Conservation Plan: Reduce or eliminate contaminants	**Actions:** 1. Implement 'best management practices' District-wide. 2. Develop an action plan for non-point source pollution reduction District-wide. Sub-action 1. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) cleanups and/or pre-CERCLA investigations at several sites within the Anacostia sites contaminated prior to NPS acquisition: Washington Gas (coal tar), Poplar Point (pesticides?, unknown), Kenilworth Park (historic sanitary landfill). Sub-action 2. Remove subterranean munitions at some Formerly Used Defense Sites (FUDS). Work has already been done at Oxon Run. Other potential sites include Anacostia Park, Fort Circle Forts/Shepherd Parkway.
Partners in Implementation: NPS, WPD	
Threat: Roads/ Utility Corridors	**Rank: High**
Conservation Plan: Minimize impacts of roads/ utility corridors	**Actions:** 1. Underground utilities to highest extent possible. 2. Be involved with urban planning process and incorporate 'best management practices' that are designed to minimize impacts to wildlife. 3. Actively participate in land use planning committee. 4. Allocate funds for wildlife planning in the Transportation Bill.
Partners in Implementation: OOP, DED, DPW, DOT	

Conservation Actions for Urban Landscape	
Threat: Light Pollution	**Rank: High**
Conservation Plan: Reduce light pollution	**Actions:** 1. Adopt 'best management practices' to prevent light pollution. 2. Consult the International Dark Sky Association. 3. Adopt District-wide the National Park Service's 'best management practices' that prevent light trespass. 4. Carefully direct lighting at facilities such as stadiums and ball fields. 5. Turn off unnecessary lights. 6. Use natural lighting when possible. **7.** Use timers.
Partners in Implementation: OOP, DED, DPW	
Threat: Parasites/ Pathogens	**Rank: High**
Conservation Plan: Reduce or eliminate parasites and pathogens	**Actions:** 1. Implement 'integrated pest management' across the District. 2. Implement the National Capital Region Animal and Plant Health Inspection Service (APHIS) oral rabies vaccine program across the District. 3. Monitor Sudden Oak Death. 4. Monitor Chronic Wasting Disease in deer. **5.** Monitor parasites and pathogens in wild animals.
Partners in Implementation: ACD	

Associated Species of Greatest Conservation Need

Birds	**Mammals**	**Reptiles**
Black-crowned Night Heron	E. Red Bat	E. Box Turtle
Brown Thrasher	E. Chipmunk	E. Hognose Snake
Chimney Swift	Gray Fox	
Eastern Towhee		**Invertebrates**
Red-shouldered Hawk		Research is needed

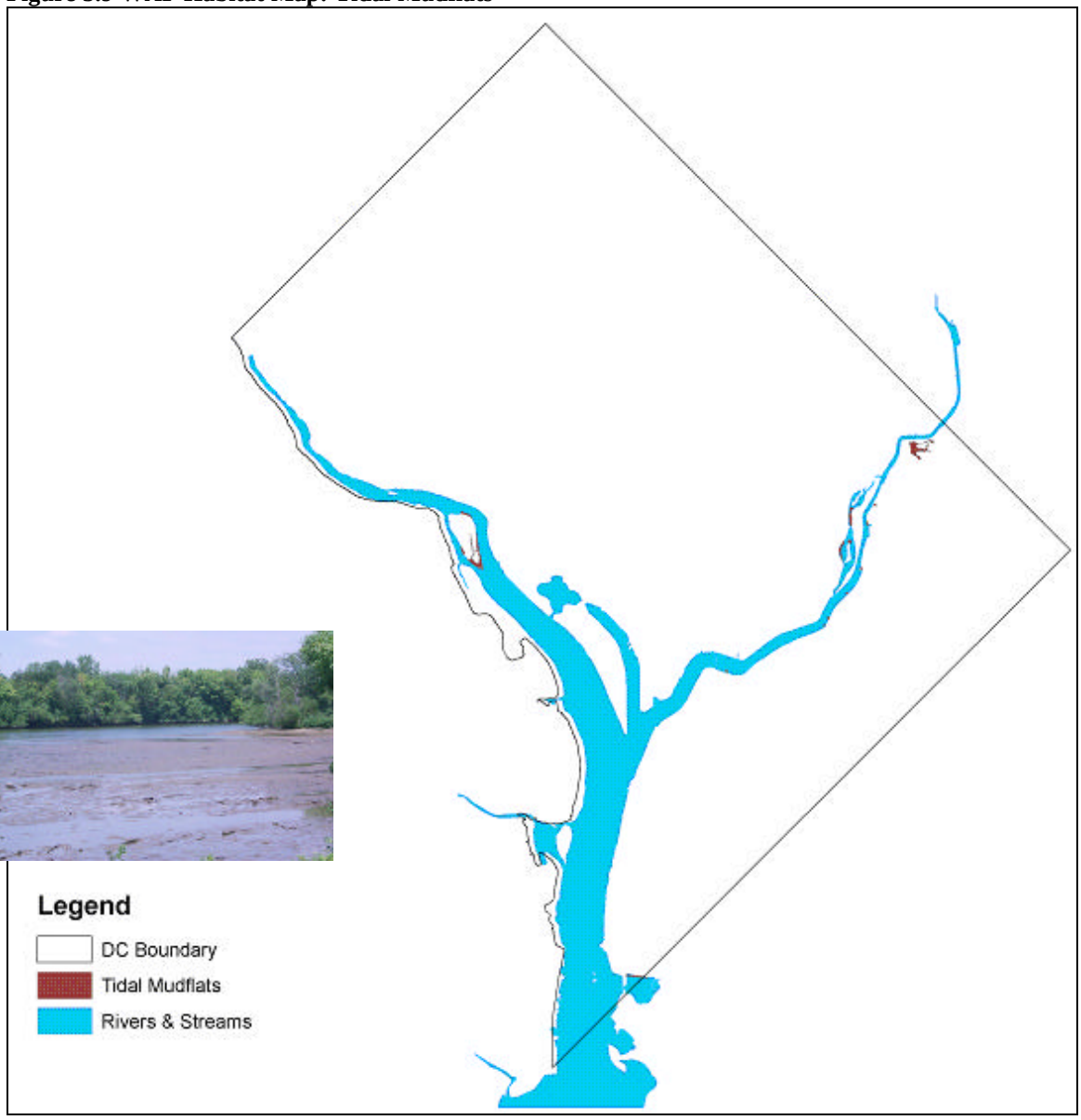
Priority Locations

All 8 Wards of the District
Anacostia Park
National Arboretum
Hains Point Golf Course
Cemeteries
School campuses
Langston Golf Course
The National Mall

Habitat 9 – Tidal Mudflats

Tidal mudflats occur between vegetated marsh and the water's edge and are alternately exposed and submerged by the tide. They are important for wildlife because they provide habitat and improve habitat quality by purifying the water. Many invertebrates live in the mud and provide food for birds and mammals when the tides are out. Tidal mudflats occur where wave energy is low and herbaceous vegetation covers less than 10% of the mud.

Figure 5.9 WAP Habitat Map: Tidal Mudflats



Conservation Actions for Tidal Mudflats	
Threat: Invasive/ Alien Species	**Rank: High**
Conservation Plan: Reduce, eliminate, and/or control populations of invasive/ alien species	**Actions:** 1. Fully fund the Exotic Plants Management Team (EPMT) exotics removal team and implement District-wide. 2. Provide resources to spray and manually remove plants.
Partners in Implementation: NPS, DPW, ECC, AWS	
Threat: Sedimentation	**Rank: High**
Conservation Plan: Reduce sedimentation	**Actions:** 1. Develop and implement a sediment control plan. 2. Promote 'best management practices' for all DC projects.
Partners in Implementation: NPS, WSD, COE	
Threat: Pollution	**Rank: High**
Conservation Plan: Reduce or eliminate pollution	**Actions**: 1. Where applicable, install new trash traps at the outlets to tidal mudflats. 2. Implement 'best management practices' District-wide.
Partners in Implementation: DPW, COE, WSD	
Threat: Stormwater Erosion	**Rank: High**
Conservation Plan: Reduce or eliminate stormwater runoff	**Actions:** 1. Implement the District's stormwater control plan District-wide, as developed by the Water Quality Division. 2. Promote 'best management practices' for all new DC development projects.
Partners in Implementation: WSD, COE, WASA	
Threat: Changes to Hydrologic Regime	**Rank: High**
Conservation Plan: Reduce or eliminate activities that cause changes to hydrologic regimes	**Actions:** 1. Minimize disturbance in upstream watersheds. 2. Maximize the effects of stormwater management projects on maintaining the hydrologic regime. 3. Eliminate pollution and sediment from stormwater outfalls through facilities such as swirl concentrators. 4. Monitor the planning process from the beginning of all DC projects and, where possible, require 'low impact development.' 5. Promote 'best management practices' for all DC projects to increase the quality of runoff. 6. Where feasible, return streams to their natural conditions using techniques such as 'daylighting.' **7.** Work with outside agencies and developers to mitigate impacts to the watershed.
Partners in Implementation: NPS, DPW, COE	

Associated Species of Greatest Conservation Need

Birds	**Mammals**	**Fish**
Bald Eagle	American Mink	American Eel
Wilson's Snipe	N. River Otter	
	S. Bog Lemming	**Reptiles**
Amphibians	Virginia Opossum	Bog Turtle
Bullfrog		Common Musk Turtle

Priority Locations

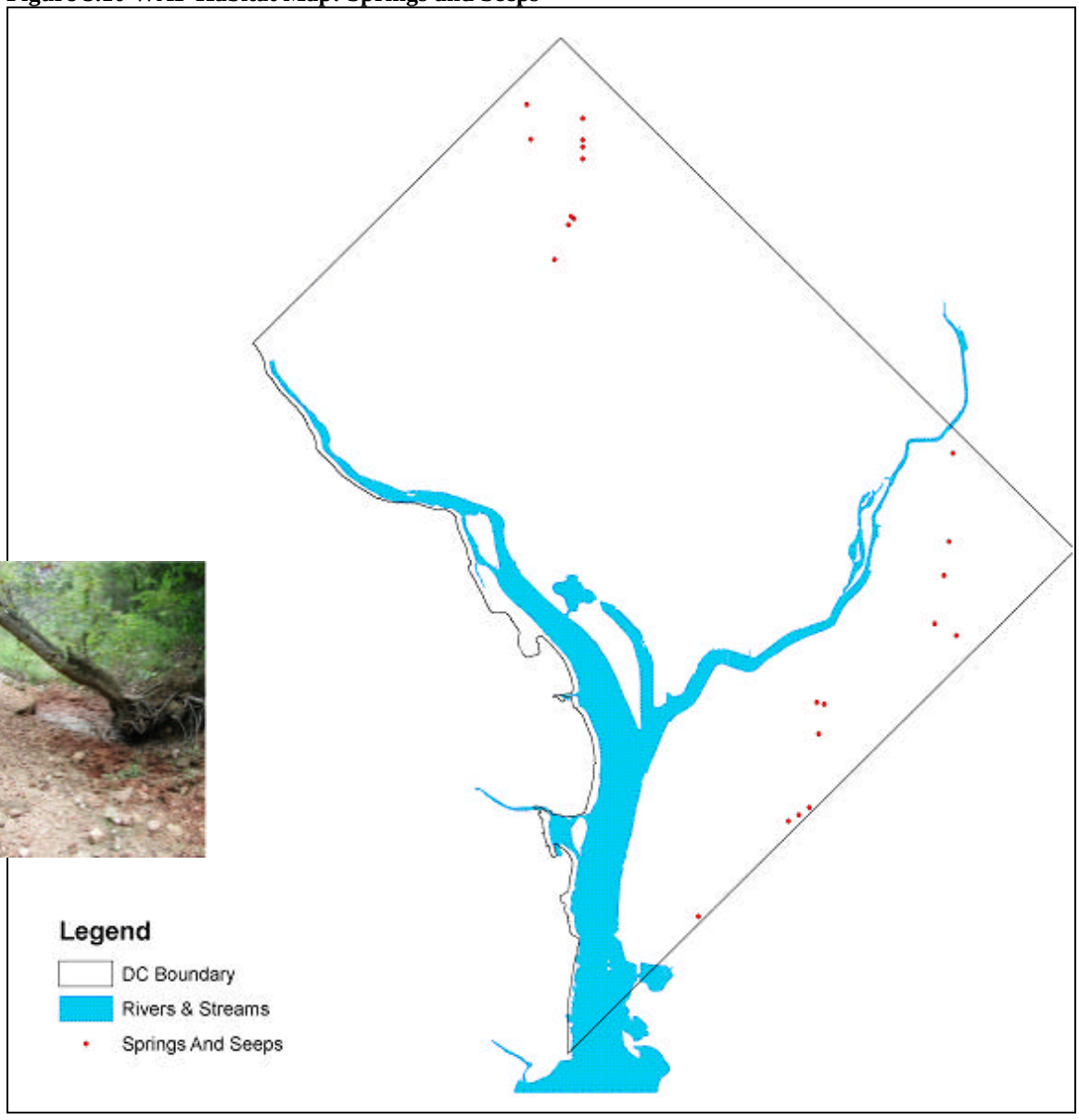
Anacostia Park
Kenilworth Marsh
Kingman Island
Oxon Cove
Theodore Roosevelt Island

Habitat 10 – Springs and Seeps

Springs and seeps occur where groundwater flows to the surface. A spring has a concentrated flow, whereas a seep has a diffuse flow (CRBC 1999). Springs occur when the water table is higher than the ground surface and pressure forces the water out of the land **(**http://pasture.ecn.purdue.edu/~agenhtml/agen521/epadir/grndwtr/spring.html**).**

Seeps are areas where groundwater continuously surfaces and flows down a slope. They support habitats made up of tiny mosses, lichens, ferns and flowering plants that cling to the surface of the slope (http://www.nps.gov/dewa/pphtml/subnaturalfeatures21.html).

Figure 5.10 WAP Habitat Map: Springs and Seeps



Conservation Actions for Springs and Seeps	
Threat: Contaminants	**Rank: High**
Conservation Plan: Reduce or clean up contaminants	**Actions:** 1. Identify potential contaminants such as leaking storage tanks and fund the District Department of the Environment monitoring and leaking storage tank programs. 2. Identify locations where there is dumping into the watershed. 3. Clean-up dumps. 4. For property ownership exchanges, develop protocols for cleanups or removal of storage tanks. 5. Promote 'best management practices' for watersheds that involve pesticides, hazardous wastes, etc.
Partners in Implementation: NPS, NA, NZ	
Threat: Sedimentation	**Rank: High**
Conservation Plan: Reduce sedimentation	**Actions:** 1. Enforce strict sediment controls on construction permits issued in upstream watersheds. 2. Work with outside entities to mitigate runoff impacts with 'best management practices' and 'low impact development' to reduce runoff and potential sedimentation.
Partners in Implementation: NPS, NA, NZ	
Threat: Park Facilities/ Operations/ Management	**Rank:Medium**
Conservation Plan: Reduce the impact of park facilities, operation and management	**Actions:** 1. Review plans and planning documents for potential impacts and remove or relocate potential structures that would impact springs and seeps.
Partners in Implementation: NPS, NA, NZ	

Conservation Actions for Springs and Seeps	
Threat: Invasive/ Alien Species	**Rank:Medium**
Conservation Plan: Reduce, eliminate, and/or control populations of invasive/ alien species	**Actions:** 1. Fully fund the Exotic Plants Management Team (EPMT) exotics removal team and implement District-wide. 2. Implement control and management of invasive species District-wide. Sub-action 1. National Arboretum has invasive species contract for areas that are not curated. Staff sprays or manually removes invasive species from their areas for which they are responsible. Sub-action 2. A partnership between the Anacostia Watershed Society and Maryland Native Plant Society trains volunteers to identify and control exotic invasive plants, generally using mechanical methods.
Partners in Implementation: NPS, AWS, DCW, MNPS, NA, ECC, USFWS	
Threat: Changes to Hydrologic Regime	**Rank:Medium**
Conservation Plan: Reduce or eliminate activities that cause changes to hydrologic regimes	**Actions:** 1. Preserve groundwater recharge areas and avoid creating impervious surfaces, and where possible, remove impervious surfaces. 2. Preserve the pH of the groundwater. 3. Minimize disturbance in upstream watersheds. 4. Maximize the effects of stormwater management projects on maintaining the hydrologic regime. 5. Eliminate pollution and sediment from stormwater outfalls through facilities such as swirl concentrators. 6. Monitor the planning process from the beginning of all DC projects and, where possible, require 'low impact development.' 7. Promote 'best management practices' for all DC projects to increase the quality of runoff. 8. Where feasible, return streams to their natural conditions using techniques such as 'daylighting.' 9. Work with outside agencies and developers to mitigate impacts to the watershed.
Partners in Implementation: NPS, USGS, NA, USFWS, NZ	

Priority Locations

Rock Creek Park
National Arboretum
National Zoo
Fort Circle Parks
Oxon Run Parkway

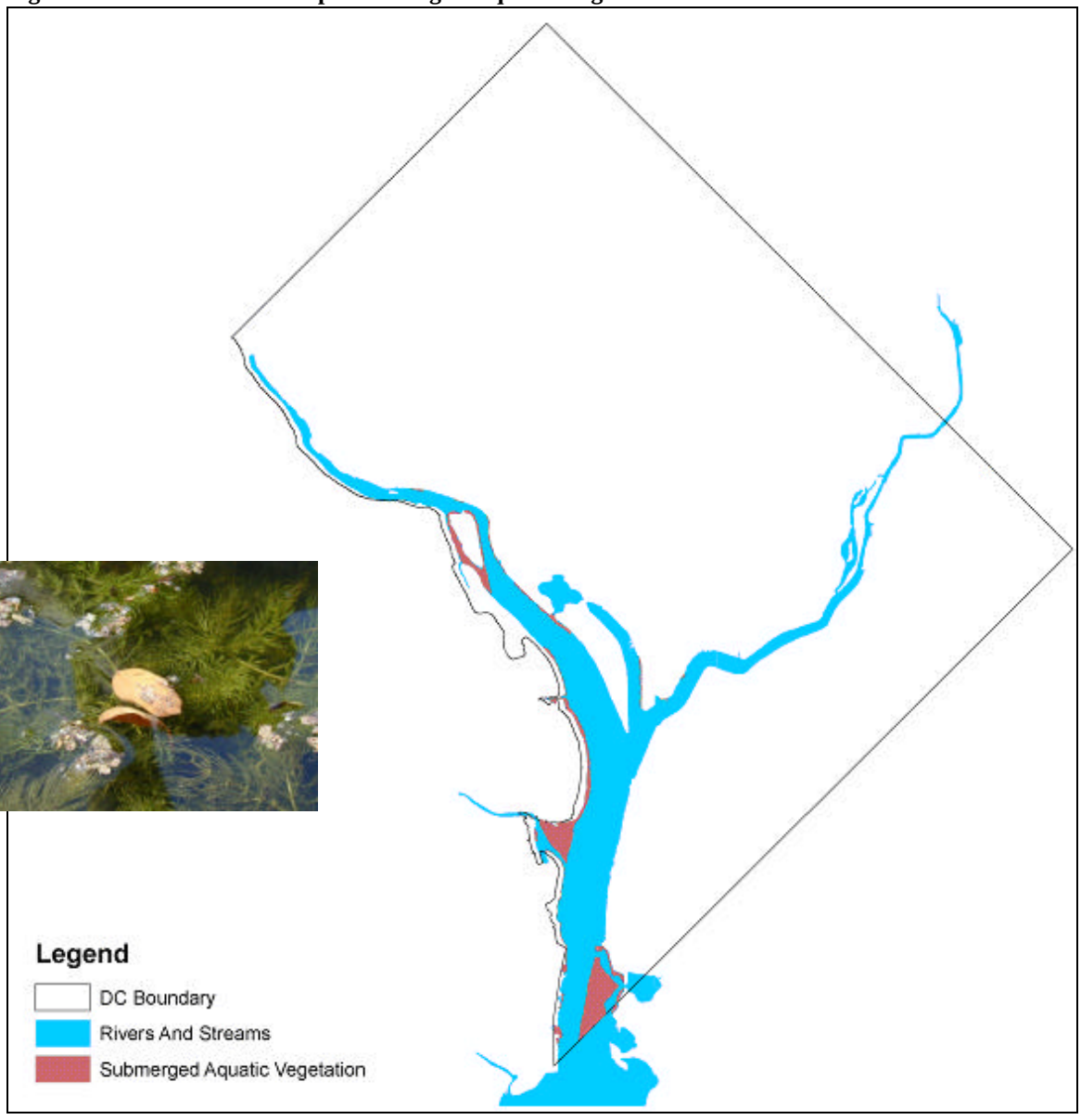
Associated Species of Greatest Conservation Need

Amphibians	**Invertebrates**
Mud Salamander	Hay's Spring Amphipod
N. Dusky Salamander	Kenk's Amphipod
N. Red Salamander	Lilypad Forktail Damselfly
N. Spring Peeper	Pizzini's Cave Amphipod
	Potomac Groundwater Amphipod
	Tiger Spiketail Dragonfly

Habitat 11 – Submerged Aquatic Vegetation

Submerged aquatic vegetation (SAV) is made up of permanently submerged vegetation and can be a mix of from one or two species in small patches, to seven to ten species in larger patches; the large mat had seven species in 2003. The largest patch of SAV in the District is located just upstream of the Woodrow Wilson Bridge. Species commonly found in the SAV beds in the District include *Hydrilla verticillata*, *Ceratophyllum demersum*, *Myriophyllum spicatum*, *Vallisneria americana*, *Heteranthera dubia*, and *Najas minor, Najas guadalupensis, and Myriophyllum spicatum*.

Figure 5.11 WAP Habitat Map: Submerged Aquatic Vegetation



Conservation Actions for Submerged Aquatic Vegetation	
Threat: Habitat Loss	**Rank: High**
Conservation Plan: Prevent habitat loss	**Actions:** 1. Introduce submerged aquatic vegetation to suitable areas through plantings. 2. Implement goose management to prevent overbrowsing.
Partners in Implementation: OOP, WPD, NPS	
Threat: Stormwater Erosion	**Rank: High**
Conservation Plan: Reduce or eliminate stormwater runoff	**Actions:** 1. Implement the District's stormwater control plan District-wide, as developed by the Water Quality Division. 2. Promote 'best management practices' for all new DC development projects.
Partners in Implementation: DPW, AWS, ECC	
Threat: Invasive/ Alien Species	**Rank: High**
Conservation Plan: Reduce, eliminate, and/or control populations of invasive/ alien species	**Actions:** 1. Fully fund the Exotic Plants Management Team (EPMT) exotics removal team and implement District-wide. 2. Provide resources to spray and manually remove plants, such as lesser celandine, *Ranunculus ficaria*.
Partners in Implementation: DPW, WASA	
Threat: Sedimentation	**Rank: High**
Conservation Plan: Reduce sedimentation	**Actions:** 1. Develop and implement a sediment control plan. 2. Promote 'best management practices' for all DC projects.
Partners in Implementation: DPW, WASA	
Threat: Pollution	**Rank: High**
Conservation Plan: Reduce or eliminate pollution	**Actions:** 1. Where applicable, install new trash traps at areas with submerged aquatic vegetation. 2. Implement 'best management practices' District-wide.
Partners in Implementation: WASA, DPW, COE	

Associated Species of Greatest Conservation Need

Birds	**Fish**	
American Black Duck	Alewife	Blueback Herring
	American Eel	Bowfin
	American Shad	Hickory Shad
		Warmouth

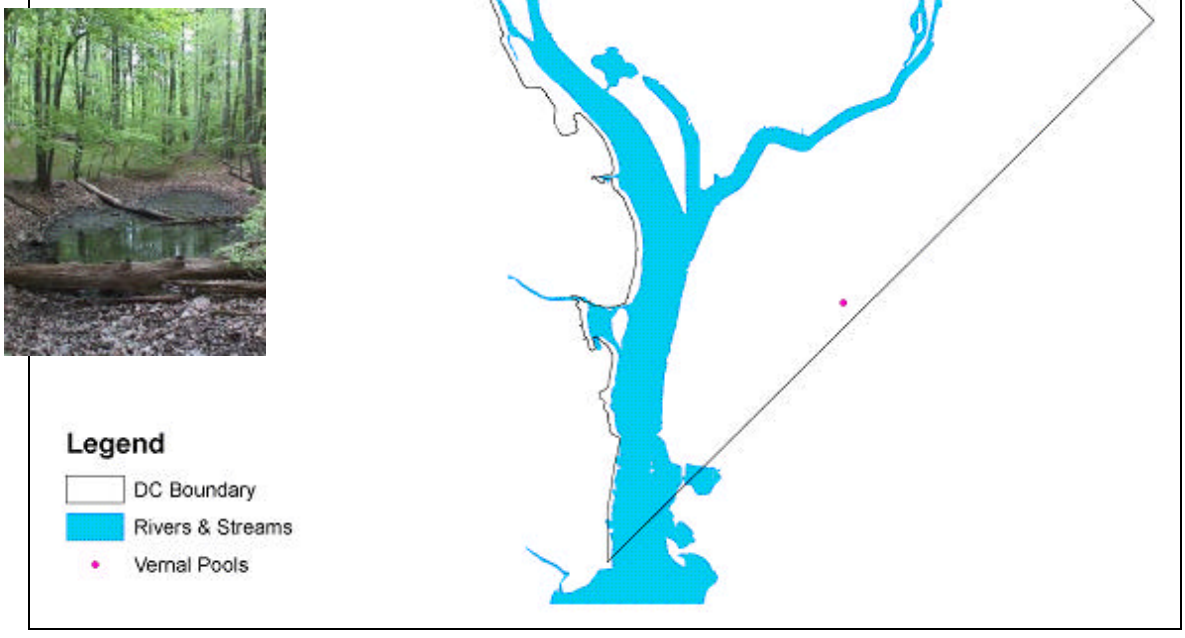
Priority Locations

Potomac River
Anacostia River
Kenilworth Aquatic Gardens

Habitat 12 – Vernal Pools

Vernal pools are seasonal bodies of water that flood each year for a few months during the spring and dry up by the end of summer. Because they are not permanently flooded, they do not support fish populations. Instead, they provide important breeding habitat for many species of amphibians. Some species, such as the spotted salamander and wood frog, are obligate vernal pool species, meaning that they require vernal pools to breed.

Figure 5.12 WAP Habitat Map: Vernal Pools



Conservation Actions for Vernal Pools	
Threat: Changes to Hydrologic Regimes	**Rank: High**
Conservation Plan: Reduce or eliminate activities that cause changes to hydrologic regimes	**Actions:** 1. Maximize the effects of stormwater management projects on maintaining the hydrologic regime. 2. Monitor the planning process from the beginning of all DC projects and, where possible, require 'low impact development.' 3. Promote 'best management practices' for all DC projects to increase the quality of runoff. 4. Work with outside agencies and developers to mitigate impacts to the watershed.
Partners in Implementation: NPS, WPD, NA	
Threat: Pollution	**Rank:Medium**
Conservation Plan: Reduce or eliminate pollution	**Actions:** 1. Where applicable, install new trash collectors at the inlets of vernal pools. 2. Implement 'best management practices' District-wide. 3. 'Integrated pest management' in areas with vernal pools to eliminate the use of potentially toxic substances. 4. Monitor water chemistry for pollution and mitigation problems.
Partners in Implementation: NPS, NA, DPW, ECU	
Threat: Park Facilities/ Operation/ Maintenance	**Rank:Medium**
Conservation Plan: Reduce the impact of park facilities, operation and management	**Actions:** 1. Implement policies and procedures to minimize impact on wildlife. 2. Educate staff about the importance and location of vernal pools and how to protect them. 3. Minimize maintenance activities in areas with vernal pools.
Partners in Implementation: NPS, NA, DPR	
Threat: Sedimentation	**Rank:Medium**
Conservation Plan: Reduce sedimentation	**Actions:** 1. Develop and implement a sediment control plan. 2. Promote 'best management practices' for all DC projects. 3. Install temporary fencing around pools to protect breeding amphibians from pets off leash. Sub-action 1. Support the US Fish and Wildlife Service plan in regard to sedimentation in Hickey Creek and its tributaries.
Partners in Implementation: NPS, NA, DPR, WSD	

Conservation Actions for Vernal Pools	
Threat: Poaching	**Rank:Medium**
Conservation Plan: Reduce or eliminate poaching	**Actions:** 1. Increase enforcement and surveillance and increased visibility and presence of law enforcement. 2. Strengthen laws that prohibit poaching. 3. Increase fines. 4. Focused educational and interpretation programs to increase awareness of the importance of vernal pools.
Partners in Implementation: NPS, ECU, BEQ	

Associated Species of Greatest Conservation Need

Amphibians
American Toad
Fowler's Toad
Marbled Salamander
N. Spring Peeper
Pickerel Frog
Spotted Salamander
Wood Frog

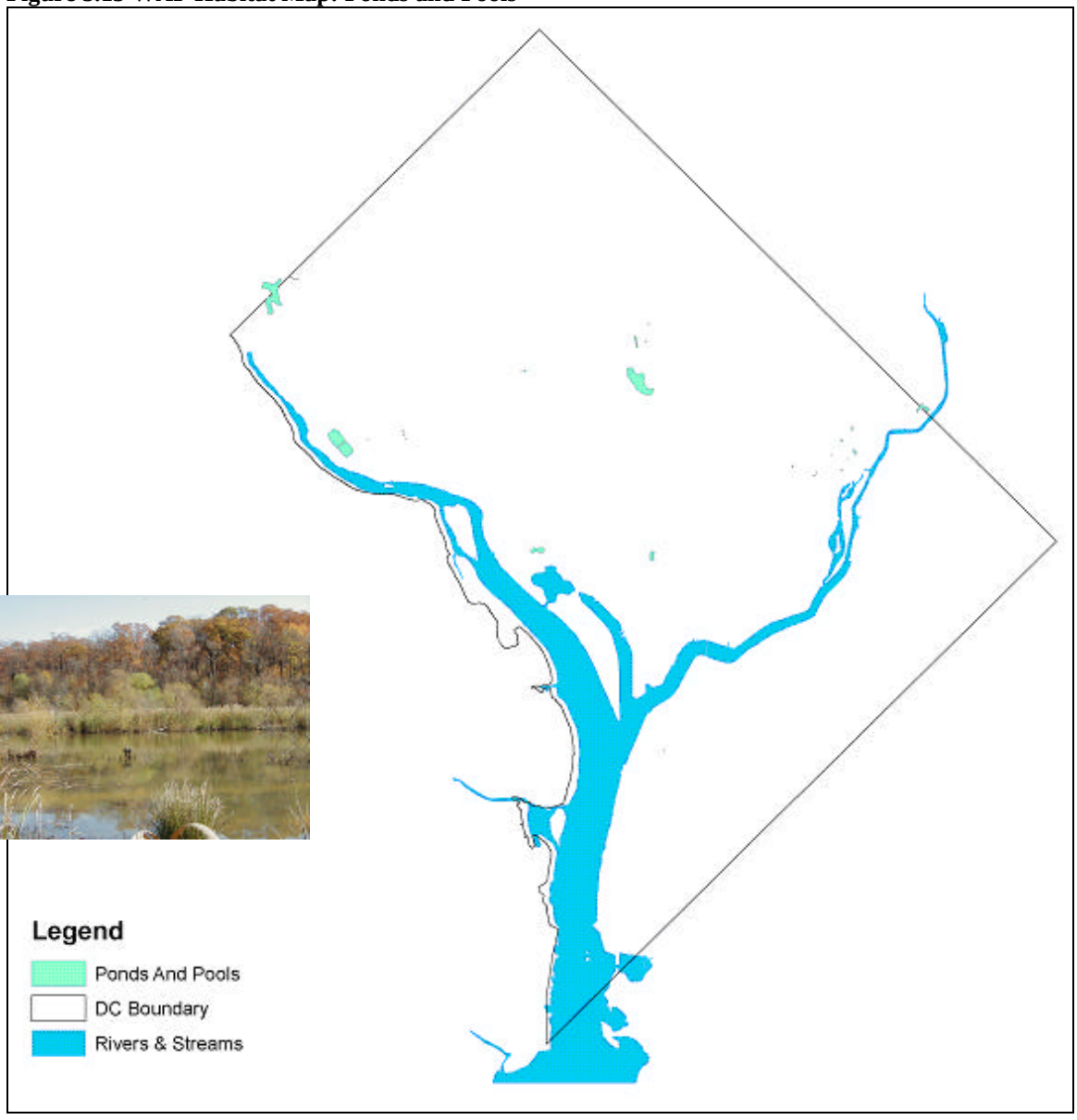
Priority Locations

Kenilworth Park
Fort Dupont
National Arboretum
Rock Creek Park
Oxon Run Parkway
Heritage Island
C&O Canal

Habitat 13 – Ponds and Pools

Ponds and pools provide habitat for six species of greatest conservation need. They are located in various areas around the District. Because the District is highly urbanized, ponds and pools have a high potential for providing habitat to many aquatic species of greatest conservation need within urbanized areas. However, scientific data documenting usage by those species is lacking. Therefore, more research is needed to identify which species use this habitat and to develop the most effective conservation actions for those species.

Figure 5.13 WAP Habitat Map: Ponds and Pools



Conservation Actions for Ponds and Pools	
Threat: Pollution	**Rank:Medium**
Conservation Plan: Reduce or eliminate pollution	**Actions:** 1. Where applicable, install new trash collectors at the inlets of ponds and pools. 2. Promote separating stormwater and sanitary sewers when retrofitting roadways and sewer lines.
Partners in Implementation: WQD, WASA, DPW, COE	
Threat: Stormwater Erosion	**Rank:Medium**
Conservation Plan: Reduce or eliminate stormwater runoff	**Actions:** 1. Implement the District's stormwater control plan District-wide, as developed by the Water Quality Division. 2. Promote 'best management practices' for all new DC development projects.
Partners in Implementation: WPD, WASA	
Threat: Erosion	**Rank:Medium**
Conservation Plan: Reduce or eliminate erosion	**Actions:** 1. Promote 'best management practices' for all new DC development projects; perform stream bank restoration. Sub-action 1. Support the US Fish and Wildlife Service plan in regard to erosion in Hickey Creek and its tributaries.
Partners in Implementation: NPS, USFWS, NA	
Threat: Invasive/ Alien Species	**Rank:Medium**
Conservation Plan: Reduce, eliminate, and/or control populations of invasive/ alien species	**Actions:** 2. Fully fund the Exotic Plants Management Team (EPMT) exotics removal team and implement District-wide. Please see pg. 4- for a description of the goals of EPMT. *3.* Control invasive species and prevent their establishment. 4. Provide resources to spray and manually remove plants, such as lesser celandine, *Ranunculus ficaria*.
Partners in Implementation: NPS, NA, DPW, ECC	
Threat: Sedimentation	**Rank:Medium**
Conservation Plan: Reduce sedimentation	**Actions:** Develop and implement a sediment control plan. Promote 'best management practices' for all DC projects. Sub-action 1. Support the US Fish and Wildlife Service plan in regard to sedimentation in Hickey Creek and its tributaries.
Partners in Implementation: WSD, NPS, NA, COE	

Associated Species of Greatest Conservation Need

Birds	**Fish**	**Invertebrates**
Black-crowned Night Heron	Research is needed	Appalachian Spring Snail
		E. Pondmussel
Amphibians	**Reptiles**	Green Floater
Research is needed	Research is needed	Lilypad Forktail Damselfly
		Mocha Emerald Dragonfly

Priority Locations

McMillan Reservoir
Kenilworth Aquatic Gardens
National Arboretum
Soldier's/ veteran's home
Constitution Gardens
Lincoln Wetland Complex
Rock Creek Cemetery
Del Carla Reservoir
Langston Golf Course