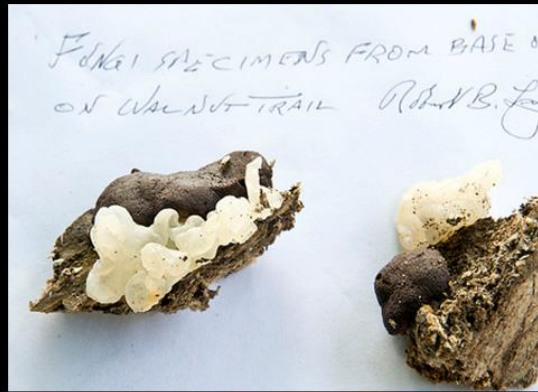
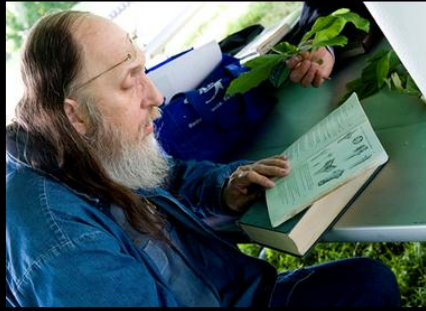


2009 Patuxent River Park at Jug Bay Natural Area **BioBlitz**

May 30th – 31st

16000 Croom Airport Road
Upper Marlboro, MD 20772



Parks & Recreation
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The Maryland-National Capital
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Prince George's County, MD

Thank You!

To all experts, participants, M-NCPPC staff, and volunteers

The 2009 Jug Bay Natural Area at Patuxent River Park BioBlitz was a highly successful and well supported event. The M-NCPPC Park Ranger staff, Patuxent River Park staff, and the Maintenance team of Patuxent River Park worked tirelessly to plan, prepare, and carry-out this event. The Maintenance team went the extra mile to ensure the Park was ready for our participants, especially the Base Camp area and park office. Staff and Rangers did an exceptional job working with the participants, assisting throughout the event, and helping with surveys. Scientists, experts, interest group clubs, and volunteers surveyed steadily throughout both days, and diligently into the night. We greatly appreciate the efforts of Jeff Campbell who set up an Access database used to input data and generate species lists. To you all, warmest regards and thanks!

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I. Introduction

A BioBlitz is traditionally a 24-hour biological survey of a given area. Participants identify and catalogue as many species as possible to provide a snapshot of the area's biodiversity. The first BioBlitz in the United States was held in 1996 at Kenilworth Aquatic Gardens in Washington, D.C. Numerous BioBlitzes, both large and small, are now held nationwide and worldwide as well. Subject matter experts, scientists, special interest groups, local naturalists, volunteers and other interested parties band together to conduct these events. Some BioBlitzes invite the public to participate and offer educational talks and activities, while others focus more on the surveys and species identification aspect. Preliminary results are shared with participants at the close of the event. Complete species tabulations are often put into a report and can be used in the future to track changes in species richness.

During a BioBlitz, subject matter experts are given the opportunity to observe organisms in the field, and often times broaden the specimen collections of their organization. BioBlitzes also foster the interest of volunteers and "citizen scientists" about the world of ecology, conservation, field surveys and scientific observation.

The 2009 Patuxent River Park at Jug Bay Natural Area BioBlitz was held from May 30th at 12:00pm until May 31st at 12:00pm. The survey area was the 2000 acre Jug Bay Natural Area, the headquarters of the Patuxent River Park properties, in Upper Marlboro, Maryland. The park is owned and operated by the Maryland-National Capital Park and Planning Commission (M-NCPPC) of Prince George's County. The Park offers a wide range of amenities including more than eight miles of trails, camping and picnic facilities, two fishing areas, two boat ramps, canoe and kayak rentals, guided tours and trips, and seasonal hunting opportunities.

The event was spearheaded, organized, and hosted by the M-NCPPC Park Rangers and the staff of Patuxent River Park. Those in attendance ranged from novice volunteers and independent enthusiasts to subject matter experts. Participants hailed from a variety of organizations, federal and local government agencies and interest groups, while some were general volunteers. Several participants brought teams of fellow colleagues to conduct surveys, while other teams were assembled of volunteers that were excited to be there and who may have never taken part in such an endeavor. Many teams surveyed and camped for the full 24 hours, with some working throughout the evening and night.

A total of 547 species were found throughout the course of the 24 hour BioBlitz. Areas of study that were surveyed include flatworms and mollusks, earthworms, isopods, amphipoda, dragonflies and damselflies, stoneflies (plecoptera), true bugs (hemiptera), megaloptera, beetles (coleoptera), caddiesflies (triptoptera), moths and butterflies (lepidoptera), ants (hymenoptera), bees and wasps (hymenoptera), reptiles and amphibians, birds, mammals, fungi and liverworts,

club mosses, ferns, flowering plants (trees, shrubs, vines, herbaceous plants), and submerged aquatic vegetation (habitat based category).

II. Participant Information

Over 90 experts, observers, staff and volunteers participated in the 2009 Patuxent River Park at Jug Bay Natural Area BioBlitz. Table 1 lists the team leaders, their area of expertise, and respective organizations. Additional experts, volunteers, staff, and other participants are also listed below.

Table 1. Team Leaders, areas of expertise, and respective organizations.

Team Leader	Area of Expertise	Organization
Butch Norden	Flatworms, Mollusks (Land Snails)	MD Department of Natural Resources
Daniel Kjar	Entomology (Ants)	Elmira College, Elmira, New York
Greg Kearns	Birds	M-NCPPC Patuxent River Park
Jeff Shenot	Birds, Butterflies	Jug Bay Wetlands Sanctuary
Joe Metzger	Meadow Plants, Ferns, Trees	MD Native Plant Society
Karyn Molines	Macroinvertebrates, Herps, Trees	Anne Arundel County Government
Kathy Szlavecz	Terrestrial Isopods, Earthworms, Arthropods	Johns Hopkins University
Lance Biechele	Mycology, Fungi	Mycological Association of Maryland
Lindsay Funk Hollister	Herps	Jug Bay Wetlands Sanctuary
Mark Imlay	Invasive Species	Anacostia Watershed Society
Mike Quinlan	Owls, Amphibians, Reptiles	Jug Bay Wetlands Sanctuary
Peter Bergstrom	Submerged Aquatic Vegetation (SAVs)	National Oceanic and Atmospheric Administration (NOAA)
Peter Osenton	Small mammals	Patuxent Wildlife Research Center (PWRC)
Phil Kean	Butterflies	Believe in Tomorrow
Richard Orr	Entomology (Odonata, Dragonflies, Damselflies)	Mid-Atlantic Invertebrate Field Studies

Other experts, participants, volunteers and staff who contributed.

Adrian Testa
 Alyssa Domzal
 Amanda Goldberg
 Amy Brannen
 Andy Kreft
 Beth Johnson
 Bill Walmsley
 Bob Gardner

Jill Swearingen
 John Aguiar
 John Sherwell
 Jonathan Peake
 Jorge Bogantes
 Julie Fortin
 Karolyn Darrow
 Kate Meade

Bob Lyon
Brian Gates
Brooke Warrington
Brooke Westby
Bruce Hunter
Cassi Hayden
Charles Staines
Chris Garrett
Dave Linthicum
Dave Mozurkewich
Deborah Anderson
Devin Mills
Diane Holsinger
Don Davis
Edward Kardish
Ellen Burroughs
Erica Hahn
Evelyn Bookwolter
Fumiko Shirkura
Gary Hevel
Ginny Deise
Greg Kearns
Greg Lewis
Jeannie Jacobs
Jeff Campbell
Jerry Louton
Jessica Louton
Jill Lee

Kenny Glover
Kerry Wixted
Kiyoshi Sasaki
Kyle Lowe
Langley Bowers
Lisa Garrett
Liz Van Denhovel
Lynette Fullerton
Mary Kilbourne
Mignon Davis
Pat Durkin
Rebecca Ash
Ricardo McClees
Richard Smith
Robert Frezza
Rosemary Frezza
Sam Droege
Sarah Florentino
Shannon Bethel & Park Maintenance Staff
Sparky Sparks
Stephanie Jacob
Sue Muller
Sue Staines
Tammy Newcomer
Terry Crowe
Thomas Baden
Warren Steiner

III. Park Location and Habitats

Jug Bay Natural Area, the headquarters of the Patuxent River Park properties, is a 2,000 acre tract of land comprised of varying habitats that buffer the Patuxent River. The park is managed and operated by the Maryland-National Capital Park and Planning Commission, a bi-county agency serving the citizens of Prince George’s and Montgomery Counties. Jug Bay Natural Area is located in Prince George’s County along the western shore of the Patuxent River at Jug Bay. Jug Bay’s tidal marshes of the upper Patuxent River encompass one of the most important freshwater tidal estuaries in the Chesapeake Bay watershed. This natural area is a component of the Chesapeake Bay National Estuarine Research Reserve in Maryland, a nationwide network of diverse coastal estuaries that serve as laboratories for scientific research, education, and monitoring. The park is also a site on the Chesapeake Bay Gateways Network, a partnership of parks, refuges, museums, historical communities and trails where visitors can experience and learn about the Chesapeake Bay. Jug Bay has also been designated an "Important Birding Area" by the National Audubon Society.

Table 2. Habitats within the park are comprised of the following:

Tidal	Non-Tidal	Terrestrial	Disturbed or Open	Rivers and Streams
Low Marsh	Shallow emergent	Mixed hardwood	Gardens, planted areas	Deep water river (Patuxent River)
High Marsh	Shrub swamp	Evergreen	Lawns, cleared areas	Year-round stream
Scrub Shrub	Seepage Swamp	Stream banks	Old fields	Intermittent stream-lower
Swamp	Seep	Managed meadow		Intermittent stream-higher
Intertidal mudflats	Bottomland forest			
	Vernal Pool			
	Beaver Pond			

IV. Methods

BioBlitzes have become a popular way to survey the biodiversity of an area; therefore the planning team (M-NCPPC Rangers and Naturalists) consulted individuals who had previously undertaken this type of event for advice. Research was also conducted via the internet for methodologies and guidance from previous BioBlitzes. The planning team decided late May was an optimum time of year for the BioBlitz due to the high activity of flora growth and fauna activity during the late spring. Experts and participants were recruited via email from various organizations and institutions beginning eight months in advance. Because we wanted a wide encompassing snapshot of the park’s diversity, we recruited individuals from as many scientific

disciplines as possible. See Table 1 for detailed information regarding team leaders and areas of expertise.

Survey teams were led and directed by a team leader during each survey window. Team leaders were typically experts in their respective field of study, or highly knowledgeable citizen scientists. Volunteers were divided into the survey groups by their area of interest or available team space. Survey windows consisted of three hour blocks of time. For instance, Richard Orr led a search for dragonflies on Saturday May 30th from 12noon until 3pm. Surveys, identification, and collection took place through the evening and into the night. Several experts obtained voucher specimen for post-event identification and research purposes. Nocturnal animal searches took place from dusk until around midnight.

Patuxent River Park's Jug Bay Natural Area has over 8 miles of hiking/biking/equestrian trails regularly used by the public. These trails were used to divide the park into 9 survey areas plus the Patuxent River and the tidal marshes. The trail system served as routes of entry for participants to venture into the various areas of the park. The Black Walnut Nature Study Area, an ecologically sensitive area directly adjacent to the Patuxent River marsh, was one of these survey areas and proved to be particularly biodiverse. Boardwalks provided easy access and observation for participants within Black Walnut. Another unique survey area was the Historic Croom Airport field, a haven for surveying meadow/field dwelling organisms. Some participants like the Submerged Aquatic Vegetation (SAV) team, needed river/outer marsh access to perform their surveys; therefore, canoes, kayaks, and/or motorized boat were also utilized to perform surveys on the water.

Team leaders and participants were requested to arrive at the BioBlitz Base Camp between 10:00am and 11:30am on Saturday in order to provide adequate time to register, assemble survey teams, review survey locations and maps, and identify target survey areas. Lunch was served prior to the event kickoff at 12:00 noon, followed by a welcome speech from Senior Park Ranger Erica Hahn and Park Director Greg Lewis. A schedule of events and survey time slot/survey schedule were posted throughout the base camp area in order to keep all participants informed. Sign-in sheets were filled out at the various tables labeled for each survey team.

Team leaders were provided with several survey supplies/documents upon arrival. Firstly, several copies of two types of data sheets were distributed. *Data Collection Sheet #1: Site & Habitat* required leaders to enter site information and habitat information (See Appendix A). *Data Collection Sheet #2: Specimen* required leaders to enter data about survey findings including location, species, quantity, and specimen fate (See Appendix A). *Instructions/Protocols for Surveying Experts/Volunteers* were also distributed in order to instruct teams on how to use the data sheets and when to GPS a particular finding (See Appendix B). Lastly, a Species List: Jug Bay, Maryland extracted from Kathryn Stafford's *A Volunteer's Guide to Jug Bay* (1994) was distributed to each team leader as a point of reference for their surveys (Appendix E). At the end of the BioBlitz, data sheets were collected, compiled, and

organized into an Access database and Excel spreadsheets. Some experts submitted their data immediately following the event. Others took several weeks to identify their voucher specimen, compile data and submit it to the planning team.

19 teams of various areas of study embarked on species searches. Teams varied in size from 1 to 8 people depending on the amount of volunteers assisting the team leader. Some experts surveyed independently from a team due to personal preferences. Because the main focus of this BioBlitz was to estimate species richness, flexibility was given to experts.

Many teams surveyed by walking the trails and surrounding areas to observe their target species. Some teams used specific survey tools to complete their surveys. Butterfly surveyors used butterfly nets and collection jars for their searches. Earthworm surveyors used shovels for soil digging and leaf litter digging, sieves as well as vials and ethanol to preserve a subset of specimen for subsequent identification. Dragonfly and damselfly surveyors utilized hand lenses. Macroinvertebrate/Aquatic Insect surveyors led by Karyn Molines of Anne Arundel County Government, used dip nets, terrariums, and microscopes, and ice cube trays to sort species. Entomology surveyors, like Gary Hevel of the Smithsonian Natural History Museum, used a variety of methods for collection and identification including dragonfly netting, black lighting, Malaise traps, and yellow pan traps for bees. Ant expert Daniel Kjar of Elmira College used aspirators made from medical tubing, gauze, and plastic pipe. Peter Osenton of Patuxent Wildlife Research Center set out small mammal traps in attempts to catch and identify his targeted species. Microscopes and hand lenses were used for identification purposes for several survey teams.

V. Weather Conditions

Weather conditions on Saturday May 30th were optimal for field surveys. The warmest part of the day occurred between 2:30PM and 4:20PM with a high of 81°F. The coolest part of the day occurred at 11:30PM with a low of 64°F. Weather data for Saturday, May 30, 2009 is as follows:

Table 3. Weather data for Saturday May 30, 2009

Temperature	Mean Temperature	69.2°F
	Max Temperature	81°F
	Min Temperature	56°F
Precipitation	Precipitation	0.00 in
Wind	Average Wind Speed	2.2mph
	Max Wind Speed	6mph

(Weather Underground, 2009)

Early on Sunday May 31st a significant rainstorm occurred, which delayed survey start times minimally. The rain began about 6:30AM and tapered off completely at 9:20AM. Weather data for Sunday, May 31, 2009 is as follows:

Table 4. Weather data for Sunday, May 31, 2009

Temperature	Mean Temperature	68.1°F
	Max Temperature	82°F
	Min Temperature	59°F
Precipitation	Precipitation	Approx. 0.4in
Wind	Average Wind Speed	-
	Max Wind Speed	-

(Weather Underground, 2009)

VI. Survey Results

A total of 547 species of plants, animals, and fungi were identified during the 2009 Jug Bay Natural Area BioBlitz. Table 5 provides a summary of the total number of species observed in each organism group. The organism group with the highest number of species was Flowering Plants, which included trees, shrubs, and vines, as well as herbaceous plants tallying a total of 161 species. Other groups with high tallies included birds with 80 species observed.

Table 5. Group of species and number of organisms observed

Group of Organisms	Species Observed
Flatworms and Mollusks	17
Earthworms	9
Isopods	4
Amphipoda	1
Dragonflies & Damselflies (Odonata)	21
Stoneflies (Plecoptera)	1
Hemiptera (True Bugs)	1
Megaloptera	2
Beetles (Coleoptera)	43
Caddisflies (Trichoptera)	2
Moths & Butterflies (Lepidoptera)	49
Diptera	3
Ants	30
Bees and Wasps	27
Reptiles & Amphibians	25
Birds	80
Mammals	11
Fungi & Liverworts	39
Club Mosses	3
Ferns	13

Flowering Plants (Trees, Shrubs, and Vines, Herbaceous Plants)	161
Submerged Aquatic Vegetation (SAV)	5
Total Species Observed	547

Tables 7 through 28 display the full species list of all organisms observed at the BioBlitz. Results are organized by taxonomic levels and are alphabetized by Family name. Common names are listed when applicable. Although some experts notated the number of species observed, many solely noted whether a species was present. Our focus was to determine species richness in regards to diversity of species, therefore counts or estimates are not reflected in the result lists.

There were several notable findings among the observed species at the BioBlitz. There were several Global and State ranked Rare, Threatened, Endangered species observed at the BioBlitz. Table 6 outlines these notable findings.

Gary Hevel observed a new state record beetle, *Pelecotoma flavipes*. Sam Droege, who assisted in identifying several of Gary Hevel’s observed bee species, provided expert knowledge regarding the status of several of these hymenoptera species. A new state species, *Nomada affabilis*, was observed by Gary Hevel and identified by Sam Droege. Mr. Droege also identified several other bee species as uncommon and provided other unique information about their habitat.

Lance Biechele from the Mycological Association of Maryland observed 39 species of fungi and liverworts. It was of great interest to have this species group observed because there is little pre-existing information about the diversity of fungi and liverworts at Patuxent River Park’s Jug Bay Natural Area. Fungi expert, Lance Biechele, reported that he observed *Hygrocybe unquinos*, a rare species that may represent Maryland’s first record.

Table 6. Notable species observed at the BioBlitz

Species Observed	Rare, Threatened, or Endangered Rank*/Comments
<i>Plectotoma flavipes</i>	Gary Hevel: New State record of beetle
<i>Nomada affabilis</i>	Gary Hevel & Sam Droege: New State Record of hymenoptera
<i>Andrena illicis</i>	Sam Droege: Uncommon
<i>Andrena morissonella</i>	Sam Droege: Seems to be regular near the Chesapeake Bay
<i>Andrena thaspii</i>	Sam Droege: Uncommon
<i>Andrena tridens</i>	Sam Droege: Uncommon
<i>Anthophora abrupta</i>	Regularly seen, but usually only near areas with nesting cliffs
<i>Certina strenua</i>	Sam Droege: Uncommon, but increasing in southern portions of the state
<i>Hygrocybe unquinos</i>	Lance Biechele: Rare species, possibly first state of Maryland record

Chelone oblique (Red Turtlehead)	Global Rank: G4, State Rank: S1, State Status: T
Dioscorea hirticaulis (Wild Yam)	Global Rank: G3Q, State Rank: SH
Goodyera repens (Dwarf Rattlesnake-plantain)	Global Rank: G5, State Rank: SH, State Status: X
Cordulegaster bilineata (Brown Spiketail)	Global Rank: G5, State Rank: S3
Gomphus rogersi (Sable Clubtail)	Global Rank: G4, State Rank: S2, State Status: I
Tachopteryx thoreyi (Gray Petaltail)	Global Rank: G4, State Rank: S3
Haliaeetus leucocephalus (Bald Eagle)	Global Rank: G5, State Rank: S3.1B
Ixobrychus exilis (Least Bittern)	Global Rank: G5, State Rank: S2S3B, State Status: I

* Rare, Threatened, or Endangered Ranks derived from Maryland Natural Heritage Program, 2010.

**See Appendix F for Explanation of Species Rank and Status Codes (Maryland Natural Heritage Program, 2010).

VII. Discussion

Participants widely expressed the Patuxent River Park at Jug Bay Natural Area BioBlitz was fun, educational, and well organized. The main objective was to gain a snapshot of the biodiversity of this ecologically rich area along the Patuxent River. Team leaders were enthusiastic and thorough in their observations, and volunteers were an asset in assisting team leaders.

Success of the event depended largely on the team leaders and experts gracious donation of their time and efforts. Many of these professionals are subject matter experts of their respective species and offered invaluable knowledge in identifying habitat, conducting searches and accurately identifying species. Several experts opted to survey independently or with fellow colleagues rather than lead search teams. Their efforts were immensely important and led to many unique findings and contributed to the high tallies.

Survey results will assist park staff, researchers, and all interested parties in knowing more about the biodiversity of the park and how it has changed over time. Future surveyors or BioBlitz participants will be able to refer to the collected data and learn how the park's diversity changes in years to come as well. Several rare and sensitive species were identified allowing park staff to more effectively protect and manage these habitats. Some of the experts and participants visited Jug Bay Natural Area for the first time upon attending the BioBlitz. Their new found familiarity with the park may encourage further research about their species of study. Graduate students are encouraged to utilize the park for their investigative research, and the BioBlitz served to market this area for such purposes.

The BioBlitz also served to raise public awareness regarding the value and inherent worth of the Jug Bay Natural Area as it relates to species diversity. A goal of the Maryland-National Park and Planning Commission in gaining ownership of land along the Patuxent River corridor is to preserve and protect the natural resources that are present in these areas. The BioBlitz confirms that when properly protected and managed, ecosystems can flourish and a diverse variety of species can live and thrive.

Determining presences and severity of invasive species within the park was a goal of the BioBlitz. Invasive species and non-native species can be a major threat to native species within an ecosystem. The National Invasive Species Information Center, a program under the United States Department of Agriculture's National Agricultural Library, defines invasive species as: "1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112)" (USDA, 2010). Invasive species may be plants, animals, or other organisms such as microbes. The main means of invasive species introduction is from human activity. For instance, the seeds of a non-native species from another country may be accidentally transported via a human's shoe that is traveling from one country to another. The seeds may then enter an ecosystem here in the U.S. and begin to thrive, therefore disrupting the habitat and possibly leading to biological decreases in native species. The survey teams' and experts' findings reflected the existence of several non-native flora and fauna species. These findings will help park staff and other M-NCPPC staff in managing invasive species, and determining the long term effects on native species.

Overall, the 2009 Patuxent River Park at Jug Bay Natural Area BioBlitz was a great success. Several organism groups were observed which the park staff had little pre-existing information, namely fungi and liverworts, and insects. Jug Bay Natural Area's bird and plant diversity was already well documented; however, unique findings still resulted from the BioBlitz surveys. During this event, the staff aimed to recruit a variety of experts and survey as many species groups as possible. This strategy was ambitious and exciting and yielded a great deal of findings. However, in the future we may narrow the focus and observe specific species groups individually in order to generate more comprehensive knowledge of a group's diversity and prevalence.

Table 7. Flatworms and Mollusks

Family	Genus	Species	Common Name	Observer
Arionidae	<i>Arion</i>	<i>subfuscus</i>	Dusky Slug	BNorden, MImlay
Discidae	<i>Anguispira</i>	<i>sp.</i>		BNorden, MImlay
Limacidae	<i>Deroceras</i>	<i>sp.</i>		BNorden, MImlay
Philomycidae	<i>Philomycus</i>	<i>caridinaus</i>		BNorden, MImlay
Philomycidae	<i>Megapallifera</i>	<i>mutabilis</i>	Changeable Mantleslug	BNorden, MImlay
Philomycidae	<i>Philomycus</i>	<i>carolinianus</i>	Carolina Mantleslug	BNorden, MImlay
Philomycidae	<i>Philomycus</i>	<i>virginicus</i>	Virginia Mantleslug	BNorden, MImlay
Planariidae	<i>Dugesia</i>	<i>tigrina</i>		BNorden
Planariidae	<i>Phagocata</i>	<i>gracilis</i>		BNorden
Polygyridae	<i>Mesodon</i>	<i>thyroidus</i>	White-lip Globe Snail	BNorden, MImlay
Polygyridae	<i>Triodopsis</i>	<i>sp.</i>		BNorden, MImlay
Pupillidae	<i>Gastrocopta</i>	<i>contracta</i>	Bottleneck Snaggletooth	BNorden, MImlay
Strobilopsidae	<i>Strobilops</i>	<i>sp.</i>		BNorden, MImlay
Valloniidae	<i>Vallonia</i>	<i>pulchella</i>	Lovely Vallonia	BNorden, MImlay
Valloniidae	<i>Vallonia</i>	<i>costata</i>		BNorden, MImlay
Zonitidae	<i>Zonitoides</i>	<i>arboreus</i>		BNorden, MImlay
Zonitidae	<i>Glyphyalinia</i>	<i>sp.</i>		BNorden, MImlay

Table 8. Earthworms

Family	Genus	Species	Common Name	Notes	Observer
Lumbricidae	<i>Aporrectodea</i>	<i>caliginosa</i>	Grey Worm	European Species	KSzlavec
Lumbricidae	<i>Bimastos</i>	<i>tumidus</i>		Native	KSzlavec
Lumbricidae	<i>Dendrobaena</i>	<i>octaedra</i>		European Species	KSzlavec
Lumbricidae	<i>Eisenia</i>	<i>fetida [foetida]</i>	Redworm, Brandling Tiger, or Red Wiggler worm	European Species	KSzlavec
Lumbricidae	<i>Eisenoides</i>	<i>lönnerbergi</i>		Native	KSzlavec
Lumbricidae	<i>Lumbricus</i>	<i>rubellus</i>	Red Earthworm	European Species	KSzlavec
Lumbricidae	<i>Lumbricus</i>	<i>terrestris</i>	Nightcrawler	European species	KSzlavec
Lumbricidae	<i>Octolasion</i>	<i>lacteum</i>		European Species	KSzlavec
Megascolecidae	<i>Amyntas</i>	<i>corticus</i>		Asian Species	KSzlavec

Table 9. Isopods

Family	Genus	Species	Common Name	RecordNotes	Observer
Armadillidiidae	<i>Armadillidium</i>	<i>nasatum</i>	Pill Bug, Woodlouse	European Species	KSzlavec
Asellidae			Sow Bugs	MAC*	KMolines
Philosciidae	<i>Philoscia</i>	<i>muscorum</i>	Common Striped Woodlouse	European Species	KSzlavec
Porcellionidae	<i>Porcellio</i>	<i>scaber</i>	Common rough Woodlouse	European Species	KSzlavec

*MAC = Macroinvertebrate

Table 10. Amphipoda

Family	Genus	Species	Common Name	Notes	Observer
Gammaridae			Scud	MAC*	KMolines

*MAC = Macroinvertebrate

Table 11. Dragonflies and Damselflies (Odonata)

Family	Genus	Species	Common Name	Notes	Observer
Aeshnidae	<i>Anax</i>	<i>junius</i>	Common Green Darner		ROrr
Aeshnidae	<i>Epiaeschna</i>	<i>heros</i>	Swamp Darner		ROrr
Calopterygidae			Blackwinged Damselfly	MAC*	KMolines
Calopterygidae	<i>Calopteryx</i>	<i>maculata</i>	Ebony Jewelwing		ROrr
Coenagrionidae	<i>Enallagma</i>	<i>civile</i>	Familiar Bluet		ROrr
Coenagrionidae	<i>Enallagma</i>	<i>signatum</i>	Orange Bluet		ROrr
Coenagrionidae	<i>Ischnura</i>	<i>posita</i>	Fragile Forktail		ROrr
Coenagrionidae	<i>Ischnura</i>	<i>verticalis</i>	Eastern Forktail		ROrr
Cordulegastidae			Biddies	MAC*	KMolines
Cordulegastidae	<i>Cordulegaster</i>	<i>bilineata</i>	Brown Spiketail		ROrr
Corduliidae	<i>Didymops</i>	<i>transversa</i>	Stream Cruiser		ROrr
Gomphidae			Clubtail Dragonfly	MAC*	KMolines
Gomphidae	<i>Gomphus</i>	<i>lividus</i>	Ashy Clubtail		ROrr
Gomphidae	<i>Gomphus</i>	<i>rogersi</i>	Roger's Clubtail		ROrr
Libellulidae	<i>Erythemis</i>	<i>simplicicollis</i>	Common Pondhawk		ROrr
Libellulidae	<i>Libellula</i>	<i>lydia</i>	Common Whitetail		ROrr
Libellulidae	<i>Libellula</i>	<i>needham</i>	Needham's Skimmer		ROrr
Libellulidae	<i>Libellula</i>	<i>vibrans</i>	Great Blue Skimmer		ROrr
Libellulidae	<i>Pachydiplax</i>	<i>longipennis</i>	Blue Dasher		ROrr
Libellulidae	<i>Pantala</i>	<i>hymenaea</i>	Spot-winged Glider		ROrr
Petaluridae	<i>Tachopteryx</i>	<i>thoreyi</i>	Gray Petaltail		ROrr

*MAC = Macroinvertebrate

Table 12. Stoneflies (Plecoptera)

Family	Genus	Species	Common Name	Notes	Observer
Capniidae			Slender Winter Stonefly	MAC*	KMolines

*MAC = Macroinvertebrate

Table 13. True Bugs (Hemiptera)

Family	Genus	Species	Common Name	Collector
Delphacidae	<i>Liburniella</i>	<i>ornata</i>	Ornate Planthopper	GHevel

Table 14. Megaloptera

Family	Genus	Species	Common Name	Notes	Collector
Corydalidae			Dobson Flies/Fish Flies	MAC*	KMolines
Sialidae			Alderflies	MAC*	KMolines

*MAC = Macroinvertebrate

Table 15. Beetles (Coleoptera)

Family	Genus	Species	Common Name	Subsp	Notes	Observer
Buprestidae	<i>Chrysobothris</i>	<i>species</i>				CStaines, SStaines
Carabidae	<i>Cicindela</i>	<i>sexguttata</i>	Tiger Beetle			CStaines, SStaines GHevel
Carabidae	<i>Lebia</i>	<i>species</i>				CStaines, SStaines
Cerambycidae	<i>Hyperplatys</i>	<i>aspersa</i>	Spotted Longhorn Beetle			GHevel
Chrysomelidae	<i>Anisotena</i>	<i>nigrita</i>				CStaines, SStaines
Chrysomelidae	<i>Anomoea</i>	<i>laticlavia</i>	Clay-colored Leaf Beetle			CStaines, SStaines
Chrysomelidae	<i>Cerotoma</i>	<i>trifurcate</i>	Bean Leaf Beetle			CStaines, SStaines, GHevel
Chrysomelidae	<i>Chalepus</i>	<i>bicolor</i>				CStaines, SStaines
Chrysomelidae	<i>Cicindelidae</i>	<i>sexguttata</i>	Six-spotted Green Tiger Beetle			GHevel
Chrysomelidae	<i>Epitrix</i>	<i>species</i>				CStaines, SStaines
Chrysomelidae	<i>Microrhopala</i>	<i>vittata</i>	Goldenrod Leaf Miner			CStaines, SStaines
Chrysomelidae	<i>Neochlamisus</i>	<i>sp</i>				CStaines, SStaines
Chrysomelidae	<i>Odontota</i>	<i>dorsalis</i>	Locust Leaf Miner			CStaines, SStaines
Chrysomelidae	<i>Ophraella</i>	<i>sp</i>				CStaines, SStaines
Chrysomelidae	<i>Paria</i>	<i>sp.</i>				CStaines, SStaines
Chrysomelidae	<i>Paria</i>	<i>sp.</i>				CStaines, SStaines
Chrysomelidae	<i>Plagiometriona</i>	<i>clavata</i>	Clavate Tortoise Beetle	clavata		CStaines, SStaines
Chrysomelidae	<i>Plateumaris</i>	<i>sp.</i>				CStaines, SStaines
Chrysomelidae	<i>Stenispa</i>	<i>metallica</i>				CStaines, SStaines
Chrysomelidae	<i>Sumitrosis</i>	<i>sp.</i>				CStaines, SStaines
Coccinellidae	<i>Coleomegilla</i>	<i>maculata</i>	Spotted Lady Beetle			GHevel
Coccinellidae	<i>Cycloneda</i>	<i>munda</i>	Polished lady beetle			GHevel
Coccinellidae	<i>Harmonia</i>	<i>axyridis</i>	Multicolored Asian lady beetle			GHevel
Coccinellidae	<i>Propylea</i>	<i>quatuordecimpunctata</i>	Fourteen-spotted lady beetle			GHevel
Curculionidae	<i>Callirhopalus</i>	<i>bifasciatus</i>	Twobanded Japanese weevil			GHevel
Dytiscidae	<i>Acilius</i>	<i>sp.</i>				CStaines, SStaines
Dytiscidae	<i>Neoporus</i>	<i>sp.</i>				CStaines, SStaines
Elmidae			Riffle Beetle		MAC*	KMolines
Erotylidae	<i>Triplax</i>	<i>sp.</i>				CStaines, SStaines
Gyrinidae			Whirlygig Beetle		MAC*	KMolines
Gyrinidae	<i>Dineutus</i>	<i>sp.</i>				CStaines, SStaines
Haliplidae			Crawling Beetle		MAC*	KMolines
Haliplidae	<i>Peltodytes</i>	<i>sp.</i>				CStaines, SStaines
Hydrophilidae	<i>Hydrochara</i>	<i>sp</i>				CStaines, SStaines
Lampyridae	<i>Lucidota</i>	<i>atra</i>	Black Firefly			GHevel
Passalidae	<i>Odontotaenius</i>	<i>disjunctus</i>	Patent-leather Beetle			GHevel
Rhipiphoridae	<i>Pelecotoma</i>	<i>flavipes</i>			New State Record	GHevel

Family	Genus	Species	Common Name	Subsp	Notes	Observer
Scarabaeidae	<i>Anomala</i>	<i>sp.</i>				GHevel
Scarabaeidae	<i>Geotrapes</i>	<i>sp.</i>				CStaines, SStaines
Scarabaeidae	<i>Onthophagus</i>	<i>sp.</i>				CStaines, SStaines
Scirtidae			Marsh Beetles		MAC*	KMolines
Tenebrionidae	<i>Alobates</i>	<i>pennsylvanica</i>	False Mealworm Beetle			GHevel
Tenebrionidae	<i>Microphopala</i>	<i>xerene</i>				GHevel

*MAC = Macroinvertebrate

Table 16. Caddisflies (Trichoptera)

Family	Genus	Species	Common Name	Notes	Observer
Limnephilidae			Northern Casemaker	MAC*	KMolines
Leptoceridae			Long-horn Caddisfly	MAC*	KMolines

*MAC = Macroinvertebrate

Table 17. Butterflies and Moths (Lepidoptera)

Family	Genus	Species	Common Name	Observer
Arctiidae	<i>Cisthene</i>	<i>plumbea</i>	Lead-colored Lichen Moth	Don & Mignon Davis
Arctiidae	<i>Grammia</i>	<i>parthenice</i>	Parthenice Tiger Moth	Don & Mignon Davis
Arctiidae	<i>Pyrrharctia</i>	<i>isabella</i>	Isabella Tiger Moth	Don & Mignon Davis
Arctiidae	<i>Spilosoma</i>	<i>dubia</i>	Dubious Tiger Moth	Don & Mignon Davis
Arctiidae	<i>Spilosoma</i>	<i>virginica</i>	Virginian Tiber Moth	Don & Mignon Davis
Crambidae	<i>Crambus</i>	<i>laqueatellus</i>	Eastern Grass-veneer Moth	Don & Mignon Davis
Crambidae	<i>Crocidophora</i>	<i>serratissimalis</i>	Sawtoothed Crocidophora	RSmith
Crambidae	<i>Udea</i>	<i>rubigalis</i>	Celery Leaf-tier	RSmith
Geometridae	<i>Epimecis</i>	<i>hortaria</i>	Tulip-tree Beauty Moth	GHevel
Geometridae	<i>Euchlaena</i>	<i>amoenaria</i>	Deep Yellow Euchlaena	RSmith
Geometridae	<i>Eupithecia</i>	<i>miserulata</i>	Common Eupithecia Moth	RSmith
Geometridae	<i>Pleuroprucha</i>	<i>insulsaria</i>	Common Tan Wave Moth	RSmith
Geometridae	<i>Xanthotype</i>	<i>sospeta</i>	Geometer Moth	Don & Mignon Davis
Gracillariidae	<i>Antaeotricha</i>	<i>schlaegeri</i>	Schlaeger's Fruitworm Moth	Don & Mignon Davis
Gracillariidae	<i>Phyllocnistis</i>	<i>magnoliella</i>	Magnolia Leafminer	Don & Mignon Davis
Gracillariidae	<i>Phyllocnistis</i>	<i>vitegenella</i>	American Leafminer	Don & Mignon Davis
Hesperiidae	<i>Ancyloxypha</i>	<i>numitor</i>	Least Skipper	PKean, JShenot
Hesperiidae	<i>Epargyreus</i>	<i>clarus</i>	Silver Spotted Skipper	PKean
Hesperiidae	<i>Euphyes</i>	<i>vestris</i>	Dun Skipper	PKean
Hesperiidae	<i>Pholisora</i>	<i>catullus</i>	Common Sootywing	PKean
Hesperiidae	<i>Poanes</i>	<i>zabulon</i>	Zabulon Skipper	PKean
Hesperiidae	<i>Pompeius</i>	<i>verna</i>	Little Glassywing	PKean
Lycaenidae	<i>Celastrina</i>	<i>ladon</i>	Spring Azure	PKean, JShenot
Lycaenidae	<i>Everes</i>	<i>comyntas</i>	Eastern Tailed Blue	PKean
Lymantriidae	<i>Dasychira</i>	<i>tephra</i>	Tephra Tussock Moth	Don & Mignon Davis
Lymantriidae	<i>Lymantria</i>	<i>dispar</i>	Gypsy Moth	Don & Mignon Davis
Noctuidae	<i>Acronicta</i>	<i>americana</i>	American Dagger Moth	Don & Mignon Davis
Noctuidae	<i>Pangrapta</i>	<i>decoralis</i>	Decorated Owlet Moth	RSmith
Noctuidae	<i>Zanclognatha</i>	<i>pedipilalis</i>	Grayish Zanclognatha	RSmith

Family	Genus	Species	Common Name	Observer
Notodontidae	<i>Datana</i>	<i>Sp.</i>		Don & Mignon Davis
Nymphalidae	<i>Asterocampa</i>	<i>celtis</i>	Hackberry Emperor	PKean
Nymphalidae	<i>Euptoieta</i>	<i>claudia</i>	Variegated Fritillary	PKean
Nymphalidae	<i>Limenitis</i>	<i>astyanax</i>	Red-spotted Purple	PKean
Nymphalidae	<i>Nymphalis</i>	<i>antiopa</i>	Mourning Cloak	PKean
Nymphalidae	<i>Phyciodes</i>	<i>tharos</i>	Pearl Crescent	JShenot
Nymphalidae	<i>Polygonia</i>	<i>comma</i>	Comma	PKean
Nymphalidae	<i>Polygonia</i>	<i>interrogationis</i>	Question Mark	PKean, JShenot
Nymphalidae	<i>Vanessa</i>	<i>virginensis</i>	American Painted Lady	PKean
Oecophoridae	<i>Mathildana</i>	<i>newmanella</i>	Concealer moth	Don & Mignon Davis, GHevel
Papilionidae	<i>Graphium</i>	<i>marcellus</i>	Zebra Swallowtail	JShenot, PKean
Papilionidae	<i>Papilio</i>	<i>polyxenes</i>	Black Swallowtail	JShenot
Papilionidae	<i>Papilio</i>	<i>glaucus</i>	Tiger Swallowtail	PKean, JShenot
Papilionidae	<i>Papilio</i>	<i>troilus</i>	Spicebush Swallowtail	PKean, JShenot
Pieridae	<i>Colias</i>	<i>eurytheme</i>	Orange Sulphur	PKean, JShenot
Pieridae	<i>Pieris</i>	<i>rapae</i>	Cabbage White Butterfly	PKean, JShenot
Pyralidae	<i>Tosale</i>	<i>oviplagalis</i>	Dimorphic Tosale Moth	Don & Mignon Davis
Satyridae	<i>Lethe</i>	<i>appalachia</i>	Appalachian Brown	JShenot
Sphingidae	<i>Paonias</i>	<i>excaecatus</i>	Blinded Sphinx	Don & Mignon Davis
Zygaenidae	<i>Harrisina</i>	<i>americana</i>	Grapeleaf skeletonizer	Don & Mignon Davis

Table 18. Diptera

Family	Genus	Species	Common Name	Notes	Observer
Ceratopogonidae			Biting Midge	MAC*	KMolines
Chironomidae			Midges	MAC*	KMolines
Tipulidae			Crane Fly	MAC*	KMolines

*MAC = Macroinvertebrate

Table 19. Bees & Wasps (Hymenoptera)

Family	Genus	Subgenus	Species	Subsp	Common Name	Observer	Notes
Andrenidae	<i>Andrena</i>		<i>brevipalpis/robertsonii</i>		Mining Bee	GHevel	Identified by Sam Droege
Andrenidae	<i>Andrena</i>		<i>illicis</i>		Mining Bee	GHevel	IDed by Sam Droege
Andrenidae	<i>Andrena</i>		<i>morissonella</i>		Mining Bee	GHevel	IDed by Sam Droege
Andrenidae	<i>Andrena</i>		<i>thaspui</i>		Mining Bee	GHevel	IDed by Sam Droege
Andrenidae	<i>Andrena</i>		<i>tridens</i>		Mining Bee	GHevel	IDed by Sam Droege
Anthophoridae	<i>Anthophora</i>	Melea	<i>abrupta</i>		Mustached Mud Bee	GHevel	IDed by Sam Droege
Anthophoridae	<i>Nomada</i>		<i>affabilis</i>			GHevel	IDed by Sam Droege *New State Species
Anthophoridae	<i>Nomada</i>	Centrias	<i>articulata</i>			GHevel	IDed by Sam Droege
Anthophoridae	<i>Nomada</i>	Centrias	<i>bidentate</i>			GHevel	IDed by Sam Droege
Anthophoridae	<i>Nomada</i>	Nomada	<i>pygmaea</i>			GHevel	
Apidae	<i>Apis</i>		<i>mellifera</i>		European Honeybee	GHevel	IDed by Sam Droege
Apidae	<i>Ceratina</i>	Zadontomerus	<i>calcarata</i>		Small Carpenter Bee	GHevel	IDed by Sam Droege
Apidae	<i>Ceratina</i>	Zadontomerus	<i>dupla</i>		Small Carpenter Bee	GHevel	
Apidae	<i>Ceratina</i>	Zadontomerus	<i>strenua</i>		Small Carpenter Bee	GHevel	IDed by Sam Droege
Apidae	<i>Xylocopa</i>	Xylocopoides	<i>virginica</i>	virginica	Large Carpenter Bee	GHevel	
Colletidae	<i>Hylaeus</i>	Prosopis	<i>modestus</i>	modestus		GHevel	IDed by Sam Droege
Halictidae	<i>Augochlora</i>	Augochlora	<i>pura</i>	pura		GHevel	
Halictidae	<i>Augochloropsis</i>	Paraugochloropsis	<i>metallica</i>	fulgida		GHevel	
Halictidae	<i>Augochloropsis</i>	Paraugochloropsis	<i>metallica</i>	subspecies		GHevel	IDed by Sam Droege
Halictidae	<i>Halictus</i>	Seladonia	<i>confusus</i>	confusus		GHevel	IDed by Sam Droege
Halictidae	<i>Halictus</i>	Halictus	<i>ligatus</i>		Sweat Bee	GHevel	IDed by Sam Droege
Halictidae	<i>Lasioglossum</i>		<i>fuscipenne</i>		Sweat Bee	GHevel	IDed by Sam Droege
Halictidae	<i>Lasioglossum</i>	Dialictus	<i>imitatus</i>		Sweat Bee	GHevel	IDed by Sam Droege
Halictidae	<i>Lasioglossum</i>	Dialictus	<i>nelumbonis</i>		Sweat Bee	GHevel	IDed by Sam Droege, "A waterlily specialist" -SD
Halictidae	<i>Lasioglossum</i>	Dialictus	<i>pectorale</i>			GHevel	IDed by Sam Droege
Halictidae	<i>Sphecodes</i>		<i>species</i>			GHevel	IDed by Sam Droege
Megachilidae	<i>Heriades</i>		<i>carinatus</i>			GHevel	IDed by Sam Droege

Table 20. Ants (Hymenoptera)

Family	Genus	Subgenus	Species	Subsp	Common Name	Observer
Formicidae	<i>Amblyopone</i>		<i>pallipes</i>			DKjar
Formicidae	<i>Aphaenogaster</i>	Attomyrma	<i>fulva</i>		Myrmicine Ant	DKjar
Formicidae	<i>Aphaenogaster</i>	Attomyrma	<i>rudis</i>	subspecies	Myrmicine Ant	DKjar
Formicidae	<i>Aphaenogaster</i>	Attomyrma	<i>tennesseensis</i>			DKjar
Formicidae	<i>Camponotus</i>	Camponotus	<i>americanus</i>		Carpenter Ant	DKjar
Formicidae	<i>Camponotus</i>	Tanaemyrmex	<i>castaneus</i>		Chesnut Carpenter Ant	DKjar
Formicidae	<i>Camponotus</i>	Camponotus	<i>chromaiodes</i>		Red Carpenter Ant	DKjar
Formicidae	<i>Camponotus</i>	Camponotus	<i>impessus</i>			DKjar
Formicidae	<i>Camponotus</i>	Myrmentoma	<i>nearcticus</i>			DKjar
Formicidae	<i>Camponotus</i>	Camponotus	<i>Pennsylvanicus</i>		Black Carpenter Ant	DKjar
Formicidae	<i>Camponotus</i>	Myrmentoma	<i>subbarbatus</i>			DKjar
Formicidae	<i>Crematogaster</i>	Crematogaster	<i>cerasi</i>		Myrmicine Acrobatic Ant	DKjar
Formicidae	<i>Crematogaster</i>	Crematogaster	<i>lineolata</i>		Lined Acrobatic Ant	DKjar
Formicidae	<i>Formica</i>		<i>pallidifulva</i>	nitidiventris		DKjar
Formicidae	<i>Formica</i>	Formica	<i>subsericea</i>		Formicine Ant	DKjar
Formicidae	<i>Lasius</i>	Lasius	<i>alienus</i>		Cornfield Ant	DKjar
Formicidae	<i>Monomorium</i>	Monomorium	<i>minimum</i>		Little Black Ant	DKjar
Formicidae	<i>Myrmecina</i>		<i>americana</i>		Myrmicine Ant	DKjar
Formicidae	<i>Myrmica</i>		<i>lobicornis</i>			DKjar
Formicidae	<i>Myrmica</i>		<i>pinetorum</i>		Myrmicine Ant	DKjar
Formicidae	<i>Myrmica</i>		<i>punctiventris</i>			DKjar
Formicidae	<i>Paratrechina</i>	Nylanderia	<i>faisonensis</i>			DKjar
Formicidae	<i>Ponera</i>		<i>pennsylvanica</i>			DKjar
Formicidae	<i>Prenolepis</i>		<i>imparis</i>		Formicine Ant	DKjar
Formicidae	<i>Stenamma</i>		<i>impar</i>			DKjar
Formicidae	<i>Tapinoma</i>		<i>sessile</i>		Dolichoderine Odorous House Ant	DKjar
Formicidae	<i>Temnothorax</i>		<i>curvispinosus</i>			DKjar
Formicidae	<i>Temnothorax</i>		<i>longispinosus</i>			DKjar
Formicidae	<i>Tetramorium</i>		<i>caespitum</i>		Myrmicine Pavement Ant	DKjar
Formicidae	<i>Vollenhovia</i>		<i>emeryi</i>			DKjar

Table 21. Reptiles and Amphibians

Family	Genus	Species	Subsp	CommonName	Observer
Bufo	<i>Anaxyrus</i>	<i>americanus</i>	<i>subspecies</i>	American Toad	MQuinlan
Bufo	<i>Anaxyrus</i>	<i>fowleri x americanus</i>		Fowler's Toad	MQuinlan JShenot

Family	Genus	Species	Subsp	CommonName	Observer
Chelydridae	<i>Chelydra</i>	<i>serpentina</i>	<i>subspecies</i>	Snapping Turtle	MQuinlan
Colubridae	<i>Carphophis</i>	<i>amoenus</i>	<i>subspecies</i>	Eastern Wormsnake	JShenot
Colubridae	<i>Coluber</i>	<i>constrictor</i>	<i>constrictor</i>	Northern Black Racer	JShenot, MQuinlan
Colubridae	<i>Diadophis</i>	<i>punctatus</i>	<i>subspecies</i>	Ring-necked Snake	MQuinlan
Colubridae	<i>Nerodia</i>	<i>sipedon</i>	<i>sipedon</i>	Northern Water Snake	MQuinlan
Colubridae	<i>Opheodrys</i>	<i>aestivus</i>	<i>aestivus</i>	Rough Green Snake	MQuinlan
Colubridae	<i>Thamnophis</i>	<i>sauritus</i>		Eastern Ribbonsnake	MQuinlan
Colubridae	<i>Thamnophis</i>	<i>sirtalis</i>	<i>sirtalis</i>	Common Garter Snake	JShenot
Emydidae	<i>Chrysemys</i>	<i>picta</i>	<i>picta</i>	Eastern Painted Turtle	MQuinlan
Emydidae	<i>Chrysemys</i>	<i>picta</i>	<i>subspecies</i>		MQuinlan
Emydidae	<i>Pseudemys</i>	<i>rubriventris</i>		Red-bellied Turtle	MQuinlan
Emydidae	<i>Terrapene</i>	<i>carolina</i>	<i>carolina</i>	Eastern Box Turtle	MQuinlan
Emydidae	<i>Terrapene</i>	<i>carolina</i>	<i>subspecies</i>		MQuinlan
Hylidae	<i>Acris</i>	<i>crepitans</i>	<i>subspecies</i>	Northern Cricket Frog	MQuinlan
Hylidae	<i>Hyla</i>	<i>cinerea</i>		Green Tree Frog	MQuinlan
Hylidae	<i>Hyla</i>	<i>versicolor</i>		Gray Tree Frog	MQuinlan, JShenot
Hylidae	<i>Hyla</i>	<i>chrysoscelis</i>		Cope's Gray Tree Frog	JShenot
Plethodontidae	<i>Plethodon</i>	<i>cinereus</i>		Red-backed Salamander	MQuinlan
Ranidae	<i>Lithobates</i>	<i>palustris</i>		Pickerel Frog	MQuinlan
Ranidae	<i>Lithobates</i>	<i>catesbeiana</i>		American Bullfrog	MQuinlan
Ranidae	<i>Lithobates</i>	<i>clamitans</i>	<i>melanota</i>	Northern Green Frog	MQuinlan
Ranidae	<i>Lithobates</i>	<i>clamitans</i>	<i>subspecies</i>	Green Frog	JShenot, MQuinlan
Scincidae	<i>Eumeces</i>	<i>fasciatus</i>		Five-lined Skink	MQuinlan

Table 22. Birds

Family	Genus	Species	Common Name	Observer
Accipitridae	<i>Accipiter</i>	<i>cooperii</i>	Cooper's Hawk	GKearns
Accipitridae	<i>Buteo</i>	<i>jamaicensis</i>	Red-tailed Hawk	GKearns
Accipitridae	<i>Buteo</i>	<i>lineatus</i>	Red-shouldered Hawk	GKearns
Accipitridae'	<i>Haliaeetus</i>	<i>leucocephalus</i>	Bald Eagle	GKearns
Accipitridae	<i>Pandion</i>	<i>haliaetus</i>	Osprey	GKearns
Alcedinidae	<i>Ceryle</i>	<i>alcyon</i>	Belted Kingfisher	GKearns
Anatidae	<i>Aix</i>	<i>sponsa</i>	Wood Duck	GKearns
Anatidae	<i>Anas</i>	<i>platyrhynchos</i>	Mallard	GKearns
Apodidae	<i>Chaetura</i>	<i>pelagica</i>	Chimney Swift	GKearns
Ardeidae	<i>Ardea</i>	<i>herodias</i>	Great Blue Heron	GKearns
Ardeidae	<i>Ixobrychus</i>	<i>exilis</i>	Least Bittern	GKearns
Bombycillidae	<i>Bombycilla</i>	<i>cedrorum</i>	Cedar Waxwing	GKearns
Cardinalidae	<i>Cardinalis</i>	<i>cardinalis</i>	Northern Cardinal	GKearns
Cardinalidae	<i>Passerina</i>	<i>cyanea</i>	Indigo Bunting	GKearns
Cathartidae	<i>Cathartes</i>	<i>aura</i>	Turkey Vulture	GKearns
Columbidae	<i>Zenaidra</i>	<i>macroura</i>	Mourning Dove	GKearns
Corvidae	<i>Corvus</i>	<i>brachyrhynchos</i>	American Crow	GKearns

Family	Genus	Species	Common Name	Observer
Corvidae	<i>Corvus</i>	<i>ossifragus</i>	Fish Crow	GKearns
Corvidae	<i>Cyanocitta</i>	<i>cristata</i>	Blue Jay	GKearns
Cuculidae	<i>Coccyzus</i>	<i>americanus</i>	Yellow-billed Cuckoo	GKearns
Emberizidae	<i>Melospiza</i>	<i>melodia</i>	Song Sparrow	GKearns
Emberizidae	<i>Pipilo</i>	<i>erythrophthalmus</i>	Eastern Towhee	GKearns
Emberizidae	<i>Spizella</i>	<i>passerine</i>	Chipping Sparrow	GKearns
Emberizidae	<i>Spizella</i>	<i>pusilla</i>	Field Sparrow	GKearns
Fringillidae	<i>Carduelis</i>	<i>tristis</i>	American Goldfinch	GKearns
Fringillidae	<i>Carpodacus</i>	<i>mexicanus</i>	House Finch	GKearns
Hirundinidae	<i>Hirundo</i>	<i>rustica</i>	Barn Swallow	GKearns
Hirundinidae	<i>Progne</i>	<i>subis</i>	Purple Martin	GKearns
Hirundinidae	<i>Tachycineta</i>	<i>bicolor</i>	Tree Swallow	GKearns
Icteridae	<i>Agelaius</i>	<i>phoeniceus</i>	Red-winged Blackbird	GKearns
Icteridae	<i>Icterus</i>	<i>galbula</i>	Baltimore Oriole	GKearns
Icteridae	<i>Icterus</i>	<i>spurius</i>	Orchard Oriole	GKearns
Icteridae	<i>Molothrus</i>	<i>ater</i>	Brown-headed Cowbird	GKearns
Icteridae	<i>Quiscalus</i>	<i>quiscula</i>	Common Grackle	GKearns
Mimidae	<i>Dumetella</i>	<i>carolinensis</i>	Gray Catbird	GKearns
Mimidae	<i>Mimus</i>	<i>polyglottos</i>	Northern Mockingbird	GKearns
Mimidae	<i>Toxostoma</i>	<i>rufum</i>	Brown Thrasher	GKearns
Paridae	<i>Baeolophus</i>	<i>bicolor</i>	Tufted Titmouse	GKearns
Paridae	<i>Poecile</i>	<i>carolinensis</i>	Carolina Chickadee	GKearns
Parulidae	<i>Dendroica</i>	<i>dominica</i>	Yellow-throated Warbler	GKearns
Parulidae	<i>Dendroica</i>	<i>petechia</i>	Yellow Warbler	GKearns
Parulidae	<i>Dendroica</i>	<i>pinus</i>	Pine Warbler	GKearns
Parulidae	<i>Dendroica</i>	<i>striata</i>	Blackpoll Warbler	GKearns
Parulidae	<i>Geothlypis</i>	<i>trichas</i>	Common Yellowthroat	GKearns
Parulidae	<i>Icteria</i>	<i>virens</i>	Yellow-breasted Chat	GKearns
Parulidae	<i>Parula</i>	<i>americana</i>	Northern Parula	GKearns
Parulidae	<i>Protonotaria</i>	<i>citrea</i>	Prothonotary Warbler	GKearns
Parulidae	<i>Seiurus</i>	<i>aurocapillus</i>	Ovenbird	GKearns
Parulidae	<i>Seiurus</i>	<i>motacilla</i>	Louisiana Waterthrush	GKearns
Parulidae	<i>Setophaga</i>	<i>ruticilla</i>	American Redstart	GKearns
Parulidae	<i>Wilsonia</i>	<i>citrine</i>	Hooded Warbler	GKearns
Passeridae	<i>Passer</i>	<i>domesticus</i>	House Sparrow	GKearns
Phalacrocoracidae	<i>Phalacrocorax</i>	<i>auritus</i>	Double-crested Cormorant	GKearns
Picidae	<i>Colaptes</i>	<i>auratus</i>	Northern Flicker	GKearns
Picidae	<i>Dryocopus</i>	<i>pileatus</i>	Pileated Woodpecker	GKearns
Picidae	<i>Melanerpes</i>	<i>carolinus</i>	Red-bellied Woodpecker	GKearns
Picidae	<i>Picoides</i>	<i>pubescens</i>	Downy Woodpecker	GKearns
Picidae	<i>Picoides</i>	<i>villosus</i>	Hairy Woodpecker	GKearns
Scolopacidae	<i>Tringa</i>	<i>solitaria</i>	Solitary Sandpiper	GKearns
Sittidae	<i>Sitta</i>	<i>carolinensis</i>	White-breasted Nuthatch	GKearns
Strigidae	<i>Bubo</i>	<i>virginianus</i>	Great Horned Owl	GKearns
Strigidae	<i>Otus</i>	<i>asio</i>	Eastern Screech Owl	GKearns
Sturnidae	<i>Sturnus</i>	<i>vulgaris</i>	European Starling	GKearns
Sylviidae	<i>Poliophtila</i>	<i>caerulea</i>	Blue-gray Gnatcatcher	GKearns

Family	Genus	Species	Common Name	Observer
Thraupidae	<i>Piranga</i>	<i>olivacea</i>	Scarlet Tanager	GKearns
Thraupidae	<i>Piranga</i>	<i>rubra</i>	Summer Tanager	GKearns
Trochilidae	<i>Archilochus</i>	<i>colubris</i>	Ruby-throated Hummingbird	GKearns
Troglodytidae	<i>Cistothorus</i>	<i>palustris</i>	Marsh Wren	GKearns
Troglodytidae	<i>Thryothorus</i>	<i>ludovicianus</i>	Carolina Wren	GKearns
Turdidae	<i>Hylocichla</i>	<i>mustelina</i>	Wood Thrush	GKearns
Turdidae	<i>Sialia</i>	<i>sialis</i>	Eastern Bluebird	GKearns
Turdidae	<i>Turdus</i>	<i>migratorius</i>	American Robin	GKearns
Tyrannidae	<i>Contopus</i>	<i>virens</i>	Eastern Wood-Pewee	GKearns
Tyrannidae	<i>Empidonax</i>	<i>virescens</i>	Acadian Flycatcher	GKearns
Tyrannidae	<i>Myiarchus</i>	<i>crinitus</i>	Great Crested Flycatcher	GKearns
Tyrannidae	<i>Sayornis</i>	<i>phoebe</i>	Eastern Phoebe	GKearns
Tyrannidae	<i>Tyrannus</i>	<i>tyrannus</i>	Eastern Kingbird	GKearns
Vireonidae	<i>Vireo</i>	<i>flavifrons</i>	Yellow-throated Vireo	GKearns
Vireonidae	<i>Vireo</i>	<i>griseus</i>	White-eyed Vireo	GKearns
Vireonidae	<i>Vireo</i>	<i>olivaceus</i>	Red-eyed Vireo	GKearns

Table 23. Mammals

Family	Genus	Species	Common Name	Observer
Canidae	<i>Vulpes</i>	<i>vulpes</i>	Red Fox	POsenton
Castoridae	<i>Castor</i>	<i>canadensis</i>	Beaver	POsenton
Cervidae	<i>Odocoileus</i>	<i>virginianus</i>	White-tailed Deer	POsenton
Didelphidae	<i>Didelphis</i>	<i>virginiana</i>	Virginia Opossum	POsenton
Leporidae	<i>Sylvilagus</i>	<i>floridanus</i>	Eastern Cottontail	POsenton
Muridae	<i>Ondatra</i>	<i>zibethicus</i>	Muskrat	POsenton
Muridae	<i>Peromyscus</i>	<i>leucopus</i>	White-footed Mouse	POsenton
Procyonidae	<i>Procyon</i>	<i>lotor</i>	Raccoon	POsenton
Sciuridae	<i>Marmota</i>	<i>monax</i>	Groundhog	POsenton
Sciuridae	<i>Sciurus</i>	<i>carolinensis</i>	Eastern Gray Squirrel	POsenton
Sciuridae	<i>Tamias</i>	<i>striatus</i>	Eastern Chipmunk	POsenton

Table 24. Fungi and Liverworts

Family	Genus	Species	Common Name	Notes	Collector
Auriscalpiaceae	<i>Clavicornia</i>	<i>pyxidata</i>			LBiechele
Auriscalpiaceae	<i>Lentinellus</i>	<i>ursinus</i>			LBiechele
Bolbitiaceae	<i>Conocybe</i>	<i>tenera</i>			LBiechele
Bolbitiaceae	<i>Hebeloma</i>	<i>species</i>			LBiechele
Boletaceae	<i>Boletus</i>	<i>chrysenteron</i>			LBiechele
Cephaloziaceae	<i>Nowellia</i>	<i>curvifolia</i>			LBiechele
Cephaloziaceae	<i>Odontoschisma</i>	<i>prostratum</i>			LBiechele
Clavulinaceae	<i>Clavulina</i>	<i>crinata</i>			LBiechele
Coprinaceae	<i>Coprinus</i>	<i>plicatilis</i>			LBiechele
Coprinaceae	<i>Psathyrella</i>	<i>velutina</i>			LBiechele

Family	Genus	Species	Common Name	Notes	Collector
Cortinariaceae	<i>Galerina</i>	<i>species</i>			LBiechele
Helvellaceae	<i>Helvella</i>	<i>macropus</i>			LBiechele
Hymenochaetaceae	<i>Hydnochaete</i>	<i>olivaceum</i>			LBiechele
Hymenochaetaceae	<i>Phellinus</i>	<i>rimosus</i>			LBiechele
Hypocreaceae	<i>Hypomyces</i>	<i>luteovirens</i>			LBiechele
Jubulaceae	<i>Frullania</i>	<i>eboracensis</i>			LBiechele
Nidulariaceae	<i>Crucibulum</i>	<i>laeve</i>			LBiechele
Otidaceae	<i>Scutellinia</i>	<i>scutellata</i>			LBiechele
Pluteaceae	<i>Pluteus</i>	<i>cervinus</i>			LBiechele
Polyporaceae	<i>Ganoderma</i>	<i>lucidum</i>			LBiechele
Polyporaceae	<i>Lenzites</i>	<i>betulina</i>			LBiechele
Polyporaceae	<i>Trametes</i>	<i>elegans</i>			LBiechele
Polyporaceae	<i>Trametes</i>	<i>versicolor</i>			LBiechele
Polyporaceae	<i>Trichaptum</i>	<i>biforme</i>			LBiechele
Russulaceae	<i>Lactarius</i>	<i>subserifluus</i>			LBiechele
Russulaceae	<i>Russula</i>	<i>ornaticeps</i>			LBiechele
Russulaceae	<i>Russula</i>	<i>species</i>			LBiechele
Scapaniaceae	<i>Scapania</i>	<i>nemorosa</i>			LBiechele
Schizophyllaceae	<i>Schizophyllum</i>	<i>commune</i>			LBiechele
Sclerodermataceae	<i>Scleroderma</i>	<i>polyrhizum</i>			LBiechele
Steccherinaceae	<i>Irpex</i>	<i>lacteus</i>	White Polypore		LBiechele
Tricholomataceae	<i>Hygrocybe</i>	<i>cuspidate</i>			LBiechele
Tricholomataceae	<i>Hygrocybe</i>	<i>flavescens</i>			LBiechele
Tricholomataceae	<i>Hygrocybe</i>	<i>psittacina</i>			LBiechele
Tricholomataceae	<i>Hygrocybe</i>	<i>unguinosa</i>		Rare	LBiechele
Tricholomataceae	<i>Megacollybia</i>	<i>platyphylla</i>			LBiechele
Tricholomataceae	<i>Micromphale</i>	<i>foetidum</i>			LBiechele
Tricholomataceae	<i>Mycena</i>	<i>corticola</i>			LBiechele
Tricholomataceae	<i>Xerula</i>	<i>furfuraceae</i>			LBiechele

Table 25. Club Mosses

Family	Genus	Species	CommonName	Observer
Lycopodiaceae	<i>Lycopodium</i>	<i>flabelliforme</i>	Ground pine, Running Pine	JMetzger
Lycopodiaceae	<i>Lycopodium</i>	<i>lucidulum</i>	Shining Clubmoss	JMetzger
Lycopodiaceae	<i>Lycopodium</i>	<i>obscurum</i>	Rare Clubmoss	JMetzger

Table 26. Ferns

Family	Genus	Species	CommonName	Observer
Aspleniaceae	<i>Asplenium</i>	<i>platyneuron</i>	Ebony Spleenwort	JMetzger
Blechnaceae	<i>Woodwardia</i>	<i>areolata</i>	Netted Chain Fern	KMolines
Dennstaedtiaceae	<i>Dennstaedtia</i>	<i>punctilobula</i>	Hayscented Fern	JMetzger
Dryopteridaceae	<i>Athyrium</i>	<i>angustum</i>	Northern Lady Fern	JMetzger
Dryopteridaceae	<i>Onoclea</i>	<i>sensibilis</i>	Sensitive Fern	JMetzger

Dryopteridaceae	<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern	JMetzger
Ophioglossaceae	<i>Botrychium</i>	<i>virginianum</i>	Rattlesnake Fern	JMetzger
Ophioglossaceae	<i>Ophioglossum</i>	<i>vulgatum</i>	Southern Adderstongue	JMetzger
Osmundaceae	<i>Osmunda</i>	<i>cinnamomea</i>	Cinnamon Fern	JMetzger, KMolines
Osmundaceae	<i>Osmunda</i>	<i>regalis</i>	Royal Fern	JMetzger, KMolines
Polypodiaceae	<i>Polypodium</i>	<i>virginianum</i>	Common Polypody	JMetzger, KMolines
Thelypteridaceae	<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern	JMetzger
Thelypteridaceae	<i>Thelypteris</i>	<i>palustris</i>	Eastern Marsh Fern	JMetzger

Table 27. Flowering Plants (Trees, Shrubs, Vines, Herbaceous Plants)

Family	Genus	Species	Common Name	Observer
Aceraceae	<i>Acer</i>	<i>negundo</i>	Boxelder Maple	JMetzger
Aceraceae	<i>Acer</i>	<i>rubrum</i>	Red Maple	JMetzger
Alismataceae	<i>Alisma</i>	<i>subcordatum</i>	American Water Plantain	JMetzger
Alismataceae	<i>Sagittaria</i>	<i>latifolia</i>	Broadleaf Arrowhead	JMetzger
Anacardiaceae	<i>Toxicodendron</i>	<i>radicans</i>	Poison Ivy	JMetzger
Annonaceae	<i>Asimina</i>	<i>triloba</i>	Pawpaw	JMetzger
Apiaceae	<i>Cryptotaenia</i>	<i>canadensis</i>	Canadian Honewort	JMetzger
Apiaceae	<i>Sanicula</i>	<i>canadensis</i>	Canadian Blacksnakeroot	JMetzger
Apiaceae	<i>Sanicula</i>	<i>sp.</i>		JMetzger
Apiaceae	<i>Sium</i>	<i>suave</i>	Hemlock Water Parsnip	JMetzger
Apocynaceae	<i>Apocynum</i>	<i>cannabinum</i>	Indian Hemp	JMetzger
Aquifoliaceae	<i>Ilex</i>	<i>opaca</i>	American Holly	JMetzger
Aquifoliaceae	<i>Ilex</i>	<i>verticillata</i>	Common Winterberry	JMetzger
Araceae	<i>Arisaema</i>	<i>atrorubens</i>	Jack-in-the-pulpit	JMetzger
Araceae	<i>Peltandra</i>	<i>virginica</i>	Arrow Arum	JMetzger
Araceae	<i>Symplocarpus</i>	<i>foetidus</i>	Skunk Cabbage	JMetzger
Araliaceae	<i>Aralia</i>	<i>nudicaulis</i>	Wild Sasparilla	JMetzger
Araliaceae	<i>Aralia</i>	<i>spinosa</i>	Devil's Walkingstick	JMetzger
Asclepiadaceae	<i>Asclepias</i>	<i>syriaca</i>	Common Milkweed	JMetzger
Asteraceae	<i>Achillea</i>	<i>millefolium</i>	Common Yarrow	JMetzger
Asteraceae	<i>Antennaria</i>	<i>plantaginifolia</i>	Plantain-leaf Pussytoes	JMetzger
Asteraceae	<i>Chrysanthemum</i>	<i>leucanthemum</i>	Oxeye Daisy	JMetzger
Asteraceae	<i>Erigeron</i>	<i>annuus</i>	Eastern Daisy Fleabane	JMetzger
Asteraceae	<i>Rudbeckia</i>	<i>sp.</i>	Black-eyed Susan	JMetzger
Asteraceae	<i>Solidago</i>	<i>sp.</i>	Goldenrod	JMetzger
Balsaminaceae	<i>Impatiens</i>	<i>capensis</i>	Common Jewelweed	KMolines
Berberidaceae	<i>Podophyllum</i>	<i>peltatum</i>	Mayapple	JMetzger, KMolines
Betulaceae	<i>Alnus</i>	<i>serrulata</i>	Hazel Alder	KMolines
Betulaceae	<i>Betula</i>	<i>nigra</i>	River Birch	KMolines
Betulaceae	<i>Carpinus</i>	<i>caroliniana</i>	American Hornbeam	KMolines
Bignoniaceae	<i>Campsis</i>	<i>radicans</i>	Trumpet Creeper	JMetzger, KMolines
Brassicaceae	<i>Alliaria</i>	<i>petiolata</i>	Garlic Mustard	MImlay

Family	Genus	Species	Common Name	Observer
Caesalpiniaceae	<i>Cassia</i>	<i>fasciculata</i>	Partridge Pea	JMetzger
Campanulaceae	<i>Triodanis</i>	<i>perfoliata</i>	Venus' Looking Glass	KMolines
Caprifoliaceae	<i>Lonicera</i>	<i>japonica</i>	Japanese Honeysuckle	JMetzger, MImlay, KMolines
Caprifoliaceae	<i>Sambucus</i>	<i>canadensis</i>	American Elderberry	JMetzger
Caprifoliaceae	<i>Viburnum</i>	<i>acerifolium</i>	Mapleleaf Viburnum	JMetzger
Caprifoliaceae	<i>Viburnum</i>	<i>dentatum</i>	Arrowwood Viburnum	KMolines
Caprifoliaceae	<i>Viburnum</i>	<i>prunifolium</i>	Blackhaw	KMolines
Caprifoliaceae	<i>Viburnum</i>	<i>recognitum</i>	Southern Arrowwood	JMetzger
Caprifoliaceae	<i>Viburnum</i>	<i>sp.</i>		JMetzger
Caryophyllaceae	<i>Cerastium</i>	<i>sp.</i>		JMetzger
Caryophyllaceae	<i>Stellaria</i>	<i>media</i>	Common Chickweed	JMetzger
Celastraceae	<i>Euonymus</i>	<i>americanus</i>	Strawberry Bush, Bursting Heart	JMetzger
Clusiaceae	<i>Hypericum</i>	<i>sp.</i>		JMetzger
Cornaceae	<i>Cornus</i>	<i>amomum</i>	Silky Dogwood	KMolines
Cornaceae	<i>Cornus</i>	<i>florida</i>	Flowering Dogwood	JMetzger, KMolines
Cornaceae	<i>Cornus</i>	<i>racemosa</i>	Gray Dogwood	KMolines
Dioscoreaceae	<i>Dioscorea</i>	<i>villosa</i>	Wild Yam	KMolines
Dioscoreaceae	<i>Dioscorea</i>	<i>oppositifolia</i>	Chinese Yam	MImlay
Elaeagnaceae	<i>Elaeagnus</i>	<i>umbellata</i>	Autumn Olive	JMetzger, MImlay
Ericaceae	<i>Epigaea</i>	<i>repens</i>	Trailing Arbutus	JMetzger
Ericaceae	<i>Gaylussacia</i>	<i>sp.</i>		JMetzger
Ericaceae	<i>Kalmia</i>	<i>latifolia</i>	Mountain Laurel	JMetzger, KMolines
Ericaceae	<i>Leucothoe</i>	<i>racemosa</i>	Sweet Bells, Swamp Doghobble	KMolines
Ericaceae	<i>Vaccinium</i>	<i>sp.</i>		JMetzger
Ericaceae	<i>Vaccinium</i>	<i>stamineum</i>	Deerberry	JMetzger
Euphorbiaceae	<i>Euphorbia</i>	<i>corollata</i>	Flowering Spurge	JMetzger
Fabaceae	<i>Amphicarpa</i>	<i>bracteata</i>	American Hogpeanut	JMetzger
Fabaceae	<i>Desmodium</i>	<i>nudiflorum</i>	Nakedflower ticktrefoil	JMetzger
Fabaceae	<i>Desmodium</i>	<i>paniculatum</i>	Panicledleaf ticktrefoil	JMetzger
Fabaceae	<i>Lespedeza</i>	<i>cuneata</i>	Chinese Lespedeza	JMetzger
Fabaceae	<i>Trifolium</i>	<i>campestre</i>	Low hop trefoil	JMetzger
Fabaceae	<i>Trifolium</i>	<i>pratense</i>	Red Clover	JMetzger
Fabaceae	<i>Trifolium</i>	<i>repens</i>	White Clover	JMetzger
Fabaceae	<i>Vicia</i>	<i>angustifolia</i>	Garden Vetch	JMetzger
Fabaceae	<i>Vicia</i>	<i>villosa</i>	Hairy Vetch	JMetzger
Fabaceae	<i>Albizia</i>	<i>julibrissin</i>	Mimose, Silk Tree	MImlay
Fabaceae	<i>Apios</i>	<i>americana</i>	Groundnut	JMetzger
Fagaceae	<i>Castanea</i>	<i>pumila</i>	Chinkapin	KMolines
Fagaceae	<i>Fagus</i>	<i>grandifolia</i>	American Beech	JMetzger, KMolines
Fagaceae	<i>Quercus</i>	<i>alba</i>	White Oak	JMetzger
Fagaceae	<i>Quercus</i>	<i>falcata</i>	Southern Red Oak	JMetzger
Fagaceae	<i>Quercus</i>	<i>phellos</i>	Willow Oak	JMetzger, KMolines

Family	Genus	Species	Common Name	Observer
Fagaceae	<i>Quercus</i>	<i>rubra</i>	Northern Red Oak	JMetzger
Grossulariaceae	<i>Itea</i>	<i>virginica</i>	Virginia Sweetspire	KMolines
Hamamelidaceae	<i>Hamamelis</i>	<i>virginiana</i>	Witch Hazel	JMetzger
Hamamelidaceae	<i>Liquidambar</i>	<i>styraciflua</i>	Sweetgum	JMetzger
Iridaceae	<i>Sisyrinchium</i>	<i>angustifolium</i>	Narrowleaf Blue-eyed Grass	JMetzger
Juglandaceae	<i>Carya</i>	<i>glabra</i>	Pignut Hickory	JMetzger
Juglandaceae	<i>Carya</i>	<i>tomentosa</i>	Mockernut Hickory	JMetzger, KMolines
Juglandaceae	<i>Juglans</i>	<i>nigra</i>	Black Walnut	KMolines
Juncaceae	<i>Juncus</i>	<i>tenuis</i>	Poverty Rush	JMetzger
Lamiaceae	<i>Lycopus</i>	<i>virginicus</i>	Bugleweed	JMetzger
Lamiaceae	<i>Perilla</i>	<i>frutescens</i>	Beefsteak Plant	MImlay
Lamiaceae	<i>Pycnanthemum</i>	<i>sp.</i>		JMetzger
Lamiaceae	<i>Salvia</i>	<i>verbenaca</i>	Wild Clary	JMetzger
Lauraceae	<i>Lindera</i>	<i>benzoin</i>	Northern Spicebush	JMetzger
Lauraceae	<i>Sassafras</i>	<i>albidum</i>	Sassafrass	JMetzger
Liliaceae	<i>Allium</i>	<i>vineale</i>	Wild Garlic	JMetzger
Liliaceae	<i>Lilium</i>	<i>superbum</i>	Turk's Cap Lily	KMolines
Liliaceae	<i>Maianthemum</i>	<i>canadense</i>	Canada Mayflower	KMolines
Liliaceae	<i>Medeola</i>	<i>virginiana</i>	Indian Cucumber Root	JMetzger, KMolines
Liliaceae	<i>Polygonatum</i>	<i>biflorum</i>	Smooth Solomon's-seal	KMolines
Liliaceae	<i>Smilacina</i>	<i>racemosa</i>	False Solomon's-seal	JMetzger, KMolines
Liliaceae	<i>Uvularia</i>	<i>sessilifolia</i>	Sessile Bellwort	JMetzger, KMolines
Magnoliaceae	<i>Liriodendron</i>	<i>tulipifera</i>	Tuliptree	JMetzger, KMolines
Menispermaceae	<i>Menispermum</i>	<i>canadense</i>	Common Moonseed	JMetzger
Monotropaceae	<i>Monotropa</i>	<i>uniflora</i>	Ghost Pipe, Indian Pipe	KMolines
Nymphaeaceae	<i>Nuphar</i>	<i>advena</i>	Spatterdock	JMetzger
Nyssaceae	<i>Nyssa</i>	<i>sylvatica</i>	Blackgum	JMetzger
Oleaceae	<i>Fraxinus</i>	<i>pennsylvanica</i>	Green Ash	KMolines
Oleaceae	<i>Fraxinus</i>	<i>profunda</i>	Pumpkin Ash	KMolines
Oleaceae	<i>Fraxinus</i>	<i>sp.</i>		JMetzger
Onagraceae	<i>Circaea</i>	<i>quadrisulcata</i>	Enchanter's Nightshade	JMetzger
Orchidaceae	<i>Cypripedium</i>	<i>acaule</i>	Pink Lady Slipper	JMetzger
Orchidaceae	<i>Goodyera</i>	<i>pubescens</i>	Rattlesnake Plantain	JMetzger
Orchidaceae	<i>Goodyera</i>	<i>repens</i>	Lesser Rattlesnake Plantain	KMolines
Orchidaceae	<i>Tipularia</i>	<i>discolor</i>	Crane-fly Orchid	KMolines
Orobanchaceae	<i>Epifagus</i>	<i>virginiana</i>	Beechdrops	JMetzger, KMolines
Oxalidaceae	<i>Oxalis</i>	<i>stricta</i>	Yellow Woodsorrel	JMetzger
Plantaginaceae	<i>Plantago</i>	<i>rugelii</i>	Blackseed Plantain	JMetzger
Platanaceae	<i>Platanus</i>	<i>occidentalis</i>	American Sycamore	JMetzger
Poaceae	<i>Dactylis</i>	<i>glomerata</i>	Orchardgrass	JMetzger
Poaceae	<i>Dichanthelium</i>	<i>sp.</i>		JMetzger
Poaceae	<i>Dichanthelium</i>	<i>clandestinum</i>	Deertongue	KMolines

Family	Genus	Species	Common Name	Observer
Poaceae	<i>Microstegium</i>	<i>vimineum</i>	Japanese Stiltgrass	MImlay, KMolines
Poaceae	<i>Zizania</i>	<i>aquatica</i>	Wild Rice	KMolines
Polygonaceae	<i>Polygonum</i>	<i>arifolium</i>	Halberd-leaved Tearthumb	JMetzger
Polygonaceae	<i>Polygonum</i>	<i>cespitosum</i>	Smartweed	JMetzger
Polygonaceae	<i>Polygonum</i>	<i>hydropiper</i>	Water Pepper	KMolines
Polygonaceae	<i>Polygonum</i>	<i>sagittatum</i>	Arrow-leaved Tearthumb	KMolines
Polygonaceae	<i>Rumex</i>	<i>acetosella</i>	Sheep Sorrel	JMetzger
Polygonaceae	<i>Rumex</i>	<i>crispus</i>	Curly Dock	JMetzger
Polygonaceae	<i>Tovara</i>	<i>virginiana</i>	Virginia Knotweed	JMetzger
Pontederiaceae	<i>Pontederia</i>	<i>cordata</i>	Pickerelweed	KMolines
Portulacaceae	<i>Claytonia</i>	<i>virginica</i>	Spring Beauty	KMolines
Pyrolaceae	<i>Chimaphila</i>	<i>maculata</i>	Spotted Wintergreen	JMetzger, KMolines
Ranunculaceae	<i>Ranunculus</i>	<i>abortivus</i>	Smallflower Buttercup	JMetzger, KMolines
Ranunculaceae	<i>Thalictrum</i>	<i>polygamum</i>	Tall Meadow Rue	JMetzger
Ranunculaceae	<i>Thalictrum</i>	<i>pubescens</i>	King of the Meadow	KMolines
Rosaceae	<i>Fragaria</i>	<i>virginiana</i>	Wild Strawberry	JMetzger
Rosaceae	<i>Potentilla</i>	<i>sp.</i>		JMetzger
Rosaceae	<i>Amelanchier</i>	<i>canadensis</i>	Canadian Serviceberry	KMolines
Rosaceae	<i>Duchesnea</i>	<i>indica</i>	Indian Strawberry	KMolines
Rosaceae	<i>Fragaria</i>	<i>virginiana</i>	Virginia Strawberry	JMetzger
Rosaceae	<i>Potentilla</i>	<i>sp.</i>		JMetzger
Rosaceae	<i>Prunus</i>	<i>serotina</i>	Black Cherry	JMetzger, KMolines
Rosaceae	<i>Rosa</i>	<i>multiflora</i>	Multiflora Rose	JMetzger, MImlay
Rosaceae	<i>Rosa</i>	<i>palustris</i>	Swamp Rose	KMolines
Rosaceae	<i>Rubus</i>	<i>sp.</i>		JMetzger
Rubiaceae	<i>Galium</i>	<i>aparine</i>	Stickywilly	JMetzger
Rubiaceae	<i>Galium</i>	<i>circaezans</i>	Licorice Bedstraw	JMetzger
Rubiaceae	<i>Houstonia</i>	<i>purpurea</i>	Venus' pride	KMolines
Rubiaceae	<i>Mitchella</i>	<i>repens</i>	Partridgeberry	JMetzger, KMolines
Rubiaceae	<i>Cephalanthus</i>	<i>occidentalis</i>	Common Buttonbush	JMetzger, KMolines
Saururaceae	<i>Saururus</i>	<i>cernuus</i>	Lizard's-tail	KMolines
Scrophulariaceae	<i>Chelone</i>	<i>obliqua</i>	Red Turtlehead	KMolines
Scrophulariaceae	<i>Penstemon</i>	<i>sp.</i>		JMetzger
Scrophulariaceae	<i>Veronica</i>	<i>sp.</i>		JMetzger
Simaroubaceae	<i>Ailanthus</i>	<i>altissima</i>	Tree of Heaven	MImlay
Smilacaceae	<i>Smilax</i>	<i>glauca</i>	Cat Greenbriar	JMetzger
Smilacaceae	<i>Smilax</i>	<i>rotundifolia</i>	Roundleaf Greenbriar	JMetzger, KMolines
Sparganiaceae	<i>Sparganium</i>	<i>sp.</i>		KMolines
Typhaceae	<i>Typha</i>	<i>latifolia</i>	Broadleaf Cattail	KMolines
Ulmaceae	<i>Celtis</i>	<i>occidentalis</i>	Common Hackberry	KMolines

Family	Genus	Species	Common Name	Observer
Urticaceae	<i>Boehmeria</i>	<i>cylindrica</i>	Smallspike False Nettle	JMetzger, KMolines
Urticaceae	<i>Pilea</i>	<i>pumila</i>	Canadian Clearweed	KMolines
Violaceae	<i>Viola</i>	<i>papilionacea</i>	Common Blue Violet	JMetzger
Violaceae	<i>Viola</i>	<i>cucullata</i>	Marsh Blue Violet	KMolines
Vitaceae	<i>Vitis</i>	<i>vulpina</i>	Frost Grape	KMolines

Table 28. Submerged Aquatic Vegetation

Family	Genus	Species	Common Name	Observer
Characeae	<i>Chara</i>	<i>sp.</i>		PBergstrom
Hydrocharitaceae	<i>Elodea</i>	<i>sp.</i>		PBergstrom
Hydrocharitaceae	<i>Hydrilla</i>	<i>sp.</i>		PBergstrom
Najadaceae	<i>Najas</i>	<i>minor</i>	Bittle Waternymph	PBergstrom
Potamogetonaceae	<i>Potamogeton</i>	<i>crispus</i>	Curly Pondweed	Kmolines

VIII. References

- Maryland Natural Heritage Program 2010 *Rare, Threatened, and Endangered Animals of Maryland* April 2010 edition Maryland Department of Natural Resources, Wildlife and Heritage Service, Annapolis, Maryland
- Maryland Natural Heritage Program 2010 *Rare, Threatened, and Endangered Plants of Maryland* April 2010 edition Maryland Department of Natural Resources, Wildlife and Heritage Service, Annapolis, Maryland
- United States Department of Agriculture (USDA): National Agricultural Library. (2010). *National Invasive Species Information Center: What is an Invasive Species?* Retrieved August 9, 2010 from: <http://www.invasivespeciesinfo.gov/whatis.shtml>
- Weather Underground (2009) Weather Station History: May 30, 2009 for Weather Station MBSLM2 (NERRS Meteorological Site Patuxent River, Upper Marlboro, MD). Retrieved August 2, 2010 from: <http://www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=MBSLM2&month=5&day=30&year=2009>.
- Weather Underground (2009) Weather Station History: May 31, 2009 for Weather Station MBSLM2 (NERRS Meteorological Site Patuxent River, Upper Marlboro, MD). Retrieved August 2, 2010 from: <http://www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=MBSLM2&day=31&year=2009&month=5>.

IX. Appendices

Appendix A. Data Sheets for 2009 Jug Bay Natural Area at Patuxent River Park Bioblitz

Set #:

Data Collection Sheet #1: Site & Habitat
Patuxent River Park at Jug Bay Bioblitz

Team #:
 Page #:
 Entered Date:

May 30 & 31, 2009	
Team Leader:	
Date:	
Time Slot:	

Site Information

Section Color:	
Nearest Trail/Intersection:	
GPS Coordinates (if applicable):	
General Site Notes:	

Habitat Information (Check a box)

Tidal	
<input type="checkbox"/>	Low Marsh
<input type="checkbox"/>	High Marsh
<input type="checkbox"/>	Phragmites
<input type="checkbox"/>	Scrub Shrub
<input type="checkbox"/>	Swamp
<input type="checkbox"/>	Intertidal mudflats

Non-Tidal	
<input type="checkbox"/>	Shallow emergent
<input type="checkbox"/>	Shrub swamp
<input type="checkbox"/>	Seepage swamp
<input type="checkbox"/>	Seep
<input type="checkbox"/>	Bottomland forest
<input type="checkbox"/>	Vernal Pool
<input type="checkbox"/>	Beaver Pond

Terrestrial	
<input type="checkbox"/>	Mixed hardwood
<input type="checkbox"/>	Evergreen
<input type="checkbox"/>	Stream banks
<input type="checkbox"/>	Managed meadow

Disturbed or Open	
<input type="checkbox"/>	Gardens, planted areas
<input type="checkbox"/>	Lawns / cleared lands
<input type="checkbox"/>	Old fields

Rivers and Streams	
<input type="checkbox"/>	Deep water river (Patuxent)
<input type="checkbox"/>	Year-round stream
<input type="checkbox"/>	Intermittent stream-lower
<input type="checkbox"/>	Intermittent stream-lower

Other	
<input type="checkbox"/>	
<input type="checkbox"/>	

Set #:

Data Collection Sheet #2: Specimen
Patuxent River Park at Jug Bay Bioblitz
 May 30 & 31, 2009

Team #:
 Page #:
 Entered Date:

Team Leader:	
Date:	
Time Slot:	

Line #	Site Information (if line #s correspond with multiple sites)			Taxonomic Information: If all the same			Quantity seen	Notes	Fate: e.g. Released, Preserved, Off-site, Died	Data Entry Notes
	Section Color	Nearest Trail/ Intersection	GPS Coordinates (if applicable)	Phylum (Order, if different) Family	Class Genus	Order Species				
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

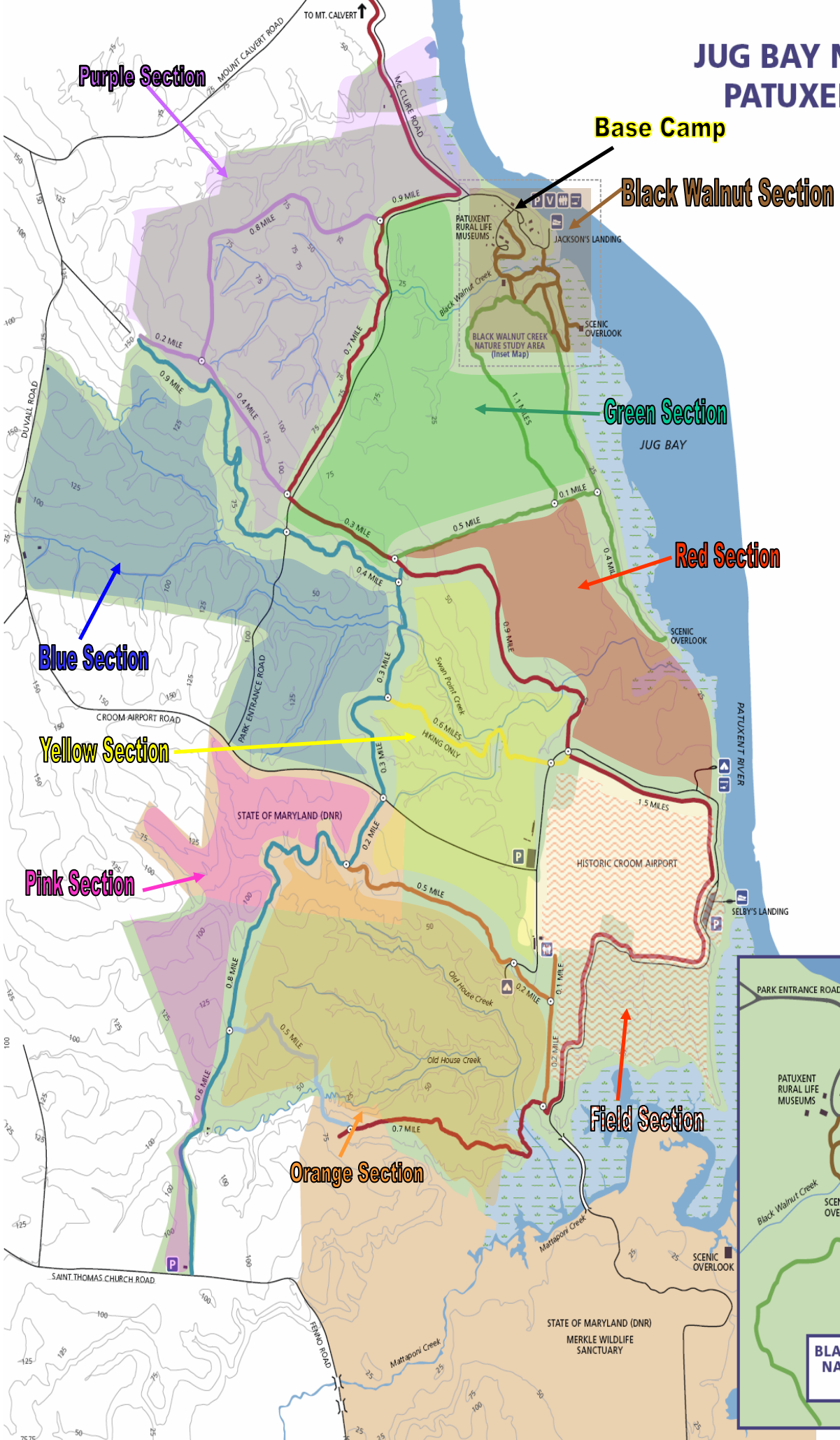
Appendix B. Instructions/Protocols for Surveying Experts/Volunteers

Instructions/Protocols for Surveying Experts/Volunteers

1. As the team leader, you are likely to have several volunteers assisting you with your surveys. Please give them instructions on how to best assist you at your discretion. Also, the data sheets are to be used to compile species findings with as much accuracy as possible. Therefore, in order to preserve accuracy, please provide guidance to volunteers if they assist you with data sheet completion.
2. Data Sheet Use: There are 3 data sheets included in your packet
 - Team Leader & Volunteer Info Sheet: Team leaders should fill this sheet out with their information and that of their volunteers.
 - Please record a *Set #* in the box in the upper left hand corner of data sheets. Each *Set* should include one Data Sheet #1 and can have several Data Sheet #2s that correspond with it. Each time you move to a new location, a new *Set* should begin.
 - Data Collection Sheet #1: Please record *Site Information* on this sheet including details about the survey location. Please use the Bioblitz Survey map for assistance in noting your location. There is a series of typical habitats found at Patuxent River Park for you to choose from. If you have questions about habitat, please see a M-NCPPC employee.
 - Data Collection Sheet #2 (two-sided): Please record Species findings on the 10 entry lines provided. Multiple sheets can be used for each *Set*, which should correspond with site information on a Data Sheet #1.
3. If you wish to use you own checklist type data sheets for some of the surveying that is fine. We will consolidate onto the given data sheets at a later date.
4. Data sheets should be submitted to the Data Repository after surveying and IDing is complete. If you require time to ID after the event is complete, please submit data via email or snail mail to Erica ASAP.
5. GPS units should be used to record/mark **notable** (e.g. rare plant or animal, endangered species, exotic species, unique location) findings. The data sheet should reflect if you marked a certain finding and its coordinates. Other findings can be recorded/mapped according to the color coded zones, intersections, and their respective habitat as seen on the park map.
6. When recording general findings that are not being GPSed, please record what color section/intersection the finding was in, as well as a general physical description of the area (e.g. landmarks, trailside, roadside, beside creek bed, etc). This short description should be in addition to the habitat specification.

Appendix C. Jug Bay Natural Area at Patuxent River Park Bioblitz Map

JUG BAY NATURAL AREA PATUXENT RIVER PARK



Legend

- Jug Bay Natural Area
- State Property
- Marsh
- Structures/Buildings
- Paved Roads
- Bridges
- Trail Intersections
- Boat Ramps
- Restrooms
- Parking
- Visitors Center
- Fishing
- Camping

TRAILS

- Light Blue
- Blue
- Green
- Orange
- Purple
- Patuxent River Scenic Trail
- Yellow - Hiking only
- Brown

Scale and Orientation

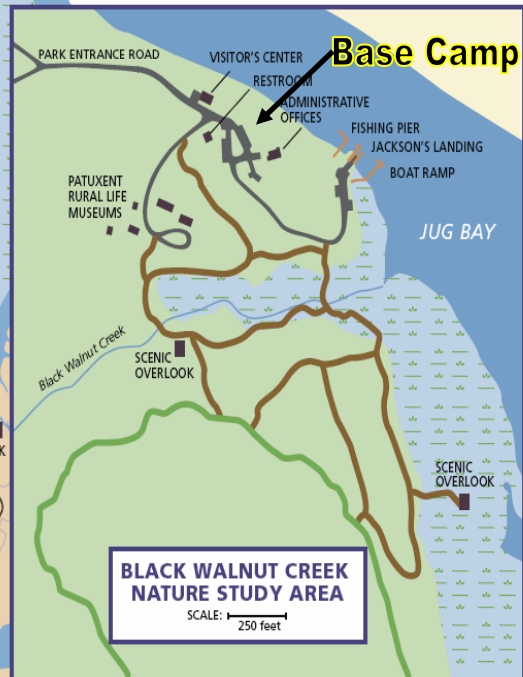
1 Inch = 1/2 Mile

0 1/4 1/2 Mile

NORTH

Parks & Recreation
M-N C P P C
www.pgparcs.com

BLACK WALNUT CREEK NATURE STUDY AREA (Inset Map)



Appendix D: Jug Bay Natural Area Bioblitz Survey Team Time Slot Schedule

	Time Slots	Mammals	Birds	Invertebrates (Insects, Spiders, Worms)			Aquatic Invertebrates (Crabs, shrimp, mollusks)	Reptiles/ Amphibians	Fish	Plants (Trees, shrubs, grasses)	Fungi
Saturday	Noon – 3pm			<i>Dragonflies:</i> Leader Richard Orr 12-3pm <i>Butterflies:</i> Leader Phil Kean 12-3pm (possibly extending until 5pm)	<i>Flatworms/ Mollusks:</i> Leader: Butch Norden & Mark Imlay 12-3pm	<i>Terrestrial isopods, earthworms:</i> Leader Kathy Szlavec 12-3pm <i>Ants Team Leader: Daniel Kjar 12-3pm</i>	<i>Aquatic Macroinvert ebrates</i> Leader: Karyn Molines 12-3pm		<i>Meadow Plants</i> Team Leader: Joe Metzger 12:00-2:00pm		
	3pm – 6pm			<i>Beetles:</i> Charles Staines and Mrs. Staines 3-6pm					<i>Submerged Aquatic Vegetation</i> Team Leader: Peter Bergstrom 2:30-5:30pm	<i>Fungi</i> Team Leader: Lance Biechele 3-6pm	
	6pm – 9pm							<i>Herps Team Leaders: Karyn Molines & Lindsay Hollister 6-9pm</i>	<i>Ferns</i> Team Leader: Joe Metzger 6:00pm-9:00pm		
	9pm – midnight		<i>Owls</i> Leader: Mike Quinlan 9pm- 12mid								

Sunday	midnight – 3am										
	3am – 6am										
	6am – 9am		<i>Birds</i> Team Leader: Greg Kearns 6:30-9am							<i>Meadow Plants</i> Team Leader: Joe Metzger 6:00am-9:00am	
	9am – noon			<i>Butterflies:</i> Team Leader Phil Kean 9:30am-12pm	<i>Ants</i> Team Leader: Daniel Kjar 10-11:30am			<i>Reptiles/ Amphibians</i> Team Leader: Mike Quinlan 8am-11am <i>Reptiles/ Amphibians</i> Jeff Shenot 8am-11am	<i>Fish</i> Team Leader: Karyn Molines 8-11am	<i>Invasive Plants</i> Team Leader: Mark Imlay 8:00-11:00am <i>Ferns</i> Team Leader: Joe Metzger 9:00-11:30am	



**Birds Observed
at Jug Bay**

**Loons-Grebes-
Cormorants**

- Common Loon
- Pied-billed Grebe
- Horned Grebe
- Double-crested Cormorant

Hérons-Egrets-Ibis

- American Bittern
- Least Bittern
- Great Blue Heron
- Great Egret
- Snowy Egret
- Little Blue Heron
- Cattle Egret
- Green Heron
- Black-crowned Night Heron
- Glossy Ibis

**Swans-Geese-
Ducks**

- Tundra Swan
- Snow Goose
- Canada Goose
- Wood Duck
- Green-winged Teal
- American Black Duck
- Mallard
- Northern Pintail
- Blue-winged Teal
- Northern Shoveler
- Gadwall
- American Wigeon
- Canvasback
- Ring-necked Duck
- Lesser Scaup
- Common Goldeneye
- Bufflehead
- Hooded Merganser
- Common Merganser
- Red-breasted Merganser
- Ruddy Duck

**Vultures-Hawks-
Falcons**

- Black Vulture
- Turkey Vulture
- Osprey
- Bald Eagle
- Northern Harrier
- Sharp-shinned Hawk
- Cooper's Hawk
- Red-shouldered Hawk
- Broad-winged Hawk
- Red-tailed Hawk
- Rough-legged Hawk
- American Kestrel
- Merlin
- Peregrine Falcon

Turkeys-Bobwhites

- Wild Turkey
- Northern Bobwhite

Rails-Coots

- King Rail
- Virginia Rail
- Sora Rail
- Common Moorhen
- American Coot

Plovers-Sandpipers

Black-bellied Plover
 American Golden Plover
 Semipalmated Plover
 Killdeer
 Greater Yellowlegs
 Lesser Yellowlegs
 Solitary Sandpiper
 Spotted Sandpiper
 Semipalmated Sandpiper
 Least Sandpiper
 Dunlin
 Pectoral Sandpiper
 Short-billed Dowitcher
 Common Snipe
 American Woodcock

Gulls-Terns

Laughing Gull
 Bonaparte's Gull
 Ring-billed Gull
 Herring Gull
 Great Black-backed Gull
 Caspian Tern
 Common Tern
 Forster's Tern

Doves-Cuckoos

Rock Dove
 Mourning Dove
 Black-billed Cuckoo
 Yellow-billed Cuckoo

Owls-Goatsuckers

Barn Owl
 Eastern Screech-Owl
 Great Horned Owl
 Barred Owl
 Short-eared Owl
 Common Nighthawk
 Whip-poor-will
 Chuck-will's-widow

Swifts-Hummingbirds

Chimney Swift
 Ruby-throated Hummingbird

Kingfishers

Belted Kingfisher

Woodpeckers

Red-headed Woodpecker
 Red-bellied Woodpecker
 Yellow-bellied Sapsucker
 Downy Woodpecker
 Hairy Woodpecker
 Northern Flicker
 Pileated Woodpecker

Flycatchers

Eastern Wood Pewee
 Acadian Flycatcher
 Least Flycatcher
 Eastern Phoebe
 Great-crested Kingbird
 Eastern Kingbird

Swallows

Purple Martin
 Tree Swallow
 Northern Rough-winged Swallow
 Bank Swallow
 Cliff Swallow
 Barn Swallow

Jays-Crows

Blue Jay
 American Crow
 Fish Crow

Chickadees-Nuthatches

Carolina Chickadee
 Tufted Titmouse
 Red-breasted Nuthatch
 White-breasted Nuthatch

Creepers-Wrens

Brown Creeper
 House Wren
 Carolina Wren
 Winter Wren
 Marsh Wren

Kinglets-Gnatcatchers

Golden-crowned Kinglet
 Ruby-crowned Kinglet
 Blue-gray Gnatcatcher

Thrushes

Eastern Bluebird
 Veery
 Gray-cheeked Thrush
 Swainson's Thrush
 Hermit Thrush
 Wood Thrush
 American Robin

Mimic Thrushes

Gray Catbird
 Northern Mockingbird
 Brown Thrasher

Pipits-Waxwings

American Pipit
 Cedar Waxwing

Starlings

European Starling

Vireos

White-eyed Vireo
 Solitary Vireo
 Yellow-throated Vireo
 Warbling Vireo
 Philadelphia Vireo
 Red-eyed Vireo

Warblers

Blue-winged Warbler
 Golden-winged Warbler
 Tennessee Warbler
 Orange-crowned Warbler
 Nashville Warbler
 Northern Parula
 Yellow Warbler
 Chestnut-sided Warbler
 Magnolia Warbler
 Cape May Warbler
 Black-throated Blue Warbler
 Yellow-rumped Warbler
 Black-throated Green Warbler
 Blackburnian Warbler
 Yellow-throated Warbler
 Pine Warbler
 Prairie Warbler
 Palm Warbler
 Bay-breasted Warbler
 Blackpoll Warbler
 Cerulean Warbler
 Black and White Warbler
 American Redstart
 Prothonotary Warbler
 Worm-eating Warbler
 Ovenbird
 Northern Waterthrush
 Louisiana Waterthrush
 Kentucky Warbler
 Connecticut Warbler
 Mourning Warbler
 Common Yellowthroat
 Hooded Warbler
 Wilson's Warbler
 Canada Warbler
 Yellow-breasted Chat

Tanagers

Summer Tanager
 Scarlet Tanager

Sparrows

Northern Cardinal
 Rose-breasted Grosbeak
 Blue Grosbeak
 Indigo Bunting
 Rufous-sided Towhee
 Chipping Sparrow
 Field Sparrow
 Vesper Sparrow
 Savannah Sparrow
 Grasshopper Sparrow
 Fox Sparrow
 Song Sparrow
 Swamp Sparrow
 White-throated Sparrow
 White-crowned Sparrow
 Dark-eyed Junco

Blackbirds-Orioles

Bobolink
 Red-winged Blackbird
 Eastern Meadowlark
 Rusty Blackbird
 Common Grackle
 Brown-headed Cowbird
 Orchard Oriole
 Northern Oriole

Finches

Purple Finch
 House Finch
 Pine Siskin
 American Goldfinch
 Evening Grosbeak

Weaver Finches

House Sparrow

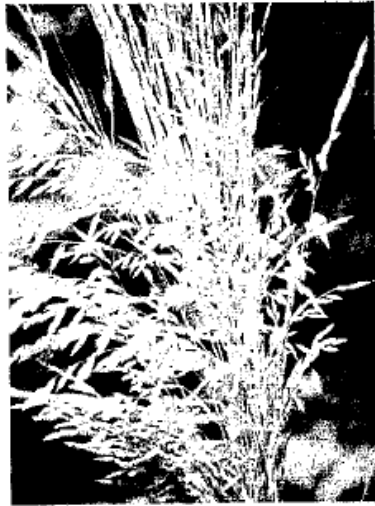
Accidentals

Red-throated Loon
 Tricolored Heron
 Mute Swan
 Eurasian Wigeon
 Clapper Rail
 Sandhill Crane
 Golden Eagle
 American Avocet
 Black-necked Stilt
 Willet
 Ruff
 Lesser Black-backed Gull
 Royal Tern
 Loggerhead Shrike
 Red-necked Grebe

Plants Found at Jug Bay

family name	Common Name	Scientific Name
Ferns and Fern Allies		
Aspleniaceae	Ebony Spleenwort Lady Fern Christmas Fern New York Fern Marsh Fern	<i>Asplenium platyneuron</i> <i>Athyrium filix-femina</i> <i>Polystichum acrostichoides</i> <i>Thelypteris noveboracensis</i> <i>Thelypteris palustris</i>
Blechnaceae	Netted Chainfern	<i>Woodwardia areolata</i>
Dennstaedtiaceae	Hay-scented Fern Bracken Fern	<i>Dennstaedtia punctilobula</i> <i>Pteridium aquilinum</i>
Lycopodiaceae	Ground Pine Running Pine Running Cedar Shining Clubmoss	<i>Lycopodium obscurum</i> <i>Lycopodium clavatum</i> <i>Lycopodium digitatum</i> <i>Lycopodium lucidulum</i>
Onocleaceae	Sensitive Fern	<i>Onoclea sensibilis</i>
Ophioglossaceae	Grape Fern Rattlesnake Fern	<i>Botrychium dissectum</i> <i>Botrychium virginianum</i>
Osmundaceae	Cinnamon Fern Royal Fern	<i>Osmunda cinnamomea</i> <i>Osmunda regalis</i>
Polypodiaceae	Rock Polypody	<i>Polypodium virginianum</i>
Conifers		
Cupressaceae	Eastern Red Cedar	<i>Juniperus virginiana</i>
Pinaceae	Virginia Pine Loblolly Pine	<i>Pinus virginiana</i> <i>Pinus taeda</i>
Flowering Plants		
Aceraceae	Red Maple	<i>Acer rubrum</i>
Acoraceae	Sweet Flag	<i>Acorus calamus</i>
Alismataceae	Mud Plantain Broad-leaf Arrow-head	<i>Alisma plantago-aquatica</i> <i>Sagittaria latifolia</i>
Amaranthaceae	Water Hemp	<i>Acnida cannabina</i>
Anacardiaceae	Winged Sumac Smooth Sumac Staghorn Sumac Poison Ivy	<i>Rhus copallina</i> <i>Rhus glabra</i> <i>Rhus typhina</i> <i>Toxicodendron radicans</i>
Annonaceae	Pawpaw	<i>Asimina triloba</i>

Apiaceae	Spreading Chervil Water Hemlock Water Parsnip	<i>Chaerophyllum procumbens</i> <i>Cicuta maculata</i> <i>Sium suave</i>
Aquifoliaceae	American Holly Common Winterberry	<i>Ilex opaca</i> <i>Ilex verticillata</i>
Araceae	Jack-in-the-Pulpit Golden Club Arrow Arum Skunk Cabbage	<i>Arisaema triphyllum</i> <i>Orontium aquaticum</i> <i>Peltandra virginica</i> <i>Symplocarpus foetidus</i>
Araliaceae	Wild Sarsaparilla Devil's Walking Stick	<i>Aralia nudicaulis</i> <i>Aralia spinosa</i>
Asclepiadaceae	Butterfly Weed Wavey-leaved Milkweed Angle Pod	<i>Asclepias tuberosa</i> <i>Asclepias amplexicaulis</i> <i>Matelea carolinensis</i>
Asteraceae	Yarrow Common Ragweed Plantain-leaved Pussey's-toes Downy Aster Late Purple Aster Purple-stemmed Aster Tall White Aster Spanish Needles Smooth Bur-marigold Ox-eye Daisy Maryland Golden Aster Horseweed Yerba-de-Tago Elephant's Foot Throughwort Sweet Joe-Pye-Weed Round-leaved Boneset Grass-leaved Goldenrod Sweet Everlasting Camphorweed	<i>Achillea millefolium</i> <i>Ambrosia artemisiifolia</i> <i>Antennaria plantaginifolia</i> <i>Aster pilosus</i> <i>Aster patens</i> <i>Aster puniceus</i> <i>Aster simplex</i> <i>Bidens bipinnata</i> <i>Bidens laevis</i> <i>Chrysanthemum leucanthemum</i> <i>Chrysopsis mariana</i> <i>Conyza canadensis</i> <i>Eclipta prostrata</i> <i>Elephantopus carolinianus</i> <i>Eupatorium perfoliatum</i> <i>Eupatorium purpureum</i> <i>Eupatorium rotundifolium</i> <i>Euthamia graminifolia</i> <i>Gnaphalium obtusifolium</i> <i>Heterotheca subaxillaris</i> <i>Hieracium sp.</i>
	Rattlesnakeweed Dwarf Dandelion Wild Blue Lettuce Climbing Hempweed Silverrod Blue-stem Goldenrod Early Goldenrod Rough-stemmed Goldenrod Dandelion Crownbeard	<i>Hieracium venosum</i> <i>Krigia virginica</i> <i>Lactuca floridana</i> <i>Mikania scandens</i> <i>Solidago bicolor</i> <i>Solidago caesia</i> <i>Solidago juncea</i> <i>Solidago rugosa</i> <i>Taraxacum officinale</i> <i>Verbesina occidentalis</i>



Balsamiaceae	Spotted Jewelweed	<i>Impatiens capensis</i>
Berberidaceae	May Apple	<i>Podophyllum peltatum</i>
Betulaceae	Smooth Alder	<i>Alnus serrulata</i>
	River Birch	<i>Betula nigra</i>
	American Hornbeam	<i>Carpinus caroliniana</i>
Bignoniaceae	Trumpet Creeper	<i>Campsis radicans</i>
Boraginaceae	Virginia Stickseed	<i>Hackelia virginiana</i>
Brassicaceae	Mouse-ear-cress	<i>Arabis thaliana</i>
	Lyre-leaved Rockcress	<i>Arabis lyrata</i>
	Early Wintercress	<i>Barbarea verna</i>
	Yellow Rocket	<i>Barbarea vulgaris</i>
	Pennsylvania Bitter Cress	<i>Cardamine pennsylvanica</i>
	Hairy Bittercress	<i>Cardamine hirsuta</i>
	Field Peppergrass	<i>Lepidium campestre</i>
	Peppergrass	<i>Lepidium densiflorum</i>
Cactaceae	Prickly Pear	<i>Opuntia humifusa</i>
Caesalpiniaceae	Partridge Pea	<i>Chamaecrista fasciculata</i>
	Wild Sensitive Plant	<i>Chamaecrista nictitans</i>
	Redbud	<i>Cercis canadensis</i>
Campanulaceae	Venus' Looking Glass	<i>Triodanis perfoliata</i>
Caprifoliaceae	Japanese Honeysuckle	<i>Lonicera japonica</i>
	Elderberry	<i>Sambucus canadensis</i>
	Coralberry	<i>Symphoricarpos orbiculatus</i>
	Maple-leaved Viburnum	<i>Viburnum acerifolium</i>

Caryophyllaceae	Southern Arrow-wood	<i>Viburnum dentatum</i>
	Possum Haw	<i>Viburnum nudum</i>
	Black Haw	<i>Viburnum prunifolium</i>
	Corn Cockle	<i>Agrostemma githago</i>
	Thyme-leaved Sandwort	<i>Arenaria serpyllifolia</i>
	Mouse-ear Chickweed	<i>Cerastium viscosum</i>
	Deptford Pink	<i>Dianthus armeria</i>
	Bouncing Bet	<i>Saponaria officinalis</i>
	Knawel	<i>Scleranthus annuus</i>
	Starry Campion	<i>Silene stellata</i>
Celastraceae	Common Chickweed	<i>Stellaria media</i>
	Strawberry Bush	<i>Euonymus americanus</i>
Ceratophyllaceae	Coontail	<i>Ceratophyllum demersum</i>
Chenopodiaceae	Mexican Tea	<i>Chenopodium ambrosioides</i>
Cistaceae	Canada Frostweed	<i>Helianthemum canadense</i>
Clethraceae	Sweet Pepperbush	<i>Clethra alnifolia</i>
Clusiaceae	St. Andrew's Cross	<i>Ascyrum hypericoides</i>
	Dwarf St. John's Wort	<i>Hypericum mutilum</i>
	Large Marsh St. John's-wort	<i>Hypericum tubulosum</i> (var.)
Comelinaceae	<i>walteri</i>	
	Asiatic Dayflower	<i>Commelina communis</i>
Convolvulaceae	Virginia Dayflower	<i>Commelina virginica</i>
	Hedge Bindweed	<i>Calystegia sepium</i>
Cornaceae	Silky Dogwood	<i>Cornus amomum</i>
	Flowering Dogwood	<i>Cornus florida</i>
	Japanese Dogwood	<i>Cornus kousa</i>
	Sour Gum	<i>Nyssa sylvatica</i>
Cuscutaceae	Dodder	<i>Cuscuta groenovii</i>
Cyperaceae	Beaded Sedge	<i>Carex comosa</i>
	Fringed Sedge	<i>Carex crinita</i>
	Bladder Sedge	<i>Carex intumescens</i>
	Smooth-sheath Sedge	<i>Carex laevivaginata</i>
	Sallow Sedge	<i>Carex lurida</i>
	Muhlenberg's Sedge	<i>Carex muhlenbergii</i>
	Drooping Sedge	<i>Carex prasina</i>
	Crowded Sedge	<i>Carex stipata</i>
	Swan's Sedge	<i>Carex swanii</i>
	Blunt Broom Sedge	<i>Carex tribuloides</i>
	Thin-culm Umbrella Sedge	<i>Cyperus filiculmis</i>
	Common Three-square	<i>Scirpus americanus</i>
	River Bulrush	<i>Scirpus fluviatilis</i>
	Leafy Bulrush	<i>Scirpus polyphyllus</i>
	Great Bulrush	<i>Scirpus validus</i>

Dioscoreaceae	Wild Yam	<i>Dioscorea villosa</i>
Ebenaceae	Persimmon	<i>Diospyros virginiana</i>
Ericaceae	Dwarf Huckleberry	<i>Gaylussacia dumosa</i>
	Mountain Laurel	<i>Kalmia latifolia</i>
	Fetterbush	<i>Leucothoe racemosa</i>
	Pink Azalea	<i>Rhododendron periclymenoides</i>
	Swamp Azalea	<i>Rhododendron viscosum</i>
	Early Highbush Blueberry	<i>Vaccinium corymbosum</i>
	Deerberry	<i>Vaccinium stamineum</i>
Euphorbiaceae	Flowering Spurge	<i>Euphorbia corollata</i>
	Ipecac Spurge	<i>Euphorbia ipecacuanhae</i>
Fabaceae	Ground Nut	<i>Apios americana</i>
	Wild Indigo	<i>Baptisia tinctoria</i>
	Hoary Tick-trefoil	<i>Desmodium canescens</i>
	Smooth Tick-trefoil	<i>Desmodium laevigatum</i>
	Panicled Tick-trefoil	<i>Desmodium paniculatum</i>
	Naked-flowered Tick-trefoil	<i>Desmodium nudiflorum</i>
	Green-flowered Tick-trefoil	<i>Desmodium viridiflorum</i>
	Downy Milk-pea	<i>Galactia volubilis</i>
	Wedge-leaved Bush-clover	<i>Lespedeza cuneata</i>
	Wandlike Bush-clover	<i>Lespedeza intermedia</i>
	Nuttall's Bush-clover	<i>Lespedeza nuttallii</i>
	Japanese Bush-clover	<i>Lespedeza striata</i>
	Downy Bush-clover	<i>Lespedeza stuevei</i>
	Rynchosia	<i>Rhynchosia tomentosa</i>
	Black Locust	<i>Robinia pseudo-acacia</i>
	Pink Wild Bean	<i>Strophostyles umbellata</i>
	Rabbit's Foot-clover	<i>Trifolium arvense</i>
	Cow Vetch	<i>Vicia cracca</i>
Fagaceae	Chinquapin	<i>Castanea pumila</i>
	American Beech	<i>Fagus grandifolia</i>
	White Oak	<i>Quercus alba</i>
	Southern Red Oak	<i>Quercus falcata</i>
	Black-jack Oak	<i>Quercus marilandica</i>
	Willow Oak	<i>Quercus phellos</i>
	Chestnut Oak	<i>Quercus prinus</i>
	Swamp Chestnut Oak	<i>Quercus michauxii</i>
	Northern Red Oak	<i>Quercus rubra</i>
	Post Oak	<i>Quercus stellata</i>
Geraniaceae		<i>Geranium columbinum</i>
	Dove's-foot Geranium	<i>Geranium molle</i>
Grossulariaceae	Virginia Willow	<i>Itea virginica</i>

Hamamelidaceae	Witch Hazel	<i>Hamamelis virginiana</i>
	Sweet Gum	<i>Liquidambar styraciflua</i>
Hydrangeaceae	Wild Hydrangea	<i>Hydrangea arborescens</i>
Hydrocharitaceae	Water Weed	<i>Elodea canadensis</i>
Iridaceae	Blue Flag	<i>Iris versicolor</i>
Juglandaceae	Mockernut Hickory	<i>Carya tomentosa</i>
	Pignut Hickory	<i>Carya glabra</i>
	Black Walnut	<i>Juglans nigra</i>
Juncaceae	Wood Rush	<i>Luzula multiflora</i>
	Soft Rush	<i>Juncus effusus</i>
	Path Rush	<i>Juncus tenuis</i>
Lamiaceae	Horse Balm	<i>Collinsonia canadensis</i>
	Ground Ivy	<i>Glechoma hederacea</i>
	Henbit	<i>Lamium amplexicaule</i>
	Purple Dead Nettle	<i>Lamium purpureum</i>
	Stalked Water Horehound	<i>Lycopus rubellus</i>
	Bugleweed	<i>Lycopus virginicus</i>
	Horse Mint	<i>Monarda punctata</i>
	Beef-steak Plant	<i>Perilla frutescens</i>
	Awed Mountain-mint	<i>Pycnanthemum setosum</i>
	Lyre-leaved Sage	<i>Salvia lyrata</i>
	Mad-dog Skullcap	<i>Scutellaria lateriflora</i>
	Bluecurls	<i>Trichostema dichotomum</i>
Lauraceae	Spicebush	<i>Lindera benzoin</i>
	Sassafras	<i>Sassafras albidum</i>
Lemnaceae	Duckweed	<i>Lemna sp.</i>
Liliaceae	Wild Onion	<i>Allium canadense</i>
	Wild Asparagus	<i>Asparagus officinalis</i>
	Orange Day Lily	<i>Hemerocallis fulva</i>
	Turk's-cap Lily	<i>Lilium superbum</i>
	Canada Mayflower	<i>Maianthemum canadense</i>
	Indian Cucumber-root	<i>Medeola virginiana</i>
	Smooth Solomon's Seal	<i>Polygonatum biflorum</i>
	False Solomon's Seal	<i>Smilacina racemosa</i>
	Perfoliate Bellwort	<i>Uvularia perfoliata</i>
	Sessile Bellwort	<i>Uvularia sessilifolia</i>
Lobeliaceae	Cardinal Flower	<i>Lobelia cardinalis</i>
Lythraceae	Swamp Loosestrife	<i>Decodon verticillatus</i>
Magnoliaceae	Tuliptree	<i>Liriodendron tulipifera</i>
	Swamp Magnolia	<i>Magnolia virginiana</i>
Malvaceae	Swamp Mallow	<i>Hibiscus moscheutos</i>

Melastomataceae	Maryland Meadow Beauty	<i>Rhexia mariana</i>
Mimosaceae	Mimosa	<i>Albizia julibrissin</i>
Molluginaceae	Carpetweed	<i>Mollugo verticillata</i>
Monotropaceae	Indian Pipe	<i>Monotropa uniflora</i>
Najadaceae	Southern Naiad	<i>Najas guadalupensis</i>
	European Naiad	<i>Najas minor</i>
Nymphaeaceae	Spatterdock	<i>Nuphar advena</i>
Oleaceae	White Ash	<i>Fraxinus americana</i>
	Green Ash	<i>Fraxinus pennsylvanica</i>
Onagraceae	Enchanter's Nightshade	<i>Circaea lutetiana</i>
	Willowherb	<i>Epilobium coloratum</i>
	Seedbox	<i>Ludwigia alternifolia</i>
	Swamp Purslane	<i>Ludwigia palustris</i>
	Evening-primrose	<i>Oenothera biennis</i>
	Dwarf Evening-primrose	<i>Oenothera laciniata</i>
Orchidaceae	Pink Lady Slipper	<i>Cypripedium acaule</i>
	Rattlesnake Plantain	<i>Goodyera repens</i>
	Crane Fly Orchid	<i>Tipularia discolor</i>
Orobanchaceae	Beech Drops	<i>Epifagus virginiana</i>
Papaveraceae	Smooth-fruited Poppy	<i>Papaver dubium</i>
	Bloodroot	<i>Sanguinaria canadensis</i>
Passifloraceae	Yellow Passion Flower	<i>Passiflora lutea</i>
Phytolaccaceae	Poke weed	<i>Phytolacca americana</i>
Plantaginaceae	Bracted Plantain	<i>Plantago aristata</i>
	Hoary Plantain	<i>Plantago virginica</i>
Platanaceae	Sycamore	<i>Platanus occidentalis</i>
Poaceae	Splitbeard Bluestem	<i>Andropogon ternarius</i>
	Broom Sedge	<i>Andropogon virginicus</i>
	Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
	Wood Reed	<i>Cinna arundinacea</i>
	Deer Tongue Panic Grass	<i>Dichanthelium clandestinum</i>
	Wild Rye	<i>Elymus virginicus</i>
	Purple Love Grass	<i>Eragrostis spectabilis</i>
	Manna Grass	<i>Glyceria canadensis</i>
	Rice Cut-grass	<i>Leersia oryzoides</i>
	Switch Grass	<i>Panicum virgatum</i>
	Common Reed	<i>Phragmites australis</i>
	Annual Bluegrass	<i>Poa annua</i>
	Purple Top	<i>Triodia flava</i>
	Wild Rice	<i>Zizania aquatica</i>

Polygonaceae	Halberd-leaved Tearthumb	<i>Polygonum arifolium</i>
	Common Smartweed	<i>Polygonum hydropiper</i>
	Dotted Smartweed	<i>Polygonum punctatum</i>
	Arrow-leaved Tearthumb	<i>Polygonum sagittatum</i>
	Sheep Sorrel	<i>Rumex acetosella</i>
Pontederiaceae	Kidney-leaf Mud-Plantain	<i>Heteranthera reniformis</i>
	Pickernelweed	<i>Pontederia cordata</i>
Portulacaceae	Spring Beauty	<i>Claytonia virginica</i>
Potamogetonaceae	Curly Pondweed	<i>Potamogeton crispus</i>
Primulaceae	Fringed Loosestrife	<i>Lysimachia ciliata</i>
	Creeping Charlie	<i>Lysimachia nummularia</i>
	Whorled Loosestrife	<i>Lysimachia quadrifolia</i>
Pyrolaceae	Spotted Wintergreen	<i>Chimaphila maculata</i>
	Pipsissewa	<i>Chimaphila umbellata</i>
Ranunculaceae	Columbine	<i>Aquilegia canadensis</i>
	Virgin's Bower	<i>Clematis virginiana</i>
	Kidney-leaved Buttercup	<i>Ranunculus abortivus</i>
	Hooked Buttercup	<i>Ranunculus recurvatus</i>
	Swamp Buttercup	<i>Ranunculus septentrionalis</i>
	Tall Meadow Rue	<i>Thalictrum pubescens</i>
Rosaceae	Service Berry	<i>Amelanchier canadensis</i>
	Red Chokeberry	<i>Aronia arbutifolia</i>
	Indian Strawberry	<i>Duchesnea indica</i>
	Wild Strawberry	<i>Fragaria virginiana</i>
	White Avens	<i>Geum canadense</i>
	Dwarf Cinquefoil	<i>Potentilla canadensis</i>
	Wild Black Cherry	<i>Prunus serotina</i>
	Wild Pasture Rose	<i>Rosa carolina</i>
	Swamp Rose	<i>Rosa palustris</i>
	Allegheny Blackberry	<i>Rubus allegheniensis</i>
	Serrate-leaf Blackberry	<i>Rubus argutus</i>
Rubiaceae	Button Bush	<i>Cephalanthus occidentalis</i>
	Button Weed	<i>Diodia teres</i>
	Cleavers	<i>Galium aparine</i>
	Wild Licorice	<i>Galium circaezans</i>
	Hairy Bedstraw	<i>Galium pilosum</i>
	Long-leaved Bluets	<i>Houstonia longifolia</i>
	Large Bluets	<i>Houstonia purpurea</i>
	Partridgeberry	<i>Mitchella repens</i>
Salicaceae	Bigtooth Aspen	<i>Populus grandidentata</i>
	Black Willow	<i>Salix nigra</i>
Saururaceae	Lizard's Tail	<i>Saururus cernuus</i>

Saxifragaceae	Ditch Stonecrop Early Saxifrage Virginia Willow	<i>Pentstemon sedoides</i> <i>Saxifraga virginiensis</i> <i>Itea virginica</i>
Scrophulariaceae	Pink Turtlehead Blue Toadflax Sharp-winged Monkey Flower Maryland Figwort Common Mullein Corn Speedwell	<i>Chelone obliqua</i> <i>Linaria canadensis</i> <i>Mimulus alatus</i> <i>Scrophularia marilandica</i> <i>Verbascum thapsus</i> <i>Veronica arvensis</i>
Simaroubaceae	Tree of Heaven	<i>Ailanthus altissima</i>
Smilicaceae	Sawbrier Common Greenbrier	<i>Smilax glauca</i> <i>Smilax rotundifolia</i>
Solanaceae	Horse Nettle	<i>Solanum carolinense</i>
Sparganiaceae	Bur Reed	<i>Sparganium sp.</i>
Typhaceae	Narrow Leaved Cattail Broad Leaved Cattail	<i>Typha angustifolia</i> <i>Typha latifolia</i>
Ulmaceae	Hackberry American Elm	<i>Celtis occidentalis</i> <i>Ulmus americana</i>
Urticaceae	False nettle Canada Wood-nettle Clearweed	<i>Boehmeria cylindrica</i> <i>Laportea canadensis</i> <i>Pilea pumila</i>
Violaceae	Wild Pansy Marsh Blue Violet Field Pansy Lance-leaved Violet Primrose-leaved Violet Woolly Blue Violet	<i>Viola arvensis</i> <i>Viola cucullata</i> <i>Viola rafinesquii</i> <i>Viola lanceolata</i> <i>Viola primulifolia</i> <i>Viola sororia</i>
Vitaceae	Virginia Creeper Wild Grape	<i>Parthenocissus quinquefolia</i> <i>Vitis vulpina</i>



Mammals Observed at Jug Bay

order	Common Name	Scientific Name	
Marsupalia	Virginia Opossum	<i>Didelphis marsupialis</i>	
Insectivora	Short-tailed Shrew	<i>Blarina brevicauda</i>	
	Southern Shrew	<i>Sorex longirostris</i>	
	Eastern Mole	<i>Scalopus aquaticus</i>	
	Star-Nosed Mole	<i>Condylura cristata</i>	
Chiroptera	Red Bat	<i>Lasiurus borealis</i>	
Lagomorpha	Eastern Cottontail	<i>Sylvilagus floridanus</i>	
Rodentia	Eastern Chipmunk	<i>Tamias striatus</i>	
	Southern Flying Squirrel	<i>Glaucomys volans</i>	
	Woodchuck	<i>Marmota monax</i>	
	Eastern Gray Squirrel	<i>Sciurus carolinensis</i>	
	White-footed Mouse	<i>Peromyscus leucopus</i>	
	Pine Vole	<i>Pitymys pinetorum</i>	
	Meadow Vole	<i>Microtus pennsylvanicus</i>	
	Muskrat	<i>Ondatra zibethicus</i>	
	Beaver	<i>Castor canadensis</i>	
	House Mouse	<i>Mus musculus</i>	
	Marsh Rice Rat	<i>Oryzomys palustris</i>	
	Eastern Harvest Mouse	<i>Reithrodontomys humulis</i>	
	Carnivora	Red Fox	<i>Vulpes vulpes</i>
		Gray Fox	<i>Urocyon cinereoargenteus</i>
Raccoon		<i>Procyon lotor</i>	
River Otter		<i>Lutra canadensis</i>	
Artiodactyla	Mink	<i>Mustela vison</i>	
	White-tailed Deer	<i>Odocoileus virginianus</i>	

Mammals Potentially Occurring at Jug Bay

Insectivora	Masked Shrew	<i>Sorex cinereus</i>
	Pygmy Shrew	<i>Microsorex hoyi</i>
Chiroptera	Little Brown Bat	<i>Myotis lucifugus</i>
	Keen's Myotis	<i>Myotis keeni</i>
	Silver-haired Bat	<i>Lasiorycteris noctivagans</i>
	Eastern Pipistrelle	<i>Pipistrellus subflavus</i>
	Big Brown Bat	<i>Eptesicus fuscus</i>
	Hoary Bat	<i>Lasiurus cinereus</i>
Rodentia	Evening Bat	<i>Nycticeius humeralis</i>
	Fox Squirrel	<i>Sciurus niger</i>
	Southern Bog Lemming	<i>Synaptomys cooperi</i>
	Norway Rat	<i>Rattus norvegicus</i>
	Meadow Jumping Mouse	<i>Zapus hudsonius</i>
Carnivora	Eastern Woodrat	<i>Neotoma floridana</i>
	Long-tailed Weasel	<i>Mustela frenata</i>
	Striped Skunk	<i>Mephitis mephitis</i>

Note: Species listed as "Potentially Occurring" have not yet been observed at Jug Bay. According to published range maps, these species occur in the general vicinity and may some day be found at Jug Bay.

Fish Occurring in the Patuxent River, Wetlands, and Streams at Jug Bay

FAMILY NAME	COMMON NAME	SCIENTIFIC NAME
Anguillidae	American Eel	<i>Anguilla rostrata</i>
Antherinidae	Atlantic Silverside	<i>Menidia menidia</i>
Catostomidae	Creek Chubsucker	<i>Erimyzon oblongus</i>
Centrarchidae	Pumpkin Seed	<i>Lepomis gibbosus</i>
	Bluegill	<i>Lepomis macrochirus</i>
	Black Crappie	<i>Promoxis nigromaculatus</i>
	Bluespotted Sunfish	<i>Enneacanthus gloriosus</i>
	Largemouth Bass	<i>Micropterus salmoides</i>
	Gizzard Shad	<i>Dorosoma cepedianum</i>
Clupeidae	Alewife	<i>Alosa pseudoharengus</i>
	Spottailed Shiner	<i>Notropis hudsonius</i>
Cyprinidae	Comely Shiner	<i>Notropis amoenus</i>
	Bridle Shiner	<i>Notropis bifrenatus</i>
	Satinfin Shiner	<i>Notropis analostanus</i>
	Common Shiner	<i>Notropis cornutus</i>
	Swallowtail Shiner	<i>Notropis procyne</i>
	Golden Shiner	<i>Notemigonus crysoleucas</i>
	Blacknose Dace	<i>Rhinichthys atratulus</i>
	Bluntnose Minnow	<i>Pimephales notatus</i>
	Common Carp	<i>Cyprinus carpio</i>
	Bay Anchovy	<i>Anchoa mitchilli</i>
	Redfin Pickerel	<i>Esox americanus</i>
	Chain Pickerel	<i>Esox niger</i>
	Banded Killifish	<i>Fundulus diaphanus</i>
Mummichog	<i>Fundulus heteroclitus</i>	
Channel Catfish	<i>Ictalurus punctatus</i>	
Brown Bullhead	<i>Ameiurus nebulosus</i>	
White Perch	<i>Morone americana</i>	
Striped Bass	<i>Morone saxatilis</i>	
Yellow Perch	<i>Perca flavescens</i>	
Tessellated Darter	<i>Etheostoma olmstedii</i>	
American Brook Lamprey	<i>Lampetra appendix</i>	
Mosquitofish	<i>Gambusia affinis</i>	
Hogchoker	<i>Trinectes maculatus</i>	
Eastern Mudminnow	<i>Umbra pygmaea</i>	

Amphibians Observed at Jug Bay

FAMILY NAME	COMMON NAME	SCIENTIFIC NAME
Salamanders	Marbled Salamander	<i>Ambystoma opacum</i>
	Spotted Salamander	<i>Ambystoma maculatum</i>
	Four-toed Salamander	<i>Hemidactylium scutatum</i>
	Red-backed Salamander	<i>Plethodon cinereus</i>
	Eastern Mud Salamander	<i>Pseudotriton montanus</i>
	Northern Red Salamander	<i>Pseudotriton ruber</i>
Toads	American Toad	<i>Bufo americanus</i>
	Fowler's Toad	<i>Bufo woodhousei fowleri</i>
	Eastern Spadefoot Toad	<i>Scaphiopus holbrookii</i>
Frogs	Spring Peeper	<i>Pseudacris crucifer</i>
	Gray Treefrog	<i>H. chrysocephala/H. versicolor</i>
	Bullfrog	<i>Rana catesbeiana</i>
	Green Frog	<i>Rana clamitans</i>
	Pickerel Frog	<i>Rana palustris</i>
	Wood Frog	<i>Rana sylvatica</i>
	Southern Leopard Frog	<i>Rana utricularia</i>

Reptiles Observed at Jug Bay

Lizards	Six-lined Racerunner	<i>Cnemidophorus sexlineatus</i>
	Five-lined Skink	<i>Eumeces fasciatus</i>
	Eastern Fence Lizard	<i>Sceloporus undulatus</i>
Snakes	Eastern Worm Snake	<i>Carphophis amoenus</i>
	Northern Black Racer	<i>Coluber constrictor</i>
	Northern Ringneck Snake	<i>Diadophis punctatus</i>
	Black Rat Snake	<i>Elaphe obsoleta</i>
	Eastern Hognose Snake	<i>Heterodon platirhinos</i>
	Eastern Kingsnake	<i>Lampropeltis getulus</i>
	Northern Water Snake	<i>Nerodia sipedon</i>
	Queen Snake	<i>Regina septemvittata</i>
	Rough Green Snake	<i>Opheodrys aestivus</i>
	Northern Brown Snake	<i>Storeria dekayi</i>
	Eastern Garter Snake	<i>Thamnophis sirtalis</i>
Turtles	Snapping Turtle	<i>Chelydra serpentina</i>
	Eastern Painted Turtle	<i>Chrysemys picta</i>
	Spotted Turtle	<i>Clemmys guttata</i>
	Red-belly Turtle	<i>Pseudemys rubriventris</i>
	Eastern Mud Turtle	<i>Kinosternon subrubrum</i>
	Stinkpot	<i>Sternotherus odoratus</i>
Eastern Box Turtle	<i>Terrapene carolina</i>	

Amphibians and Reptiles Potentially Occurring at Jug Bay

Salamanders	Eastern Tiger Salamander	<i>Ambystoma tigrinum</i>
	Northern Dusky Salamander	<i>Desmognathus fuscus</i>
	Two-lined Salamander	<i>Eurycea bilineata</i>
	Red-spotted Newt	<i>Notophthalmus viridescens</i>
Frogs	Cricket Frog	<i>Acris crepitans</i>
	Green Treefrog	<i>Hyla cinerea</i>
	Upland Chorus Frog	<i>Pseudacris triseriata</i>
Lizards	Broadhead Skink	<i>Eumeces laticeps</i>
	Ground Skink	<i>Scincella lateralis</i>
Snakes	Northern Copperhead	<i>Agkistrodon contortrix</i>
	Corn Snake	<i>Elaphe guttata</i>
	Scarlet Snake	<i>Cemophora coccinea</i>
	Mole Snake	<i>Lampropeltis calligaster</i>
	Eastern Milk Snake	<i>Lampropeltis triangulum</i>
	Red-bellied Snake	<i>Storeria occipitomaculata</i>
	Eastern Ribbon Snake	<i>Thamnophis sauritus</i>
	Smooth Earth Snake	<i>Virginia valeriae</i>
Turtles	Northern Diamondback Terrapin	<i>Malaclemys terrapin</i>
	Red-eared Slider	<i>Trachemys scripta</i>

Note: Species listed as "Potentially Occurring" have not yet been observed at Jug Bay. According to published range maps, these species occur in the general vicinity and may some day be found at Jug Bay.

Appendix F. Explanation of Species Rank and Status Codes

(Maryland Natural Heritage Program, 2010)

GLOBAL AND STATE RANKS

The global and state ranking system is used by all 50 state Natural Heritage Programs and numerous Conservation Data Centers in other countries in this hemisphere. Because they are assigned based upon standard criteria, the ranks can be used to assess the range-wide status of a species, as well as the status within portions of the species' range. The primary criterion used to define these ranks is the number of known distinct occurrences with consideration given to the total number of individuals at each locality. Additional factors considered include the current level of protection, the types and degree of threats, ecological vulnerability, and population trends. Global and state ranks are used in combination to set inventory, protection, and management priorities for species both at the state as well as regional level.

Plants:

GLOBAL RANK

G3 Either very rare and local throughout its range or distributed locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout its range; typically with 21 to 100 estimated occurrences.

G4 Apparently secure globally, although it may be quite rare in parts of its range, especially at the periphery.

G5 Demonstrably secure globally, although it may be quite rare in parts of its range, especially at the periphery.

_Q Species containing a "Q" in the rank indicates that the taxon is of questionable or uncertain taxonomic standing (i.e., some taxonomists regard it as a full species, while others treat it at an infraspecific level).

STATE RANK

S1 Highly State rare. Critically imperiled in Maryland because of extreme rarity (typically 5 or fewer estimated occurrences or very few remaining individuals or acres in the State) or because of some factor(s) making it especially vulnerable to extirpation. Species with this rank are actively tracked by the Wildlife and Heritage Service.

S3.1 A "Watch List" species that is actively tracked by the Wildlife and Heritage Service because of the global significance of Maryland occurrences. For instance, a G3 S3 species is globally rare to uncommon, and although it may not be currently threatened with extirpation in Maryland, its occurrences in Maryland may be critical to the long term security of the species. Therefore, its status in the State is being monitored.

SH Historically known from Maryland, but not verified for an extended period (usually 20 or more years), with the expectation that it may be rediscovered.

STATE STATUS

T Threatened; a species of flora or fauna that appears likely, within the foreseeable future, to become endangered in the State.

X Endangered Extirpated; a species that was once a viable component of the flora or fauna of the State, but for which no naturally occurring populations are known to exist in the State.

Animals:

GLOBAL RANK

G4 Apparently secure globally, although it may be quite rare in parts of its range, especially at the periphery.

G5 Demonstrably secure globally, although it may be quite rare in parts of its range, especially at the periphery.

STATE RANK

S2 State rare. Imperiled in Maryland because of rarity (typically 6 to 20 estimated occurrences or few remaining individuals or acres in the State) or because of some factor(s) making it vulnerable to becoming extirpated. Species with this rank are actively tracked by the Wildlife and Heritage Service.

S3 Watch List. Rare to uncommon with the number of occurrences typically in the range of 21 to 100 in Maryland. It may have fewer occurrences but with a large number of individuals in some populations, and it may be susceptible to large-scale disturbances. Species with this rank are not actively tracked by the Wildlife and Heritage Service.

S3.1 A "Watch List" species that is actively tracked by the Wildlife and Heritage Service because of the global significance of Maryland occurrences. For instance, a G3 S3 species is globally rare to uncommon, and although it may not be currently threatened with extirpation in Maryland, its occurrences in Maryland may be critical to the long term security of the species. Therefore, its status in the State is being monitored.

_B A qualifier at the end of a rank. This species is a migrant and the subrank refers only to the breeding status of the species in Maryland. This species may have a different subrank for nonbreeding populations.

STATE STATUS

I In Need of Conservation; an animal species whose population is limited or declining in the State such that it may become threatened in the foreseeable future if current trends or conditions persist.