

Biological Assessment of the Streams and Waterbodies of Prince Georges County, Maryland

Thumbnail Not Available

Tags

WADEABLE STREAMS, Habitat, Watersheds, Streams, BENTHOS, WATER QUALITY, biota, environment, Biology, Ecology, Ecosystem, Environment, Indicator, Marine, Monitoring, Quality, Surface Water, Water, Benthos, Macro Invertebrates, Water Quality

Summary

Prince George's County Department of Environmental Resources (PG DER) implemented a rotating basin monitoring program to investigate the ecological condition of the streams in Prince George's County, Maryland. During this study all planned stream locations, sites were sampled for benthic macroinvertebrates, physical habitat quality, and selected insitu water chemistry parameters. Sites were assessed using the biological indicators from the Maryland Department of Natural Resource's (DNR) Maryland Biological Stream Survey (MBSS) protocol. Prince George's County's 41 watersheds were aggregated into 28 watershed groups for assessment purposes. As of 2003 of the 28 watershed groups, 9 were rated as being in very poor condition, 15 were poor, 4 were fair, and no watershed groups were rated in good condition. There are a wide range of potential stressors affecting the quality of the streams in Prince George's County. There is some farming in the southern portions of the County, intensively urbanized areas inside of the Capitol Beltway, urbanization around the cities of Laurel and Bowie, and large areas of historical (and current) mining.

Description

To provide representative coverage of the County, a stratified random design by subwatershed group and stream order was used to select approximately 50 sites in each of year of the monitoring program. Benthic sampling and physical habitat assessment was conducted during the Spring Index Period (March 1-30), and fish sampling was completed during the Summer (June). All sampling was conducted in accordance with the Standard Operating Procedures contained within the Prince George's County Biological Monitoring Assessment Program Plan. Fish sampling was not conducted on first order streams, as the Maryland Biological Stream Survey (MBSS) fish IBI is not calculated on small streams. Duplicate macroinvertebrate samples were taken at 10% of the sites (5 in 2003) as per the data quality objectives listed in the QAPP. Cross-sectional measurements and Wolman Pebble Counts were also completed at each site to give a better understanding of the geomorphological characteristics of the stream. Benthic macroinvertebrates were collected from 100-meter reaches by making 20 one-meter linear sweeps (jabs) with a D-frame net (600-micron mesh) through different habitat types (snag, vegetated bank, bottom, riffle/cobble), sampled in proportion to their frequency at each site. All sampled material was composited in a 600-micron sieve bucket, placed in one or more 1-liter sample containers and preserved with 95% ethanol. Internal and external sample labels were completed for each container. Using a Caton gridded screen in the lab, the composited samples were randomly subsampled to 100-organisms and identified to genus. For quality control purposes duplicate samples were taken at approximately 10% of the sites and processed in the same manner, from adjacent 100-meter reaches where no additional stressor sources were observed, and physical habitat appeared similar to the original reach. Comparison of differences of the results from the paired samples provides an estimate of the precision of the biological and habitat assessments and consistency of sampling activities (field and lab). Fish were sampled at 24 second and third order streams sites using backpack electrofishing units as outlined by MBSS. At each site, fish were collected from a block-netted 75-meter reach, identified in the field (noting physical anomalies on gamefish), weighed in bulk, and released. Selected specimens were preserved in 10% formalin as vouchers and identified in the lab. All fish sampling occurred under Maryland Department of Natural Resources (MDNR) Permit No. SCP-200326. Ten parameters describing physical habitat (i.e., instream and planform morphology, riparian zone condition, and stream bank condition)

were visually assessed in 100-meter reaches, as outlined in PG DER (2000), Stribling et al. (1996) and Barbour et al. (1999)(Table 3). These parameters were summed for a total score and ranked as optimal, suboptimal, marginal, or poor based on a 20 point scale, with 20 being the best.

Credits

There are no credits for this item.

Use limitations

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Citation ►

TITLE Biological Assessment of the Streams and Waterbodies of Prince Georges County, Maryland

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Resource Details ►

CREDITS

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Resource Constraints ►

CONSTRAINTS

LIMITATIONS OF USE

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Metadata Details ►

* LAST UPDATE 2010-04-26

ARCGIS METADATA PROPERTIES

METADATA FORMAT ESRI-ISO

CREATED IN ARCGIS 2010-03-30T13:19:05

LAST MODIFIED IN ARCGIS 2010-04-26T11:08:05

AUTOMATIC UPDATES

HAVE BEEN PERFORMED No

[Hide Metadata Details ▲](#)

FGDC Metadata (read-only) ►

Identification ►

CITATION

CITATION INFORMATION

ORIGINATOR Prince George's County -Department of Environmental Resources-Water Quality and

Compliance Team

ORIGINATOR Deborah Weller

PUBLICATION DATE 2013-04-24

TITLE

Biological Assessment of the Streams and Waterbodies of Prince Georges County, Maryland

PUBLICATION INFORMATION

PUBLICATION PLACE Annapolis, MD

PUBLISHER Chesapeake Bay Program (CBP)

ONLINE LINKAGE http://data.chesapeakebay.net/?DB=CBP_NTBENDB

ONLINE LINKAGE

http://www.chesapeakebay.net/data/downloads/watershed_wide_benthic_invertebrate_database

ONLINE LINKAGE

[http://www.princegeorgescountymd.gov/Government/AgencyIndex/DER/ESG/index.asp?nivel=foldmenu\(7\)](http://www.princegeorgescountymd.gov/Government/AgencyIndex/DER/ESG/index.asp?nivel=foldmenu(7))

DESCRIPTION

ABSTRACT

To provide representative coverage of the County, a stratified random design by subwatershed group and stream order was used to select approximately 50 sites in each of year of the monitoring program. Benthic sampling and physical habitat assessment was conducted during the Spring Index Period (March 1-30), and fish sampling was completed during the Summer (June). All sampling was conducted in accordance with the Standard Operating Procedures contained within the Prince George's County Biological Monitoring Assessment Program Plan. Fish sampling was not conducted on first order streams, as the Maryland Biological Stream Survey (MBSS) fish IBI is not calculated on small streams. Duplicate macroinvertebrate samples were taken at 10% of the sites (5 in 2003) as per the data quality objectives listed in the QAPP. Cross-sectional measurements and Wolman Pebble Counts were also completed at each site to give a better understanding of the geomorphological characteristics of the stream.

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Fish were sampled at 24 second and third order streams sites using backpack electrofishing units as outlined by MBSS. At each site, fish were collected from a block-netted 75-meter reach, identified in the field (noting physical anomalies on gamefish), weighed in bulk, and released. Selected specimens were preserved in 10% formalin as vouchers and identified in the lab. All fish sampling occurred under Maryland Department of Natural Resources (MDNR) Permit No. SCP-200326.

Ten parameters describing physical habitat (i.e., instream and planform morphology, riparian zone condition, and stream bank condition) were visually assessed in 100-meter reaches, as outlined in PG DER (2000), Stribling et al. (1996) and Barbour et al. (1999) (Table 3). These parameters were summed for a total score and ranked as optimal, suboptimal, marginal, or poor based on a 20 point scale, with 20 being the best.

PURPOSE

Prince George's County Department of Environmental Resources (PG DER) implemented a rotating basin monitoring program to investigate the ecological condition of the streams in

Prince George's County, Maryland. During this study all planned stream locations, sites were sampled for benthic macroinvertebrates, physical habitat quality, and selected insitu water chemistry parameters. Sites were assessed using the biological indicators from the Maryland Department of Natural Resource's (DNR) Maryland Biological Stream Survey (MBSS) protocol. Prince George's County's 41 watersheds were aggregated into 28 watershed groups for assessment purposes. As of 2003 of the 28 watershed groups, 9 were rated as being in very poor condition, 15 were poor, 4 were fair, and no watershed groups were rated in good condition. There are a wide range of potential stressors affecting the quality of the streams in Prince George's County. There is some farming in the southern portions of the County, intensively urbanized areas inside of the Capitol Beltway, urbanization around the cities of Laurel and Bowie, and large areas of historical (and current) mining.

TIME PERIOD OF CONTENT

TIME PERIOD INFORMATION

SINGLE DATE/TIME

CALENDAR DATE 19940623-Present

CURRENTNESS REFERENCE

Ground condition

STATUS

PROGRESS Complete

MAINTENANCE AND UPDATE FREQUENCY None Planned

SPATIAL DOMAIN

BOUNDING COORDINATES

WEST BOUNDING COORDINATE -77.06314

EAST BOUNDING COORDINATE -76.681472

NORTH BOUNDING COORDINATE 39.109722

SOUTH BOUNDING COORDINATE 38.552405

KEYWORDS

THEME

THEME KEYWORD THESAURUS None

THEME KEYWORD WADEABLE STREAMS

THEME KEYWORD Habitat

THEME KEYWORD Watersheds

THEME KEYWORD Streams

THEME KEYWORD BENTHOS

THEME KEYWORD WATER QUALITY

THEME

THEME KEYWORD THESAURUS ISO 19115 Topic Category

THEME KEYWORD biota

THEME KEYWORD environment

THEME

THEME KEYWORD THESAURUS EPA GIS Keyword Thesaurus

THEME KEYWORD Biology

THEME KEYWORD Ecology

THEME KEYWORD Ecosystem

THEME KEYWORD Environment

THEME KEYWORD Indicator

THEME KEYWORD Marine

THEME KEYWORD Monitoring

THEME KEYWORD Quality
THEME KEYWORD Surface Water
THEME KEYWORD Water

THEME

THEME KEYWORD THESAURUS User
THEME KEYWORD Benthos
THEME KEYWORD Macro Invertebrates
THEME KEYWORD Water Quality

PLACE

PLACE KEYWORD THESAURUS None
PLACE KEYWORD Maryland
PLACE KEYWORD Prince George's County

ACCESS CONSTRAINTS

None

USE CONSTRAINTS

Use at your own risk

POINT OF CONTACT

CONTACT INFORMATION

CONTACT PERSON PRIMARY

CONTACT PERSON Deborah Weller

CONTACT ORGANIZATION Dept. of Environmental Services-Water Quality and Compliance Team

CONTACT POSITION Senior Environmental Planner

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CONTACT INSTRUCTIONS

Not Available

SECURITY INFORMATION

SECURITY CLASSIFICATION SYSTEM FIPS Pub 199

SECURITY CLASSIFICATION No Confidentiality

SECURITY HANDLING DESCRIPTION Standard Technical Controls

Hide Identification ▲

Data Quality ►

LOGICAL CONSISTENCY REPORT

Not applicable-Data voluntarily reported

COMPLETENESS REPORT

Unknown

POSITIONAL ACCURACY

HORIZONTAL POSITIONAL ACCURACY

HORIZONTAL POSITIONAL ACCURACY REPORT

Data were collected using methods that are accurate to within 26-100 meters (EPA National Geospatial Data Policy [NGDP] Accuracy Tier 4). For more information, please see EPA's NGDP at <http://epa.gov/geospatial/policies.html>

LINEAGE

PROCESS STEP

PROCESS DESCRIPTION

Metadata imported.

PROCESS DATE 2010-03-30

PROCESS STEP

PROCESS DESCRIPTION

Data was loaded into the CBPO Non-Tidal Benthic Data base.

PROCESS DATE 2010-03-30

Hide Data Quality ▲

Spatial Reference ►

HORIZONTAL COORDINATE SYSTEM DEFINITION

GEOGRAPHIC

LATITUDE RESOLUTION 0.000001

LONGITUDE RESOLUTION 0.000001

GEOGRAPHIC COORDINATE UNITS Decimal degrees

GEODETTIC MODEL

HORIZONTAL DATUM NAME North American Datum of 1983

ELLIPSOID NAME Geodetic Reference System 1980

SEMI-MAJOR AXIS 6378137.000000

DENOMINATOR OF FLATTENING RATIO 298.257222

Hide Spatial Reference ▲

Distribution Information ►

DISTRIBUTOR

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 unavailavle

RESOURCE DESCRIPTION Downloadable Data

DISTRIBUTION LIABILITY

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Metadata Reference ►

METADATA DATE 2013-04-24

METADATA FUTURE REVIEW DATE 2017-04-24

METADATA CONTACT

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<http://www.chesapeakebay.net>

METADATA STANDARD NAME NBII Content Standard for National Biological Information Infrastructure Metadata

METADATA STANDARD VERSION FGDC-STD-001-1998

METADATA SECURITY INFORMATION

METADATA SECURITY CLASSIFICATION SYSTEM None

METADATA SECURITY CLASSIFICATION Unclassified

METADATA SECURITY HANDLING DESCRIPTION

None

Hide Metadata Reference ▲