

Data Documentation

Dataset Information

Dataset Title:

NCCOS Assessment: Coastal Ecosystem Assessment of Chesapeake Bay Watersheds, Land Use Patterns and River Conditions from 2007-04-30 to 2012-09-27

Description:

This data collection comprises six years of estuarine monitoring for an assessment of coastal ecosystem health in relationship to watershed characteristics, principally land use. This investigation began in 2007 with three mesohaline (moderate salinity) rivers in the upper Chesapeake Bay, each dominated by a unique land use pattern. The Corsica, Magothy, and Rhode rivers were chosen to represent systems dominated by agricultural, residential, and mixed-use lands, respectively. Assessment of these three rivers continued annually through 2011. From 2010 to 2012, three additional oligohaline (low salinity) rivers were studied. These three--the Sassafras, Middle, and Nanjemoy Rivers--demonstrated the health effects of predominantly agricultural, urban, and forested lands, respectively. The health of each riverine ecosystem was assessed using a suite of observations focused on water quality and aquatic organism health. Standard water quality metrics such as dissolved nutrient concentrations, water clarity, and indicator bacteria loads were measured. Organismal health measurements included metrics of blue crab health, fish abundance, dominant fish species, fish parasites, fish disease, and the abundance of submerged aquatic vegetation (SAV). A complete description of the project can be found Leight et al. (2015).

Purpose:

In coastal and estuarine regions, land use can have a profound impact on aquatic ecosystem health. In the Chesapeake Bay watershed, agriculture and urbanization have transformed major portions of the landscape, though a significant area remains relatively untouched. This data was used to assess the health of six Bay tributaries with different land use profiles via a suite of water quality and biological condition variables. Linkages were explored between these scored variables and land use in the various watersheds.

Methods:

Samples were collected from small research vessels (and beaches in the case of seine samples) from 2007 to 2012. A variety of gear was employed including datasondes for water physicochemical characteristics, trawls and seines for fish collection, baited lines for crab collection, and a Young grab for bottom sampler. Analytical procedures, e.g. for water nutrients, followed published protocols as appropriate. For a complete description of the methods see Messick et al. (2013).

People & Projects

Dataset Authors:

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- Jim Uphoff, Maryland Department of Natural Resources

Funding:

- US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS) (ROR- <https://ror.org/05ba43f71>)

Extents

Start Date: 2007-04-30

End Date: 2012-09-27

Northern Boundary: 39.5460

Southern Boundary: 38.2557

Western Boundary: -77.3248

Eastern Boundary: -75.6851

Citations

Cited Publications:

- Leight, A.K., R. Trippe III, L. Gonsalves, J. Jacobs, S. McLaughlin, and G. Messick. 2015. Coastal Ecosystem Assessment of Chesapeake Bay Watersheds: Land Use Patterns and River Conditions. NOAA Technical Memorandum NOS NCCOS 207. Oxford, MD. <http://doi.org/10.7289/V5/TM-NOS-NCCOS-207>
- Messick, G.A., J.M. Jacobs, J.R. Brush, S.M. McLaughlin, A.K. Leight, M.R Rhodes, D.H. Howard, L. Gonsalves, and E.J Lewis. 2013. National Centers for Coastal Ocean Science Coastal Ecosystem Assessment Program: a manual of methods. NOAA Technical Memorandum NOS NCCOS 169. Oxford, MD, 123pp. <https://repository.library.noaa.gov/view/noaa/2710>
- Leight, A. K., et al. (2011). An assessment of benthic condition in several small watersheds of the Chesapeake Bay, USA. Environmental Monitoring and Assessment 176(1-4): 483-500. <http://dx.doi.org/10.1007/s10661-010-1599-9>
- Leight, A.K.; J. Jacobs; L. Gonsalves; G. Messick; S. McLaughlin; J. Lewis; J. Brush; E. Daniels; M. Rhodes; L. Collier; B. Wood. 2014. Coastal Ecosystem Assessment of Chesapeake Bay Watersheds: A Story of Three Rivers – the Corsica, Magothy, and Rhode. NOAA Technical Memorandum NOS NCCOS 189. <https://repository.library.noaa.gov/view/noaa/2722>

Data Sources:

- GIS shapefile (CBseg2003_st_shp) used for river attributes: The Chesapeake Bay Program GIS Data HUB (<http://www.chesapeakebay.net/data>)

Associated Online Resources:

- NCCOS Project Webpage; Land Use and Ecosystem Health: Decision-making Tools for Coastal Planning in the Chesapeake Bay Watershed. <https://coastalscience.noaa.gov/project/ecosystem-tools-coastal-planning-chesapeake-bay/>
- Associated Submerged Aquatic Vegetation (SAV) data tables. Virginia Institute of Marine Science. <https://www.vims.edu/research/units/programs/sav/access/tables/>

Keywords

Sea Areas, Water Bodies, Marine Protected Areas:

- Chesapeake Bay
- Corsica River
- Magothy River
- Rhode River
- Sassafras River
- Middle River
- Nanjemoy River

Discovery Theme Keywords

- Environment
- InlandWaters
- Biota
- Coastal Ecosystem Assessment

- Watersheds
- Integrated Assessment
- Chesapeake Bay
- Land Use

NCCOS Keywords:

- NCCOS Research Priority > Marine Spatial Ecology (MSE)
- NCCOS Research Priority > Stressors, Impacts, Mitigation
- NCCOS Research Topic > Chemical Contaminants
- NCCOS Research Topic > Ecological/Biological Characterization
- NCCOS Research Location > Region > East Coast
- NCCOS Research Location > U.S. States and Territories > Maryland
- NCCOS Research Geographic Area > Estuaries
- NCCOS Research Data Type > Field Observation

File Information

Total File Size: 25.1 MB total, 14 files in 1 folder (unzipped)

Data File Format(s):

- Standard spreadsheet formats:
 - Comma-separated value (.CSV)

Data File Compression: n/a

Data File Resolution: n/a

GIS Projection: n/a

Data Files:

- COL_EA_Benthic_Community.csv
- COL_EA_Benthic_Sediment.csv
- COL_EA_Blue_Crabs.csv
- COL_EA_Fish_Seine.csv
- COL_EA_Fish_Trawl.csv
- COL_EA_River_Sections.csv
- COL_EA_White_Perch_MacAggs.csv
- COL_EA_White_Perch_Pathology.csv
- COL_EA_WQ_Indicator_Bacteria.csv
- COL_EA_WQ_Nutrient.csv
- COL_EA_WQ_Physico.csv
- COL_EA_WQ_Pigment.csv
- COL_EA_WQ_Station.csv

Documentation Files:

- BrowseGraphic.jpg
- DataDocumentation.PDF

Data Documentation

NCCOS Chesapeake Bay Ecosystem Assessment: Watersheds, Land Use Patterns and River Conditions

Tables: Data Dictionaries

Data Dictionary - COL_EA_Benthic_Community		
Variable Name	Variable Label	Description
WQ_Station	WQ_Station	Name of station where benthic community samples were collected
River	River	Name of river where collected
Date	Date	Date of collection
Taxon	Taxon	Genus and species name of organism
TSN	TSN	Taxonomic Serial Number as assigned by the Integrated Taxonomic Information System at https://www.itis.gov/ A blank in this column indicates that either no organisms were present in the sample or that the organisms are from multiple species within the Genus Tanytarsus.
Count	Count	Number of these species/TSN observed in this sample
Dry_weight	Dry_weight	Weight in grams of dried organisms after heating in 100 degree Celsius oven A blank in this column indicates that either the sample contained no organisms or that the organism identified is a midge (Class Insecta). The percent of midges are included in the calculation of the benthic index of biotic integrity, but their biomass is not included.
Ash_weight	Ash_weight	Weight in grams of ash-dried organisms after heating in 500 degree Celsius oven A blank in this column indicates that either the sample contained no organisms or that the organism identified is a midge (Class Insecta). The percent of midges are included in the calculation of the benthic index of biotic integrity, but their biomass is not included.

Data Dictionary - COL_EA_Benthic_Sediment		
Variable Name	Variable Label	Description
WQ_Station	WQ_Station	Name of station where sediment samples were collected
River	River	Name of river where collected
Date	Date	Date of collection
Gravel	Gravel	Percent of sediment \geq 2000 micrometer
Sand	Sand	Percent of sediment \geq 63 micrometer and $<$ 2000 micrometer in size
SiltClay	SiltClay	Percent of sediment $<$ 63 micrometer
VeryFineSand	VeryFineSand	Percent of sediment \geq 63 micrometer and $<$ 125 micrometer
FineSand	FineSand	Percent of sediment \geq 125 micrometer and $<$ 250 micrometer
MediumSand	MediumSand	Percent of sediment \geq 250 micrometer and $<$ 500 micrometer

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CoarseSand	CoarseSand	Percent of sediment \geq 500 micrometer and $<$ 850 micrometer
VeryCoarseSand	VeryCoarseSand	Percent of sediment \geq 850 micrometer and $<$ 2000 micrometer in size
Granule	Granule	Percent of sediment \geq 2000 micrometer and $<$ 4000 micrometer in size

Data Dictionary - COL_EA Blue Crabs				
Variable Name	Variable Label	Required	Format	Description
River	River	yes	Char (9)	Name of river where collected
River_Section	River Section	yes	Char (1)	General section of river where crabs were collected. "Upper", "Middle" and "Lower". Segmentation lines between these river sections are detailed in the file COL_EA River Sections
Date	Date	yes	Date (mm/dd/yy)	Date of collection
Crab Number	Crab Number	Yes	Num (1)	Crab identifier within sample
Carapace Width	Carap_Width	yes	Num (3)	Width in millimeters of crab carapace from point-to-point
Sex	Sex	yes	Char (1)	Sex of crab - M = male, F = female, blank = not recorded
Maturity	Maturity	No	Char (1)	Sexual maturity of crab. M = mature, J = juvenile. Mature females have fully developed apron. Mature males estimated as being any male crab over 90mm in carapace length (tip-to-tip).
Gear	Gear	yes	Char (9)	Sampling gear used to collect crab
Molt	Molt	yes	Char (9)	Molting state of crab
Parasites	Parasites	Yes	Num (1)	Presence/absence of parasites
Host Response	Host_Response	yes	Num (1)	Degree of host response. 0 (no response) to 4 (severe response)
Shell Disease	Shell_Disease	yes	Num (1)	Degree of shell disease. 0=no sign of disease (no permanent discoloration); 1=rust spot; 2=darker rust spot or deep, isolated lesion; 3=discolored area; 4=larger discolored area; 5=extensive discoloration (serious necrosis)
Gill Epibiotic Detritus	Gill_Epib_Detritus	yes	Num (1)	Presence/absence of detritus among gill filaments. 0=absent, 1=present
Lactate	Lactate	No	Num (5.1)	Concentration of lactose in hemolymph in micrograms per milliliter of hemolymph. Lactate was only calculated for samples collected in years 2010-2012. Blank cells for the years 2010-2012 indicate that insufficient hemolymph was

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Data Dictionary - COL EA Blue Crabs				
Variable Name	Variable Label	Required	Format	Description
				collected to calculate lactate.
Glucose	Glucose	No	Num (4.6)	Concentration of glucose in hemolymph in micrograms per milliliter of hemolymph. Glucose was only calculated for samples collected in years 2009-2012. Blank cells for the years 2009-2012 indicate that insufficient hemolymph was collected to calculate glucose.
Notes	Notes	No	Char (100)	Other observations about collection site or crab

Data Dictionary - COL EA Fish Seine		
Variable Name	Variable Label	Description
Seine_Station	Seine_Station	Location where fish were collected
River	River	Name of river where collected
Date	Date	Date that the sample was collected
Common Name	Common Name	Common name of fish species
TSN	TSN	Taxonomic Serial Number as assigned by the Integrated Taxonomic Information System at https://www.itis.gov/
Count	Count	Number of fish of this species/TSN caught in this particular seine
Latitude	Latitude	Latitude of Seine_Station in decimal degrees, using WGS1984 projection
Longitude	Longitude	Longitude of Seine_Station in decimal degrees, using WGS1984 projection

Data Dictionary - COL EA Fish Trawl		
Variable Name	Variable Label	Description
Trawl_Station	Trawl_Station	Location where fish were collected
River	River	Name of river where collected

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Date	Date	Date that the sample was collected
Common Name	Common Name	Common name of fish species
TSN	TSN	Taxonomic Serial Number as assigned by the Integrated Taxonomic Information System at https://www.itis.gov/
Count	Count	Number of fish of this species/TSN caught in this particular trawl
Latitude	Latitude	Latitude of starting point for trawl in decimal degrees, using WGS1984 projection
Longitude	Longitude	Longitude of starting point for trawl in decimal degrees, using WGS1984 projection

Data Dictionary - COL_EA_River_Section		
Variable Name	Variable Label	Description
River	River	Name of river
Segmentation	Segmentation	The two reaches of the river that are segmented by a straight line drawn between the two sets of coordinates provided
Latitude1	Latitude1	Latitude of point that defines one end of demarcation line segment between the two river reaches named in Segmentation column. Latitude value is in decimal degrees, using the WGS1984 projection
Longitude1	Longitude1	Longitude of point that defines one end of demarcation line segment between the two river reaches named in Segmentation column. Longitude value is in decimal degrees, using the WGS1984 projection
Latitude2	Latitude2	Latitude of point that defines one end of demarcation line segment between the two river reaches named in Segmentation column. Latitude value is in decimal degrees, using the WGS1984 projection
Longitude2	Longitude2	Longitude of point that defines one end of demarcation line segment between the two river reaches named in Segmentation column. Longitude value is in decimal degrees, using the WGS1984 projection

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Data Dictionary - COL_EA_White_Perch_MacAggs		
Variable Name	Variable Label	Description
River	River	Name of river where fish was collected
River_Section	River_Section	General section of river where fish was collected. "Upper", "Middle" and "Lower". Segmentation lines between these river sections are detailed in the file COL_EA_River_Sections
Date	Date	Date fish was collected
Fish_Code	Fish_Code	Unique ID for each white perch examined
Image_Code	Image_Code	Unique ID for the microscopy image used to determine macrophage aggregate density
MacAgg_Code	MacAgg_Code	Unique ID for the macrophage aggregate for which area (MacAggArea) is being estimated
MacAggArea	MacAggArea	Area of macrophage aggregate in square microns. Estimated by visual observation of microscopic slides and calculations performed by ImageJ software.
MacAgg Analysis Method	MacAgg Analysis Method	Method for staining and counting. OM = Mayer's hematoxylin-eosin-phloxine (MHE) stain and gross observation of macrophage aggregates. NM = Perl's Prussian Blue (PPB) stain and computer assisted identification of macrophage aggregates.

Data Dictionary - COL_EA_White_Perch_Pathology		
Note: This data file contains blank cells as submitted by the Principal Investigator. The Principal Investigator has retired from NOAA and the file has not been modified from its original version.		
Variable Name	Variable Label	Description
River	River	Name of river where fish was collected
River_Section	River_Section	General section of river where fish was collected. "Upper", "Middle" and "Lower". Segmentation lines between these river sections are detailed in the file COL_EA_River_Sections
Date	Date	Date fish was collected
Fish_Code	Fish_Code	Unique ID for each white perch examined
Weight	Weight	Weight of white perch in grams
Length	Length	Length of white perch from in millimeters
Sex	Sex	Gender of the fish, "M" = male, "F" = female. Based on gross observation of gonads during dissection
TRskn	TRskn	Score for the amount of Trichodinia parasites found on the skin, 0 (none) to 5 (heavy infestation). Determined using skin scrapes (wet mounts) and histology.

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SPskn	SPskn	Score for the amount of sessile peritrichs on skin, 0 (none) to 5 (heavy infestation). Determined using skin scrapes (wet mounts) and histology.
Cskn	Cskn	Score for the amount of Ichthyobodo parasites on skin, 0 (none) to 5 (heavy infestation). Determined using skin scrapes (wet mounts) and histology.
Trgill	Trgill	Score for the amount of Trichodinia parasites found on the gill, 0 (none) to 5 (heavy infestation). Determined histologically.
Spgill	Spgill	Score for amount of sessile peritrichs on gills, 0 (none) to 5 (heavy infestation). Determined histologically.
Cgill	Cgill	Score for the amount of Ichthyobodo parasites on gills, 0 (none) to 5 (heavy infestation). Determined histologically.
diggill	diggill	Number of digenetic trematode metacercariae in gills. Determined histologically.
dactgill	dactgill	Number of Dactyloirus parasites on gills. Determined histologically.
lpocks	lpocks	Number of gill pockets formed by fusion of lamellar tips. Determined histologically.
cope	cope	Number of copepods on gills. Determined by gross observation.
isopod	isopod	Number of isopods on gills. Determined by gross observation.
acanth	acanth	Number of Acanthocephalan parasites in the gastrointestinal tract. Determined by gross observation.
sp_wt	sp_wt	Weight of the spleen in grams. Determined on analytical balance.
mycelg	mycelg	Number of mycobacteria per gram of spleen. Determined by histology and calculation.
Sclass	Sclass	Code indicating the types of abnormalities found in the spleen. "P"=parasite, "M"=mycobacteria, "U"=unknown, "N"=normal (no abnormalities), "X"=organ not present. More than one abnormality may be present. For example, "PM" indicates that there were both parasites and mycobacteria present. Determined by histology.
Ssev	Ssev	Score indicating the severity of splenic inflammation. Ranges from 0 as no inflammation to 3 as severe inflammation. Determined by histology. Blank cells indicate that the spleen was not collected (i.e. Sclass = "X").
HKClass	HKClass	Code indicating the types of abnormalities found in the head kidney. "P"=parasite, "M"=mycobacteria, "U"=unknown, "N"=normal (no abnormalities), "X"=no tissue. More than one abnormality may be present. For example, "PM" indicates that there were both parasites and mycobacteria present. Determined by histology.
Hksev	Hksev	Score indicating the severity of head kidney inflammation. Ranges from 0 as no inflammation to 3 as severe inflammation. Determined by histology. Blank cells indicate that the head kidney was not collected (i.e. HKClass = "X").
Lclass	Lclass	Code indicating the types of abnormalities found in the liver. "P"=parasite, "M"=mycobacteria, "U"=unknown, "N"=normal (no abnormalities), "X"=organ not present. Determined by histology.
Lsev	Lsev	Score indicating the severity of liver inflammation. Ranges from 0 (no inflammation) to 3 (severe inflammation). Determined by histology. Blank cells indicate that the liver was not collected (i.e. Lclass = "X").
Lglyc	Lglyc	Score indicating the number of glycogen vacuoles found in the liver. Ranges from 0 as no vacuoles to 3 for many vacuoles. Blank cells indicate that the liver tissue was not collected (i.e. Lclass = "X").

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AFBPOS	AFBPOS	Acid-fast bacteria positive stain results for spleen, liver and head kidney. "Yes" = acid-fast bacteria observed in any of these three tissues. "No" = acid-fast bacteria not observed in any of the three tissues. Determined histologically. Blank cells indicate that either no tissues were collected (i.e. Sclass, HKClass, and Lclass are all "X") or that the metric was not calculated.
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Data Dictionary - COL_EA_WQ_Indicator_Bacteria		
Variable Name	Variable Label	Description
WQ_Station	WQ_station	Name of station where water quality measurements and samples were collected
River	River	Name of river
Date	Date	Date that the sample was collected
Enterococcus	Enterococcus	Density of <i>Enterococcus</i> bacteria, in Colony Forming Units per 100 milliliters (cfu/100mL).

Data Dictionary - COL_EA_WQ_Nutrients		
Note: This data file contains blank cells as submitted by the Principal Investigator. The Principal Investigator has retired from NOAA and the file has not been modified from its original version.		
Variable Name	Variable Label	Description
WQ_Station	WQ_station	Name of station where water quality measurements and samples were collected
River	River	Name of river where collected
Date	Date	Date of sample collection
NH4	NH4	Concentration of ammonium in micromolar
NO23	NO23	Concentration of nitrate and nitrite combined in micromolar
PO4	PO4	Concentration of phosphate in micromolar
TDN	TDN	Concentration of total dissolved nitrogen in micromolar
Silicate	Silicate	Concentration of silicate in micromolar
TDP	TDP	Concentration of total dissolved phosphorus in micromolar
DOC	DOC	Concentration of dissolved organic carbon in milligrams per liter
TPP	TPP	Concentration of total particulate phosphorus in micromolar
TSS	TSS	Concentration of total suspended solids in milligrams per liter

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PC	PC	Concentration of particulate carbon in milligrams per liter
PN	PN	Concentration of particulate nitrogen in milligrams per liter

Data Dictionary - COL_EA_WQ_Physico Note: This data file contains blank cells and periods (.) as submitted by the Principal Investigator. The Principal Investigator has retired from NOAA and the file has not been modified from its original version.		
Variable Name	Variable Label	Description
WQ_Station	WQ_station	Name of station where water quality measurements and samples were collected
River	River	Name of river where collected
Date	Year	Year that the WQ_Station was at the designated latitude and longitude
Recorded_Time	Recorded_Time	Time that the sample was collected. All times are Eastern Time Zone.
Tide_State	Tide_State	The relative state of the tide; ebb, low, flood, high. Blanks indicate that this variable was not recorded on the datasheet.
Cloud_Cover	Cloud_Cover	A visual estimate of the percent of cloud cover, ranges from 0 to 100%. Blanks indicate that this variable was not recorded on the datasheet.
Weather_Today	Weather_Today	Code for current observed weather conditions; 10=no precipitation, 11=drizzle, 12=rain, 13=heavy rain, 14=squalls (fast moving storms). Blanks indicate that this variable was not recorded on the datasheet.
Weather_Yesterday	Weather_Yesterday	Code for yesterday's weather conditions; 10=no precipitation, 11=drizzle, 12=rain, 13=heavy rain, 14=squalls (fast moving storms). Blanks indicate that this variable was not recorded on the datasheet.
Wind_Max	Wind_Max	Estimated, highest observed wind velocity in knots. Blanks indicate that this variable was not recorded on the datasheet.
Wind_Min	Wind_Min	Estimated, lowest observed wind velocity in knots. Blanks indicate that this variable was not recorded on the datasheet.
Total_Depth	Total_Depth	Depth of water column in meters at time of sampling, based on depth reading from datasonde when it touches the river bottom
Secchi_Depth	Secchi_Depth	Depth of Secchi Disk in meters when disk becomes obscured by water cloudiness
Sample_Depth	Sample_Depth	Depth of datasonde in meters when measuring water conditions
Specific_Conductance	Specific_Conductance	Conductivity of water in milliSiemens per centimeter, adjusted for size of cell and for temperature. Measured by datasonde
Water_Temp	Water_Temp	Water temperature in degrees Celsius as measured by datasonde
pH	pH	pH of water. Blanks indicate that this variable was not recorded on the datasheet.

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Salinity	Salinity	Salinity of water in parts per thousand as estimated by datasonde
Turbidity	Turbidity	Turbidity of water in nephelometric turbidity units (NTU) as measured by datasonde. Blanks indicate that this variable was not recorded on the datasheet.
DO_conc	DO_conc	Dissolved oxygen as percent of saturation, as measured by datasonde
DO_pct	DO_pct	Dissolved oxygen in milligrams of oxygen per liter of water, as measured by datasonde

Data Dictionary - COL_EA_WQ_Pigment		
Variable Name	Variable Label	Description
WQ_Station	WQ_station	Name of station where water quality measurements and samples were collected
River	River	Name of river where collected
Date	Date	Date of water sample collection
Depth	Depth	General sample collection depth as "Surface" or "Bottom"
Total_Ch1_a	Total_Ch1_a	Concentration of total chlorophyll A pigment in micrograms per milliliter of water. Measured using High Performance Liquid Chromatography.
Chlide_a	Chlide_a	Concentration of chloride A pigment in micrograms per milliliter of water. Measured using High Performance Liquid Chromatography.

Data Dictionary - COL_EA_WQ_Station		
Variable Name	Variable Label	Description
WQ_Station	WQ_station	Name of station where water quality and benthic samples were collected
River	River	Name of river
Year	Year	Year that the sampling location occurred
Latitude	Latitude	Latitude of WQ_Station in decimal degrees, in WGS1984 projection
Longitude	Longitude	Longitude of WQ_Station in decimal degrees, in WGS1984 projection

Data Types (Parameter Information)

List of major parameters included in this accession:

Parameters: Number of organisms in sediment samples

Property Type: measured

Units: Integer number (count)

Observation Category: laboratory analysis

Sampling Instrument: Van Veen bottom grab

Sampling and Analyzing Method:

Sediment samples were collected using a Van Veen bottom grab, placed in a clean container, and preserved using formalin and rose bengal. In the lab, preserved organisms were identified and counted using dissecting microscopes.

Full methods are described in Messick et al. 2013.

Data Quality Method:

See Messick et al. 2013

Parameters: Percent grain size classes for sediment samples

Property Type: measured

Units: percent

Observation Category: laboratory analysis

Sampling Instrument: Van Veen bottom grab

Sampling and Analyzing Method:

Samples were collected using a Van Veen bottom grab and stored in a clean container. In the lab, sediment samples were fractionated by size using a standard series of sieves. The weight of each fraction was then used to calculate the percent of sediment falling within the Wentworth sediment size classes.

Full methods are described in Messick et al. 2013.

Data Quality Method:

See Messick et al. 2013

Parameters: Blue Crab Disease Assessment

Property Type: calculated

Units: Ranking for disease intensity based on scale of 1 to 3

Observation Category: in situ, laboratory analysis

Sampling Instrument: various collection gear

Sampling and Analyzing Method:

Blue crabs were collected using various collection gear. Gross observations included weight, sex, sexual maturity, molt stage, and shell disease. Tissue samples were collected preserved in fixative of 1 part glutaraldehyde to 4 parts formalin, and analyzed in the laboratory for gill ciliates, gill detritus, host response and parasites.

Full methods are described in Messick et al. 2013.

Data Quality Method:

See Messick et al. 2013

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Parameters: Fish community abundance data from trawl surveys
Property Type: measured
Units: integer (count)
Observation Category: in situ
Sampling Instrument: Beach seine
Sampling and Analyzing Method:
Fish were collected using a 100' long by 6' high beach seine with 1/8in mesh. Fish were identified and counted in the field and then released, except for those white perch retained for fish health assessment.
Full methods are described in Messick et al. 2013.
Data Quality Method:
See Messick et al. 2013

Parameters: Fish community abundance data from trawl surveys
Property Type: measured
Units: integer (count)
Observation Category: in situ
Sampling Instrument: Otter trawl
Sampling and Analyzing Method:
Fish were collected using a 16' otter trawl, towed behind a small research vessel for no six minutes at 2 knots. Fish were identified and counted in the field and then released, except for those white perch that were retained for fish health assessment.
Full methods are described in Messick et al. 2013.
Data Quality Method:
See Messick et al. 2013

Parameters: Demarcation lines that define the river sections
Property Type: calculated
Units: Decimal degrees
Observation Category: other - GIS Analysis
Sampling Instrument: GIS software
Sampling and Analyzing Method:
Rivers were broken into sections (upper, middle, and lower) based loosely on river miles. GIS software was used to estimate river miles, draw segmentation lines, and calculate latitude and longitude locations for points that define the ends of the line segments.
The GIS shapefile (CBseg2003_st_shp) used for river attributes was collected from the Chesapeake Bay Program GIS Data HUB (<http://www.chesapeakebay.net/data>)
Data Quality Method:
See Messick et al. 2013

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Parameters: Area of macrophage aggregates in the white perch spleens
Property Type: measured
Units: Square microns
Observation Category: laboratory analysis
Sampling Instrument: microscope
Sampling and Analyzing Method:
White perch spleens were removed by dissection and preserved. They were sectioned and stained histologically. They were examined microscopically and the area of macrophage aggregates was calculated.
Full methods are described in Messick et al. 2013.
Data Quality Method:
See Messick et al. 2013

Parameters: White perch health indicators
Property Type: measured
Units: various
Observation Category: in situ
Sampling Instrument: trawl and seine
Sampling and Analyzing Method:
White perch from trawls and seines were examined for a number of different health condition.
Full methods are described in Messick et al. 2013.
Data Quality Method:
See Messick et al. 2013

Parameters: Indicator bacteria concentrations in water samples
Property Type: measured
Units: Colony forming units per 100 milliliters of sample
Observation Category: in situ
Sampling Instrument: membrane filtration
Sampling and Analyzing Method:
Bacteria of the genus Enterococcus were measured from surface water samples using membrane filtration.
Full methods are described in Messick et al. 2013.
Data Quality Method:
See Messick et al. 2013

Parameters: Nutrient concentrations measured in water samples
Property Type: measured
Units: Micromolar and milligrams per liter
Observation Category: in situ
Sampling Instrument: water grab sample
Sampling and Analyzing Method:
Nutrient concentrations measured from grab samples of water.
Full methods are described in Messick et al. 2013.
Data Quality Method: See Messick et al. 2013

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Parameters: Water physicochemical parameters
Property Type: measured
Units: various
Observation Category: in situ
Sampling Instrument: YSI 6600 datasonde
Sampling and Analyzing Method:
Water physicochemical characteristics was measured using a YSI 6600 datasonde.
Full methods are described in Messick et al. 2013.
Data Quality Method:
See Messick et al. 2013

Parameters: Chlorophyll A concentration in water samples
Property Type: measured
Units: Milligrams per liter
Observation Category: in situ
Sampling Instrument: High Performance Liquid Chromatography
Sampling and Analyzing Method:
Chlorophyll a was measured from surface water samples.
Full methods are described in Messick et al. 2013.
Data Quality Method:
See Messick et al. 2013

Parameter Description:

Parameters: Locations of sampling sites
Property Type: measured
Units: Decimal Degrees
Observation Category: in situ, laboratory analysis
Sampling Instrument: GPS
Sampling and Analyzing Method:
Sampling site locations were selected using the Random Point tool in ArcMap (ESRI, v8.2).
Full methods are described in Messick et al. 2013.
Data Quality Method:
See Messick et al. 2013

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