MARYLAND STREAM WADERS SAMPLE YEAR 2002 REPORT

CHESAPEAKE BAY AND
WATERSHED PROGRAMS
MONITORING AND
NON-TIDAL ASSESSMENT

CBWP-MANTA- EA-03-02

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The Maryland Department of Natural Resources (DNR) seeks to preserve, protect and enhance the living resources of the state. Working in partnership with the citizens of Maryland, this worthwhile goal will become a reality. This publication provides information that will increase your understanding of how DNR strives to reach that goal through its many diverse programs.

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Maryland Stream Waders
Sample Year 2002 Report

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Foreword

This is the third in a series of annual reports on Maryland's Stream Waders statewide volunteer stream monitoring program managed by the Maryland Department of Natural Resources' (DNR) Monitoring and Non-tidal Assessment Division (MANTA). Stream Waders data are intended to supplement those collected for the Maryland Biological Stream Survey (MBSS) by DNR and University of Maryland biologists. This report provides an overview of the Program and summarizes results from sample year 2002.

Acknowledgments

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Introduction

Begun as a pilot in 2000, Maryland Stream Waders is a statewide volunteer stream-monitoring program managed by Maryland Department of Natural Resources (DNR), Monitoring and Non-tidal Assessment Division. Stream Waders is the volunteer component of the Maryland Biological Stream Survey (MBSS). Goals of Stream Waders are:

To increase the density of sampling sites for use in stream and watershed assessments;

To improve stream stewardship ethics and encourage local action to improve watershed management;

To educate the local community about the relationship between land use and stream quality; and

To provide quality assured information on stream quality to state, local, and federal agencies, environmental organizations, and others;

Stream Waders data are intended for use in water quality reports (such as Maryland's Biennial water quality report to Congress – the 305(b) Report), watershed restoration and protection programs, regulatory programs (such as 303(d) listing), and for local government use. They are also provided to the volunteers themselves who may have an interest in a particular stream or watershed.

Stream Waders 2002 was successful although, by necessity, smaller than 2000 and 2001. At three locations, 80 volunteers were trained in basic stream ecology, map and Global Positioning System (GPS) use, and field sampling. The trainees formed 24 teams, and with sampling equipment and maps provided by DNR, they ventured forth into the same watersheds slated for sampling by the MBSS.

Methods

Stream Waders is designed to be seamless with the MBSS and several other organizations sampling streams in Maryland (see Appendix A). MBSS samples are collected at the watershed level (8-digit; about 70 square miles each) (Figure 1), while Stream Waders volunteers sample at the subwatershed (12-digit; about 8 square miles each) level. Thus, Stream Waders data should help "fill the gaps" left in watershed areas not sampled by MBSS.

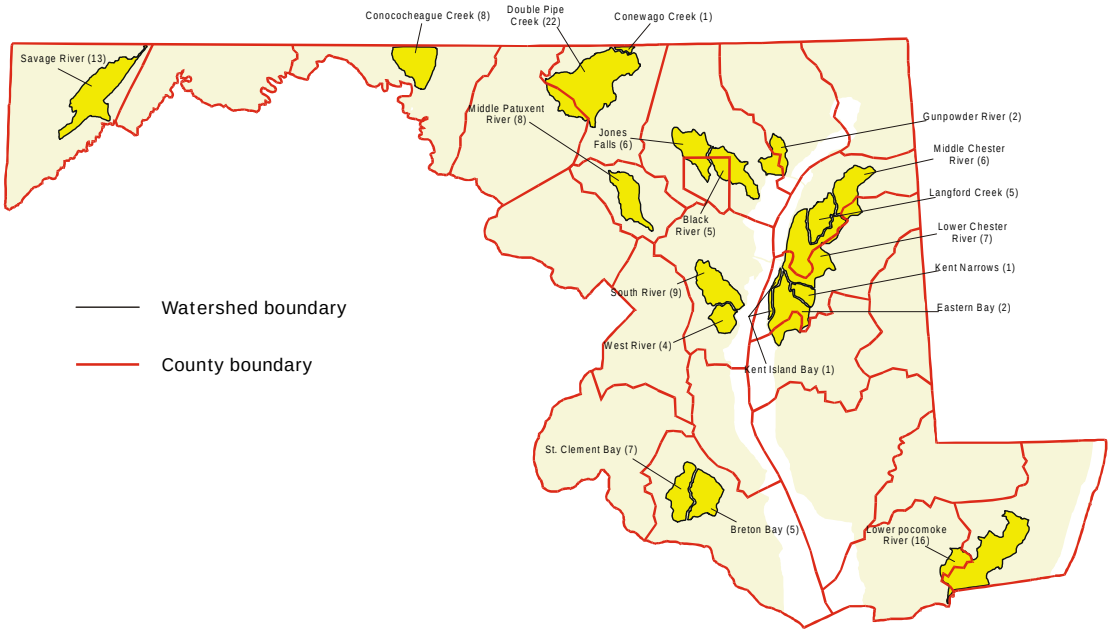

Figure 1. Watersheds sampled by Stream Waders volunteers during 2002. The number of subwatersheds in each watershed is shown in parentheses.

Site Selection

Each year, local governments and citizen organizations interested in the selected watersheds are invited to submit site locations to be sampled by Stream Waders volunteers. For 2002, sites were requested by the Anne Arundel Department of Planning and Code Enforcement and four citizen organizations (Friends of Cabin John Creek Watershed, Herring Run Watershed Association, the Magothy River Association, and the Potomac River Association).

After attending one eight-hour training session in February, volunteers were given subwatershed maps with pre-selected sites marked. Volunteers were asked to sample during the 1 March to 30 April time period and to sample the pre-selected sites first. For many subwatersheds there were fewer than five pre-selected sites, so volunteers were asked to distribute additional sites throughout the subwatershed, with one site near the most downstream part of the subwatershed. The target number of sites per subwatershed was five. Most sites were either upstream of a road crossing or within an easy walk of a road. Volunteers selected 100-foot sections of stream for their samples. Each team of volunteers was given a GPS unit to record the latitude and longitude of the actual sampling sites.

Data Collection and Analytical Methods

Benthic macroinvertebrates were sampled using the same methods as MBSS biologists (MDNR 2001a and MDNR 2001b). Samples were collected using one-foot wide "D" nets (595 micrometer mesh opening) in multiple habitats (e.g. riffles, rootwads, leaves). About 20-square feet of stream substrate were sampled per site in proportion to the available habitat. Samples were preserved in ethanol and organisms were subsampled (about 100 organisms per sample) and identified to family (MDNR 2000) by DNR staff at DNR's laboratory in Annapolis. From the list of organisms identified from each site, a family-level Index of Biotic Integrity (IBI) was calculated and each site was rated either Good (IBI 4-5) Fair (IBI 3-3.9) or Poor (IBI 1-2.9) (MDNR 1998).

In a study conducted by DNR during the first statewide round of the MBSS, the family-level IBI (used by Stream Waders) performed nearly as well as the MBSS genus-level IBI in correctly classifying reference and degraded sites (MDNR 1998). In non-coastal plain areas, the two methods performed equally well and in coastal plain areas, the family-level IBI correctly classified 77% of the sites whereas the genus-level IBI was 88% efficient.

In addition to sampling benthos at each site, volunteers noted general information about each stream, such as width and depth, as well as a description of the surrounding land and potential environmental problems. For 2002, 19 watersheds containing 134 subwatersheds were slated for sampling by Stream Waders.

Quality Assurance/Quality Control

The Stream Waders Program contained several measures of QA/QC including testing of laboratory taxonomists and repeated subsampling and sample re-identification (MDNR 2000). Volunteers attended a one-day training session and will be asked to repeat the training each year that they participate in the program. Three percent of Stream Waders sites were sampled by DNR staff (replicate samples) during the March-April index period (a gap of three or more weeks occurred between collection of the volunteer samples and the quality control samples due to the time needed for the volunteers to complete sampling and return the samples to DNR). Replicate samples were also subsampled and identified by DNR staff according to MBSS protocols (MDNR 2002b).

Site locations were verified by comparing the latitudes and longitudes recorded by volunteers using the GPS units with other location information from the data sheets such as stream name, nearest road crossing, and map grid.

Results from 2002 sampling

Two hundred ninety-six samples were taken by volunteers as part of the Stream Waders Program. Six samples were degraded due to excess organic material in the sample and/or too little preservative. These samples were discarded prior to subsampling.

Fifteen samples contained fewer than 60 organisms. The benthic IBI is generally less reliable when organism counts are less than 60. However, low organism counts are likely to occur at severely degraded sites, such as those in heavily urbanized areas, justifying keeping samples from such sites in the database. Thus, site and benthic community data were examined and best professional judgment was used to delete five of the fifteen "low-organism count" samples from the database.

Two hundred eighty-five volunteer-collected samples were of high enough quality to calculate an Index of Biotic Integrity (Figure 2; next page). Twenty-eight sites sampled by volunteers were re-sampled (replicate samples) by DNR staff for quality control purposes.

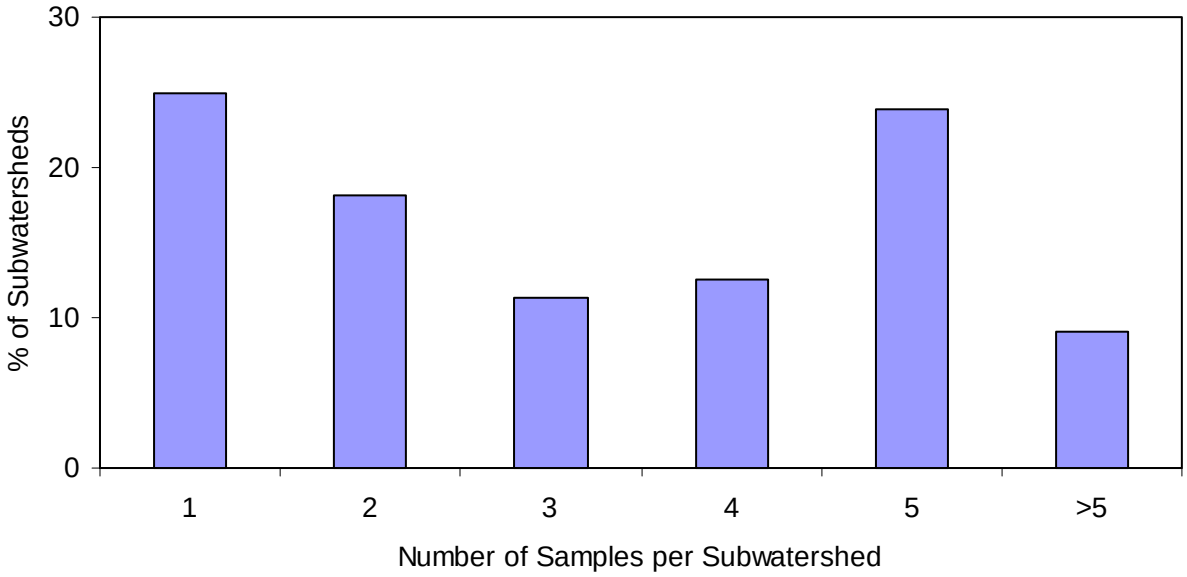

Figure 3. Number of Stream Waders samples per Subwatershed; 2002 sampling.

Watershed and subwatershed coverage by Stream Waders volunteers was good (Figure 3). Volunteers sampled 18 of the 19 scheduled watersheds, with an average of 15 sites per watershed. Of the 221 subwatersheds slated for sampling, 88 contained at least one sample. The average number of samples per subwatershed was 3.3.

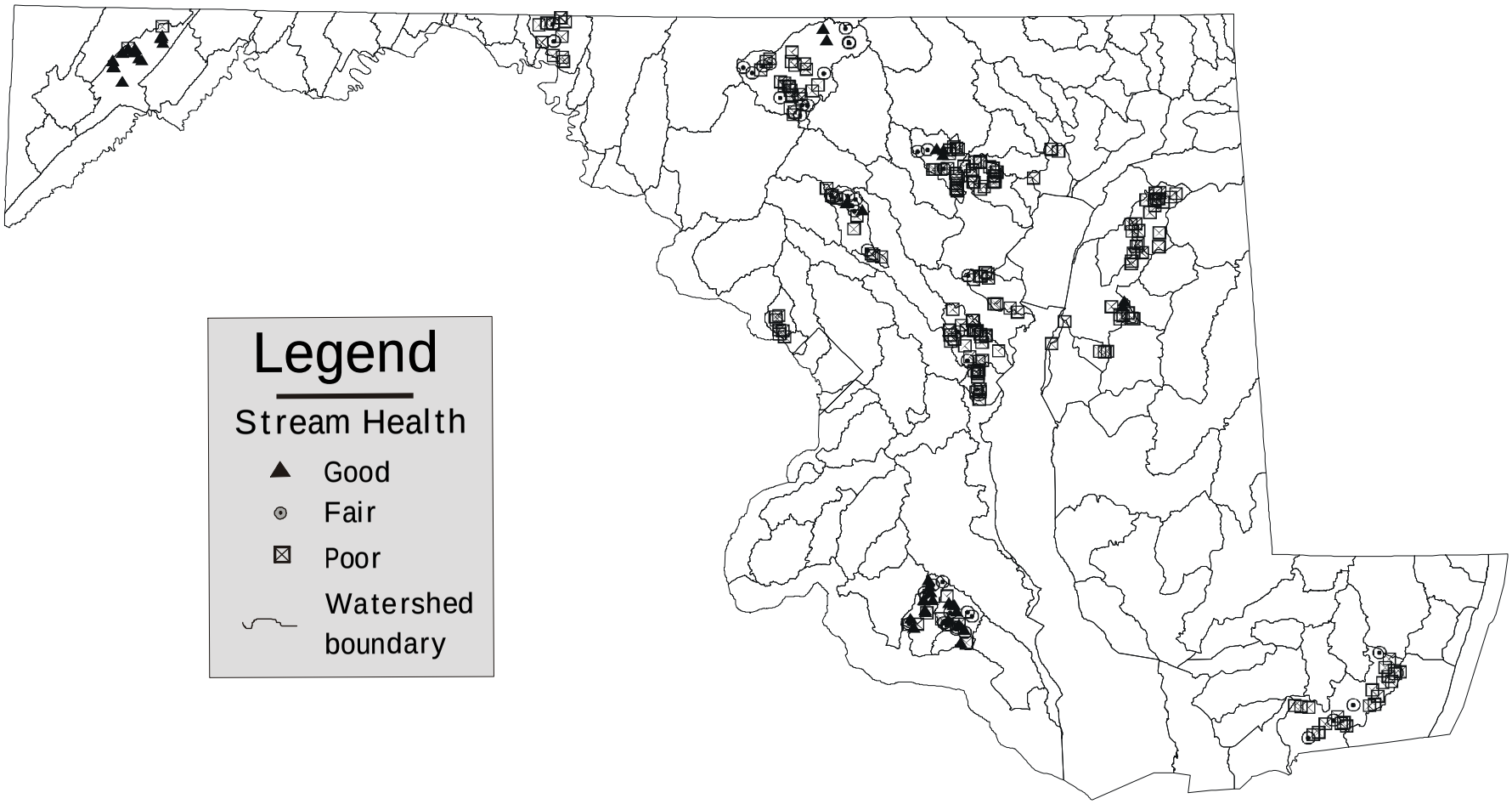

Figure 2. 2002 Maryland Stream Waders sites and stream health ratings based on a family Index of Biotic Integrity.

Did the replicate and Stream Waders samples provide similar results?

Benthic IBI values from the 28 replicate samples taken by MBSS staff corresponded well with Stream Waders results from the same sites (Figure 4). The slope of the fit line was 0.87, suggesting a near one-to-one correspondence among all the sites. The mean difference between the Stream Waders and MBSS IBIs for all pairs of sites was 0.07 (pretty close to zero). Thus, both the MBSS and Stream Waders samples yielded similar ratings for stream condition.

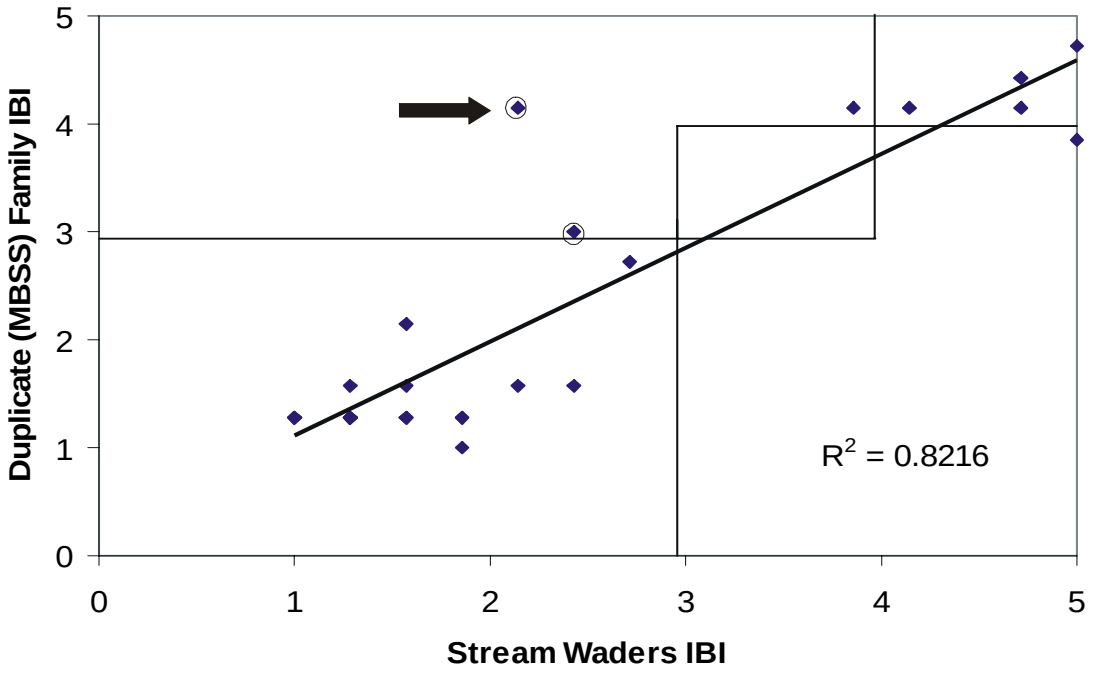

Figure 4. Stream Waders and MBSS Family IBI values from the same sites. Boxes indicate boundaries for Good, Fair, and Poor stream health ratings. The only pairs of samples that disagreed with respect to stream health category (i.e., poor or not) are circled.

Stream Waders and MBSS replicate samples were also in good agreement with respect to identifying poor quality sites (i.e., those with IBIs less than 3). Nineteen sites were rated as poor in both volunteer and replicate samples. At two sites, the volunteer samples were rated as poor and the replicate samples were fair or good. At the site with the most disagreement (the one with the arrow in Figure 4), the Stream Waders sample contained many more blackflies than the replicate sample. Since blackflies are rated as pollution-tolerant, the Stream Waders sample IBI was lower than the replicate sample IBI. In identification of sites as fair or good, there was good agreement. Seven sites were identified as fair or good in both volunteer and quality control samples.

Conclusions

Stream Waders 2002 was a success. In addition to acquiring data from 285 sites that will be used to supplement MBSS data in watershed reports, DNR has continued to include Maryland's residents in the watershed assessment process and to educate volunteers on stream stewardship and ecology. Each year we work to improve the Stream Waders program. In 2002, we increased the number of replicate sites from 19 to 28.

In the future, we plan to improve the program by encouraging more local governments and citizen organizations to participate, increasing the utility of the data.

At less than $1,500 per subwatershed, Stream Waders is a cost-effective way of supplementing the results of the Maryland Biological Stream Survey. With the increased coverage provided by Stream Waders, other government agencies and watershed organizations will have an additional tool to help identify streams in need of protection or restoration. However, a long-term and stable source of funds is needed to keep Stream Waders going into the future.

References

MDNR 1998. Development of a Benthic Index of Biotic Integrity for Maryland Streams. Maryland Department of Natural Resources. Annapolis, Maryland.

MDNR 2000. Maryland Biological Stream Survey Laboratory Methods for Benthic Macroinvertebrate Processing and Taxonomy. Maryland Department of Natural Resources. Annapolis, Maryland.

MDNR 2002a. Maryland Stream Waders Volunteer Stream Monitoring Manual. Maryland Department of Natural Resources. Annapolis, Maryland.

MDNR 2002b. Maryland Biological Stream Survey Sampling Manual. Maryland Department of Natural Resources. Annapolis, Maryland.

For More Information…

For more information on the Maryland Stream Waders Program, wade on over to www.dnr.state.md.us/mbss/mbss_volun.html. Our web site provides an overview of the Program, periodic updates on annual training sessions, and a searchable database of 2000 – 2002 results. You can also drop us an email at streamwaders@dnr.state.md.us, or call toll free (in Maryland) 1-877-620-8DNR (x8623). Our local phone number is 410-260-8623. Lastly, you can send land mail to either Dan Boward or Rita Bruckler at:

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Appendix A. List of organizations using Maryland Biological Stream Survey (MBSS)/Stream Waders field methods to collect benthic macroinvertebrates.

Aberdeen Proving Grounds (U.S. Army)
Baltimore City Department of Public Works
Carroll County Department of Water Resource Planning
Friends of the Cabin John Creek Watershed
Herring Run Watershed Association
Howard County Department of Public Works
Indian Head Naval Base (U.S. Navy)
Magothy River Association
Maryland-National Capitol Parks and Planning Commission
Montgomery County Department of Environmental Protection
Mount Pleasant Conservancy
National Park Service
Parkers Creek Task Force/Calverton High School
Potomac River Alliance
Prince George's County Department of Environmental Resources
Ridge and Valley Stream Keepers
St. Mary's College
University of Maryland

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Appendix B. Stream Waders sites in the watersheds sampled in March and April 2002 with stream name, site number, nearest road(s), and stream condition rating (based on the family-level Index of Biotic Integrity). The tables are in order alphabetically by watershed. Additional information, such as a list of benthic macroinvertebrate families found at each site, can be found at http://mddnr.chesapeakebay.net/mbss/streamwaders.cfm

Stream Waders results in the **Back River** watershed (total sites = 16). Samples were collected to support the work of the Herring Run Watershed Association.

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Biddison Run	1041-3	Goodnow Rd.	Baltimore City	1.6	POOR
Castle Run	1041-2	Tyndale Rd.	Baltimore City	1.0	POOR
Chinquipin Run	1042-1	Hartsdale Ave. and Hillen Ave.	Baltimore City	1.6	POOR
Herring Run	1041-4	Sinclair Ln.	Baltimore City	1.3	POOR
Herring Run	1041-1	Harford Rd.	Baltimore City	1.3	POOR
Herring Run East Br.	1042-5	Perring Pkwy. and Taylor Ave.	Baltimore	1.3	POOR
Herring Run UT	1042-4	Taylor Ave.	Baltimore	1.3	POOR
Herring Run UT	1041-9	Harford Rd.	Baltimore City	1.6	POOR
Herring Run West Br.	1042-2	Hillen Rd.	Baltimore City	1.3	POOR
Redhouse Cr.	1040-3	Seiling Rd.	Baltimore	1.3	POOR
Redhouse Cr.	1040-1	Weyburn Rd.	Baltimore	1.0	POOR
Redhouse Cr. UT	1040-4	Kenwood Ave.	Baltimore	1.6	POOR
Redhouse Cr. UT	1040-2	Weyburn Rd.	Baltimore	1.0	POOR
Stemmers Run	1039-3	Lillian Holt Dr.	Baltimore	1.0	POOR
Stemmers Run UT	1039-2	Belair Rd.	Baltimore	1.0	POOR
Walker Run	1042-3	Walker Ave.	Baltimore	1.6	POOR

Notes:

Those sites with samples having fewer than 60 organisms and no IBI calculation are not listed here. See the Methods section of the report for details.

Sites sampled by DNR staff (QC sites) are not listed here.

Samples collected for special programs or projects are noted at the top of each table.

Cr. = Creek; Br. = Branch; R = River; UT = Unnamed Tributary.

Stream Waders results in the **Breton Bay** watershed (total sites = 22). These results will support the Watershed Restoration Action Strategy for Breton Bay.

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Brooks Run	723-2	Rt. 245 - Hollywood Rd.	St. Mary's	3.3	FAIR
Burnt Mill Cr.	724-4	Friendship School Rd.	St. Mary's	4.1	GOOD
Burnt Mill Cr.	724-5	Bishop Rd.	St. Mary's	1.6	POOR
Glebe Run	722-1	St. Andrews Church Rd. (Rt. 4)	St. Mary's	3.3	FAIR
Gravely Run	722-2	St. Andrews Chruch Rd. (Rt. 4)	St. Mary's	3.6	FAIR
Greenhill Run	721-4	Maypole Rd.	St. Mary's	3.6	FAIR
Lows Run	723-3	St. Johns Rd.	St. Mary's	3.3	FAIR
McIntosh Run	723-1	McIntosh Rd.	St. Mary's	4.1	GOOD
McIntosh Run	721-3	Point Lookout Rd. (Rt. 5)	St. Mary's	3.0	FAIR
Miski Run	721-6	Burnt Mill Dr.	St. Mary's	3.3	FAIR
Moll Dyers Run	720-4	Rt. 244 - Medley's Neck Rd.	St. Mary's	3.6	FAIR
Moll Dyers Run	720-5	Rt. 5 - Point Lookout Rd.	St. Mary's	2.1	POOR
Nelson Run	721-5	Budds Cr. Rd. (Rt. 234)	St. Mary's	2.1	POOR
Nelson Run	721-1	Rt. 5	St. Mary's	3.0	FAIR
Nelson Run	721-2	Rt. 243	St. Mary's	2.7	POOR
Rich Neck Cr.	724-3	Jones Rd.	St. Mary's	4.7	GOOD
Tom Swamp Run	724-2	Jones Rd.	St. Mary's	4.1	GOOD
Town Run	720-1	Government Center	St. Mary's	3.9	FAIR
Town Run	720-2	Government Center	St. Mary's	3.9	FAIR
Town Run	720-6	Fenwick St.	St. Mary's	3.0	FAIR
Town Run	720-7	Point Lookout Rd. (Rt. 5)	St. Mary's	3.3	FAIR
Town Run UT	720-3	Government Center	St. Mary's	1.6	POOR

Stream Waders results in the **Cabin John Creek** watershed (total sites = 7). These samples were collected to support a project comparing Stream Waders methods with those of the Audubon Naturalists Society, used by the Friends of the Cabin John Creek Watershed.

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Bannockburn Br.	841-8	Owen Place	Montgomery	1.3	POOR
Booze Cr.	841-5	Helmsdale Rd & Selkirk Dr.	Montgomery	1.3	POOR
Buck Br.	841-3	Democracy Blvd & Gainsborough Rd.	Montgomery	1.3	POOR
Cabin John Cr.	841-2	Democracy Blvd.	Montgomery	1.3	POOR
Cabin John Cr.	841-4	Bradley Blvd.	Montgomery	1.9	POOR
Cabin John Cr.	841-6	Seven Locks Rd & River Rd.	Montgomery	2.4	POOR
Cabin John Cr.	841-7	Seven Locks Rd & Cypress Ln.	Montgomery	1.9	POOR

Stream Waders results in the **Conococheague Creek** watershed (total sites = 11).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Conococheague Cr. UT	183-1	Wishard	Washington	2.4	POOR
Conococheague Cr. UT	178-6	Kemps Mill Rd.	Washington	1.3	POOR
Conococheague Cr. UT	179-1	Independence Rd.	Washington	2.7	POOR
Meadow Brook	180-1	Mill Rd.	Washington	2.4	POOR
Meadow Brook	180-2	U.S. Rt. 40	Washington	1.6	POOR
Rockdale Run	184-1	Hicksville Rd.	Washington	2.4	POOR
Rockdale Run	184-3	Spickler Rd.	Washington	1.3	POOR
Rockdale Run	184-2	St. Paul Rd.	Washington	1.0	POOR
Rush Run	181-6	Mt. Tabor Rd.	Washington	1.6	POOR
Semple Run	177-6	Rt. 63	Washington	1.3	POOR
Tom's Run	182-6	Fairview Rd.	Washington	2.1	POOR

Stream Waders results in the **Double Pipe Creek** watershed (total sites = 37).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Bear Br.	281-1	Rt. 140	Carroll	2.4	POOR
Big Pipe Cr.	286-1	Bachman Mill Rd.	Carroll	3.3	FAIR
Big Pipe Cr.	283-1	Rt. 97	Carroll	3.9	FAIR
Big Pipe Cr.	279-5	Hapes Mill Rd.	Carroll	3.3	FAIR
Big Pipe Cr.	279-2	Crouse Mill Rd.	Carroll	3.3	FAIR
Big Pipe Cr.	279-4	Stover Rd.	Carroll	1.6	POOR
Big Pipe Cr. UT	279-3	Hapes Mill Rd.	Carroll	1.3	POOR
Big Pipe Cr. UT	279-1	Crouse Mill	Carroll	1.6	POOR
Big Pipe Cr. UT	287-1	Bixler Church Rd.	Carroll	3.0	FAIR
Big Silver Run UT	285-1	Turkeyfoot Rd.	Carroll	4.4	GOOD
Deep Run	288-1	Deep Run Rd.	Carroll	3.3	FAIR
Dickinson Run	271-5	Bowersox Rd.	Carroll	3.3	FAIR
Dickinson Run	271-1	Wakefield Valley Rd.	Carroll	2.4	POOR
Dickinson Run	271-2	Lambert Ave. and Lantz Dr.	Carroll	1.3	POOR
Dickinson Run	271-3	Wilt Rd.	Carroll	2.7	POOR

Stream Waders results in the **Double Pipe Creek** watershed (cont.)

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Double Pipe Cr.	248-1	Rt. 77	Carroll	3.0	FAIR
Little Pipe Cr.	272-3	Hawks Hill	Carroll	1.3	POOR
Little Pipe Cr.	272-4	Winters Church Rd.	Carroll	1.6	POOR
Little Pipe Cr.	272-5	Hawks Hill	Carroll	1.3	POOR
Little Pipe Cr.	273-4	Rt. 75	Carroll	1.9	POOR
Little Pipe Cr.	274-1	Rt. 194 S. of Tanytown	Carroll	3.0	FAIR
Little Pipe Cr.	276-1	Rt 852 and Adams Mill Rd.	Carroll	1.6	POOR
Meadow Br.	277-4	Baust Church Rd.	Carroll	1.0	POOR
Meadow Br.	277-2	Frizzleburg Rd.	Carroll	2.1	POOR
Meadow Br.	277-1	Rt. 140	Carroll	3.0	FAIR
Meadow Br.	277-5	Clearview Rd.	Carroll	2.1	POOR
Meadow Br. UT	277-3	Rt. 832	Carroll	1.0	POOR
Roop Br.	272-2	Rt 75	Carroll	1.9	POOR
Roop Br.	272-1	Rt 75	Carroll	2.1	POOR
Sam's Cr.	268-2	McKinstry's Mill & Sams Cr. Rd.	Carroll	3.0	FAIR
Sam's Cr.	268-1	Sam's Cr. Rd./ Oak Orchard Rd.	Carroll	2.4	POOR
Sam's Cr.	268-3	Sam's Cr. Rd.	Carroll	3.0	FAIR
Sam's Cr.	268-4	Sams Cr. Rd.	Carroll	1.3	POOR
Sam's Cr.	268-5	Sam's Cr. Rd.	Frederick	1.9	POOR
Turkeyfoot Cr. UT	275-1	New Winsor Rd.	Carroll	1.6	POOR
Wolf Pit Br.	273-2	McKinstry's Mill Rd.	Carroll	1.0	POOR
Wolf Pit Cr.	273-3	Rt. 75 and Watson Rd.	Carroll	1.6	POOR

Stream Waders results in the **Eastern Bay** watershed (total sites = 2).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Cox Cr.	429-1	Grollman Rd.	Queen Anne's	1.3	POOR
Warehouse Cr.	429-2	Rt. 8 - Romancoke Rd.	Queen Anne's	1.6	POOR

Stream Waders results in the **Gunpowder River** watershed (total sites = 4).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Foster Br.	293-2	Trimble Rd.	Harford	2.4	POOR
Foster Br. (East Br.) UT	293-1	Trimble Rd.	Harford	2.4	POOR
Reardon Inlet UT	293-3	Rt. 152	Harford	1.0	POOR
Saltpeter Cr. UT	292-1	Eastern Ave.	Baltimore	1.3	POOR

Stream Waders results in the **Jones Falls** watershed (total sites = 22).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Jones Falls	1036-4	Old Valley and Stevenson Ln.	Baltimore	3.3	FAIR
Jones Falls	1036-5	Greenspring Valley Rd. and Spring Mill	Baltimore	2.7	POOR
Jones Falls	1036-3	Greenspring Ave. and Hillside Rd.	Baltimore	5.0	GOOD
Jones Falls	1032-2	Falls Rd.	Baltimore City	1.3	POOR
Jones Falls	1032-3	Falls Rd. near 29th St. overpass	Baltimore City	1.6	POOR
Jones Falls	1032-4	Under 28th St. overpass	Baltimore City	1.6	POOR
Jones Falls	1036-2	Falls Rd. and Hillside Ave.	Baltimore	3.6	FAIR
Roland Run	1037-3	Bellona Ave. and Ruxton Crossing Rd.	Baltimore	2.4	POOR
Roland Run	1037-2	Joppa Rd. and Thorton Rd.	Baltimore	1.9	POOR
Roland Run	1037-1	Ruxton Rd.	Baltimore	2.4	POOR
Roland Run UT	1037-4	Bellona Ave. and Marleigh Circle	Baltimore	1.6	POOR
Slaughterhouse Br.	1036-1	Falls Rd. and Old Court Rd.	Baltimore	3.6	FAIR
Stoney Run	1033-1	Remington Ave. and 33rd St.	Baltimore City	1.3	POOR
Stoney Run	1033-2	San Martin Dr. at U-lot of JHU	Baltimore City	1.0	POOR
Stoney Run	1033-3	4100 Linkwood Rd. and Ridgemede St.	Baltimore City	1.3	POOR
Stoney Run	1033-4	Wilmslow Rd. and Oakdale Rd.	Baltimore City	1.3	POOR
Stoney Run	1033-5	Wyndhurst Ave. and Lawndale Ave.	Baltimore City	1.6	POOR
Western Run	1035-1	Crosscountry Blvd. and Clarks Ln.	Baltimore City	1.3	POOR
Western Run	1035-5	Kelly Ave. and Locklea Rd.	Baltimore City	2.4	POOR
Western Run	1035-4	Cross Country Blvd. and Bonne View Rd.	Baltimore City	2.7	POOR
Western Run	1035-3	Cross Country Blvd. and Pimlico Rd.	Baltimore City	2.1	POOR
Western Run	1035-2	Crosscountry Blvd. and Bancroft Rd.	Baltimore City	1.9	POOR

Stream Waders results in the **Kent Narrows** watershed (total sites = 3).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Greenwood Cr.	431-2	Perry's Corner Rd.	Queen Anne's	1.3	POOR
Greenwood Cr. West Fork	431-1	Perry's Corner Rd.	Queen Anne's	1.3	POOR
Hoghole Cr.	431-3	Perry's Corner Rd.	Queen Anne's	1.0	POOR

Stream Waders results in the **Langford Creek** watershed (total sites = 2).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Langford Cr. East Fork	409-2	Orchard Dr.	Kent	2.1	POOR
Langford Cr. East Fork	409-1	Stockton Startt Rd.	Kent	1.9	POOR

Stream Waders results in the **Lower Chester River** watershed (total sites = 13).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Broad Cr.	394-1	Rt. 289	Kent	1.3	POOR
Browns Cr.	393-3	Quaker Neck Landing Rd.	Kent	1.6	POOR
Dam Cr.	393-1	Wilkins Ln.	Kent	1.6	POOR
Grove Cr. UT	390-3	Spider Web Rd.	Queen Anne's	3.6	FAIR
Head of Queenstown Cr. UT	390-1	Joseph Boyle Rd.	Queen Anne's	1.6	POOR
Head of Spring Cove	390-4	Spring Cove Ln.	Queen Anne's	1.6	POOR
Jarrett Cr.	393-2	Learman Rd.	Kent	1.6	POOR
Northeastern Br. of Reed Cr.	390-2	Wrights Neck Rd.	Queen Anne's	4.4	GOOD
Reed Cr.	391-2	Rt. 18	Queen Anne's	2.1	POOR
Reed Cr.	391-1	Tilghman Neck Rd.	Queen Anne's	2.4	POOR
Reed Cr.	391-4	Rt. 301 S of Perlee Rd.	Queen Anne's	1.0	POOR
Reed Cr.	391-5	Rt. 301 S of Perlee Rd.	Queen Anne's	1.3	POOR
Reed Cr. UT	391-3	Rt. 18	Queen Anne's	1.3	POOR

Stream Waders results in the **Lower Pocomoke River** watershed (total sites = 26).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Acquango Br.	639-3	Whiton Rd.	Worcester	3.0	FAIR
Campground Br.	638-3	Scotland Rd.	Worcester	1.3	POOR
Campground Br.	638-4	Double Bridges Rd.	Worcester	1.6	POOR
Campground Br.	638-2	Scotland Rd.	Worcester	1.6	POOR
Campground Br.	638-5	Timmons Rd.	Worcester	1.3	POOR
Costen Br.	627-2	Hayward Rd.	Somerset	1.6	POOR
Goodwill Ditch	631-2	Holly Swamp Rd.	Worcester	1.6	POOR
Hardship Br.	633-2	Castle Hill Rd.	Worcester	1.3	POOR
Kelly Mill Br.	633-3	Snow Hill Rd. - Rt. 12	Worcester	1.6	POOR
Landing Br.	627-1	Costen Rd.	Somerset	1.0	POOR
Little Mill Cr.	626-2	New Bridge Rd.	Worcester	2.7	POOR
Little Mill Cr.	626-3	Dunn Swamp Rd.	Worcester	1.6	POOR
Little Mill Cr.	626-1	Hillman Dr.	Worcester	1.9	POOR
Mattaponi Cr.	633-1	Betheden Church Rd.	Worcester	2.7	POOR
Pattys Br.	635-2	McCabes Corner Rd.	Worcester	1.9	POOR
Pattys Br. UT	635-1	Brick Kiln Rd.	Worcester	1.9	POOR
Pilchard Cr.	631-3	Holly Swamp Rd.	Worcester	1.9	POOR
Pilchard Cr.	631-5	Bromley Rd.	Worcester	1.3	POOR
Pilchard Cr. UT	631-4	Byrd Rd.	Worcester	3.0	FAIR
Pocomoke R. UT	629-1	Rt. 366	Worcester	2.1	POOR
Poorhouse Br.	639-2	Rt. 113	Worcester	1.9	POOR
Purnell Br.	638-1	Public Landing Rd. (Rt. 365)	Worcester	1.3	POOR
Redden Cr.	631-1	Redden Rd.	Worcester	1.3	POOR
Rehoboth Br.	625-1	Costen Rd.	Somerset	1.6	POOR
Spring Hill Br.	633-4	Show Hill Rd. - Rt. 12	Worcester	1.6	POOR
Tarr Br.	633-5	Dukes Rd.	Worcester	1.3	POOR

Stream Waders results in the **Magothy River** watershed (total sites = 10). Results support the work of the Magothy River Association.

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Bailys Br.	1005-1	Armiger Dr.	Anne Arundel	1.3	POOR
Beachwood Br.	1005-3	Magothy Bridge east of Edwin Raynor Blvd.	Anne Arundel	1.3	POOR
Brookfield Br.	1005-2	Edwin Raynor Blvd. and MD 100	Anne Arundel	1.6	POOR
Dividing Cr.	1003-3	Ring Rd. on AACC Campus	Anne Arundel	1.6	POOR
Little Magothy R.	1003-1	Cape Saint Claire Rd.	Anne Arundel	1.6	POOR
Magothy Br.	1005-7	Brookwood Rd. and Obrecht Rd.	Anne Arundel	3.0	FAIR
Mill Cr.	1003-2	College Pkwy.	Anne Arundel	1.6	POOR
Muddy Run	1005-4	Old Mill Rd.	Anne Arundel	1.6	POOR
Pasdena Run	1005-6	RailRd. Ave.	Anne Arundel	1.0	POOR
Upper Magothy R.	1005-5	Old Mill Rd. and MD 648	Anne Arundel	2.1	POOR

Stream Waders results in the **Middle Chester River** watershed (total sites = 20).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Chester R. UT	410-1	Lovers Ln.	Kent	1.9	POOR
Chester R. UT	410-2	Country Club Ln.	Kent	2.4	POOR
Hambleton Cr.	412-3	Schrader Rd.	Queen Anne's	1.6	POOR
Morgan Cr.	415-5	Wallis Rd.	Kent	2.4	POOR
Morgan Cr.	415-4	Browntown Rd.	Kent	1.6	POOR
Morgan Cr.	415-2	Kennedyville Rd.	Kent	1.6	POOR
Morgan Cr. UT	414-2	Rt. 213 and Big Woods Rd.	Kent	1.6	POOR
Morgan Cr. UT	414-1	Mill Hollow Ln and Rileys Mill Rd.	Kent	1.6	POOR
Radcliffe Cr.	411-1	West Rt. 20	Kent	2.1	POOR
Radcliffe Cr. UT	411-2	Cromwell Clark Rd.	Kent	1.6	POOR
Rosin Cr.	412-1	Round Top Rd.	Queen Anne's	1.6	POOR
Rosin Cr.	412-2	Rt. 544	Queen Anne's	1.6	POOR
Urieville Lake UT	415-8	Station Rd.	Kent	1.9	POOR
Urieville Lake UT	415-11	Lynch Rd.	Kent	1.3	POOR
Urieville Lake UT	415-10	Still Pond Rd.	Kent	2.4	POOR
Urieville Lake UT	415-7	292 E. MD and DE RR	Kent	2.1	POOR
Urieville Lake UT	415-6	292 E. MD and DE RR	Kent	2.1	POOR
Urieville Lake UT	415-3	Still Pond Rd.	Kent	1.3	POOR
Urieville Lake UT	415-9	Still Pond Rd.	Kent	1.6	POOR
Urieville Lake UT	415-1	Station Rd.	Kent	1.9	POOR

Stream Waders results in the **Middle Patuxent River** watershed (total sites = 18).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Benson Br.	961-4	Carrol Mill Rd. and Mt. Albert Rd.	Howard	3.3	FAIR
Middle Patuxent R.	963-1	Rt. 32	Howard	3.6	FAIR
Middle Patuxent R.	964-4	Rover Mill Rd.	Howard	1.6	POOR
Middle Patuxent R.	963-3	Rt. 144	Howard	3.0	FAIR
Middle Patuxent R.	963-5	Tridelphia Rd. near Carol Mill Rd..	Howard	3.0	FAIR
Middle Patuxent R.	964-2	McKendree Rd. and Rover Mill Rd..	Howard	3.0	FAIR
Middle Patuxent R.	964-3	Rover Mill Rd.	Howard	2.7	POOR
Middle Patuxent R.	964-5	Pfefferkorn Rd.	Howard	1.3	POOR
Middle Patuxent R.	961-2	Folly Quarter Rd. at UMD Farm	Howard	1.0	POOR
Middle Patuxent R.	958-4	Johns Hopkins APL; Sanner Rd. to Area B	Howard	3.3	FAIR
Middle Patuxent R.	958-3	Murray Hill Rd. and Gorman Rd.	Howard	2.1	POOR
Middle Patuxent R.	958-2	Gorman Rd. and Kinder Rd.	Howard	2.1	POOR
Middle Patuxent R.	958-1	Old Columbia Rd. and Rt. 29	Howard	1.3	POOR
Middle Patuxent R. UT	961-3	Folly Quarter Rd.	Howard	3.9	FAIR
Middle Patuxent R. UT	963-2	Rt. 32	Howard	2.7	POOR
Middle Patuxent R. UT	963-4	Rt. 144	Howard	3.3	FAIR
Middle Patuxent R. UT	964-1	Rt. 144 and Rt. 97	Howard	1.6	POOR
Middle Patuxent R. UT	961-1	Shepherd Ln.	Howard	2.1	POOR

Stream Waders results in the **Savage River** watershed (total sites = 16).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Big Run	78-1	Big Run Rd.	Garrett	4.1	GOOD
Christley Run	83-4	Green Lantern	Garrett	4.4	GOOD
Elk Lick	80-3	Western Port Rd.	Garrett	4.7	GOOD
Elk Lick	80-5	Western Port Rd.	Garrett	4.1	GOOD
Elk Lick North Br.	80-1	Red Hill Rd.	Garrett	4.4	GOOD
Elk Lick UT	80-4	Western Port Rd.	Garrett	4.7	GOOD
Miller Run	78-2	Big Run Rd.	Garrett	5.0	GOOD
Monroe Run	78-4	Big Run Rd.	Garrett	4.7	GOOD

Stream Waders results in the **Savage River** watershed (cont.)

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Mudlick Run	83-1	Mt. Etna Rd.	Garrett	4.1	GOOD
Mudlick Run	83-2	Blocker Rd.	Garrett	1.9	POOR
Mudlick Run	83-5	Green Lantern Rd.	Garrett	3.6	FAIR
Mudlick Run UT	83-3	Green Lantern Rd.	Garrett	3.6	FAIR
Poplar Lick	79-1	McAndrew Hill Rd.	Garrett	2.1	POOR
Poplar Lick Run	79-2	New Germany Rd.	Garrett	4.7	GOOD
Savage R. UT	80-2	McAndrew's Hill Rd.	Garrett	3.9	FAIR
Whiskey Hollow	78-3	Big Run Rd.	Garrett	5.0	GOOD

Stream Waders results in the **South River** watershed (total = 25).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Bacon Ridge Br.	995-4	Chesterfield Rd.	Anne Arundel	1.9	POOR
Bacon Ridge Br.	995-1	Severn Chapel Rd./Campbell Rd.	Anne Arundel	1.9	POOR
Bacon Ridge Br. UT	992-2	Rt. 450 Defense Hwy.	Anne Arundel	1.6	POOR
Beard Cr. UT	987-1	Brick Church Rd.; Rt. 214	Anne Arundel	3.0	FAIR
Beard Cr. UT	987-2	Rt. 214; Brick Church Rd.	Anne Arundel	2.1	POOR
Bell Br.	994-2	Bell Br. Rd.	Anne Arundel	1.9	POOR
Bell Br. UT	994-1	Hallmark Dr. at Rt. 450	Anne Arundel	2.1	POOR
Broad Cr. UT	993-6	Harry Truman Pkwy.	Anne Arundel	1.6	POOR
Broad Cr. UT	993-1	Rt. 450 Defense Hwy.	Anne Arundel	1.3	POOR
Broad Cr. UT	993-3	Truman Rd.	Anne Arundel	1.9	POOR
Broad Cr. UT	993-2	Honeysuckle Ln.	Anne Arundel	1.9	POOR
Broad Cr. UT	993-4	Rt. 450 at Annapolis Corp. Center	Anne Arundel	1.3	POOR
Broad Cr. UT	993-5	Rt. 450	Anne Arundel	1.6	POOR
Church Cr.	991-5	Rt. 2 at Annap. Harbor Ctr.	Anne Arundel	1.6	POOR
Flat Cr. UT	992-1	Barber Rd.	Anne Arundel	2.1	POOR
Gingerville Cr.	991-6	Peppercorn Place	Anne Arundel	1.3	POOR
Gingerville Cr. UT	991-7	Wallace Manor Ln.	Anne Arundel	1.6	POOR
Glebe Br.	988-2	Monarch Dr.	Anne Arundel	1.6	POOR
Glebe Br.	988-1	Rt. 214	Anne Arundel	1.3	POOR
Harness Cr.	990-1	Cardinal Court	Anne Arundel	1.3	POOR
North R.	994-5	Rutland Rd.	Anne Arundel	2.7	POOR
S. Basin UT	993-7	Housely Rd.	Anne Arundel	1.3	POOR
Tarnans Br.	994-3	Rutland Rd.	Anne Arundel	1.6	POOR
Tarnans Br.	994-4	Bell Cr. Dr.	Anne Arundel	1.6	POOR
Tracys Cr. UT	991-4	Rt. 2 next to Chevy's restaurant	Anne Arundel	1.0	POOR

Stream Waders results in the **St. Clements Creek** watershed (total sites = 18).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Locust Run	730-5	Colton Rd. - Rt. 242	St. Mary's	4.4	GOOD
Saint Clements Cr.	730-3	Leon Rd.	St. Mary's	3.6	FAIR
Saint Clements Cr.	730-4	Dr. Johnson Rd..	St. Mary's	3.0	FAIR
Saint Clements Cr.	731-5	Great St. Thomas Ln.	St. Mary's	3.9	FAIR
Saint Clements Cr.	731-3	Rt. 5	St. Mary's	4.1	GOOD
Saint Clements Cr.	731-4	Forest Hall Rd.	St. Mary's	5.0	GOOD
Saint Clements Cr.	730-1	Cusic Court	St. Mary's	3.3	FAIR
Saint Clements Cr.	728-2	Colton Point Rd.	St. Mary's	3.6	FAIR
Saint Clements Cr.	728-1	Lewis Rd.	St. Mary's	4.4	GOOD
Saint Clements Cr. UT	731-1	Laurel Grove Rd.	St. Mary's	2.7	POOR
Saint Clements Cr. UT	730-2	Leon Rd.	St. Mary's	5.0	GOOD
Saint Clements Cr. UT	731-2	Morganza Turner Rd.	St. Mary's	3.3	FAIR
Saint Clements Cr. UT	728-3	Budds Cr. Rd. - Rt. 234	St. Mary's	1.3	POOR
Tamakokin Cr.	727-2	Bushwood Rd.	St. Mary's	2.7	POOR
Tamakokin Cr.	727-3	Rt. 242	St. Mary's	3.9	FAIR
Tamakokin Cr. UT	727-4	John Walters Ln.	St. Mary's	4.1	GOOD
Tamakokin Cr. UT	727-5	Rt. 242	St. Mary's	2.4	POOR
Tamakokin Cr. UT	727-1	Kaylas Rd.	St. Mary's	2.1	POOR

Stream Waders results in the **West River** watershed (total sites = 12).

Stream Name	Site	Nearest Road(s)	County	IBI Score	Condition
Big Hob Run	985-5	Old Muddy Cr. Rd.	Anne Arundel	1.9	POOR
Blue Jay Br.	985-4	Fiddlers Hill Rd.	Anne Arundel	1.9	POOR
Blue Jay Br.	985-1	Old Muddy Cr. Rd.	Anne Arundel	1.6	POOR
Jessica Brook	985-3	Fiddlers Hill Rd.	Anne Arundel	1.6	POOR
Johns Cr.	983-6	Muddy Cr. Rd. and Old Sudley Rd.	Anne Arundel	1.9	POOR
Lerch Cr.	983-3	Muddy Cr. Rd.	Anne Arundel	1.6	POOR
Lerch Cr.	983-2	Owensville Rd.	Anne Arundel	3.0	FAIR
Lerch Cr. UT	983-1	Owensville Rd.	Anne Arundel	1.9	POOR
North Fork Muddy Cr.	985-6	Old Muddy Cr. Rd.	Anne Arundel	1.6	POOR
Smith Cr.	983-5	Muddy Cr. Rd.	Anne Arundel	2.7	POOR
Smith Cr. UT	983-4	Westbury Farm Ln.	Anne Arundel	1.6	POOR
Williamson Br.	985-2	Old Muddy Cr. Rd.	Anne Arundel	1.9	POOR

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