

Maryland Chesapeake Bay Water Quality Monitoring Program: Benthic Component

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 - [Spatial Reference Information](#)
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Identification_Information:

Citation:

Citation_Information:

Originator: Roberto Llanso-Current PI

Originator: Ananda Ranasinghe-Previous PI

Originator: Steve Weisberg-Previous PI

Originator: Fredrick Hollings-Previous PI

Originator: Versar Incorporate

Publication_Date: 06/01/2008

Title:

Maryland Chesapeake Bay Water Quality Monitoring Program: Benthic Component

Edition: Unknown

Geospatial_Data_Presentation_Form: database

Publication_Information:

Publication_Place: Annapolis, MD

Publisher: US EPA Chesapeake Bay Program

Other_Citation_Details:

None

Online_Linkage: www.chesapeakebay.net

Online_Linkage: <http://www.esm.versar.com/Vcb/Benthos/CBBENhome.htm>

Description:

Abstract:

The state of Maryland, in cooperation with the US EPA Chesapeake Bay Program, has monitored benthic species abundance in the Maryland Chesapeake Bay mainstem and tributaries since July 1984. This monitoring effort began as an extension of the ongoing Power Plant monitoring studies in the state. The current program is designed to give comprehensive geographic and seasonal information on benthic conditions in the bay. The sampling parameters include water quality measurements, benthic fauna identification and counts, benthic fauna biomass determination, and sediment analysis. Sample collection is performed independently from the Maryland plankton and water quality monitoring programs.

Purpose:

The intended function of this study is to detect, monitor and assess long term responses of benthic communities to changes in water quality resulting from Bay-wide cleanup efforts, and to assess the long and short term responses of the benthos to power plant operations.

Supplemental_Information:

Please be aware that the sampling design of this survey has changed several times to

accommodate changes in the State of Maryland's objectives for this program. In the current sampling program, two types of sites are sampled: (1) fixed sites to identify temporal trends and (2) spatially random sites are sampled to assess bay-wide benthic status. Although, the site selection criteria for random site stations has changed, the actual methods of sample collection and analysis has not changed significantly. Currently three benthic organism samples are collected at fixed sites with gear used since 1984, while a single sample is collected at each randomly selected site with a Young Grab. Please read the station names and descriptions section carefully before trying to use this data.

* The fixed site element of the program has consisted of as many as 70 fixed sites. A fixed sampling site is defined by geography (within a 1 km radius from a fixed location) and by specific habitat (depth and substrate) criteria. Samples were collected haphazardly within the 1 KM radius of a fixed location. -July 1984- June 1988. Samples were collected from seventy fixed sites, on eight to ten occasions annually. Numbers ranging from 001 to 080 identifies the fixed stations. During each sampling event three samples were taken at each site, with varying types of gear.

-July 1989-June 1994. Fixed site sampling continued at 27 sites located within the small strata random sampling areas. Each area was visited on four to six sampling cruises annually and single benthic samples were collected from the fixed sites in each small area.

-July 1994-Present. Samples were collected from 27 fixed sites. Twenty-three of these fixed sites have been sampled from beginning of program in 1984; they were among the 70 original fixed sites sampled from 1884-1989. Two of the other four were additional sites were added in 1989 and the last two were added in 1995. Three samples are collected at each site during a sampling trip.

* The Spatially Random Site or Probability-based sampling was intended to estimate the area of the Bay's Mainstem and Potomac River that met the Chesapeake Bay Program Community Restoration Goals. This sampling program had two phases the Small Area/Strata sampling phase and the Large Area/Strata sampling phase.

-July 1984-June 1988. No random sampling was conducted.

-July 1989-June 1994. A small area random strata sampling element was added around 27 existing fixed site. Additionally four new strata were added in regions where sampling was previously absent, but were targeted for resource management activity. Samples were collected at random from approximately 25 kilometer squared area surrounding fixed sites to assess the representatives-ness of the fixed locations. Stratum boundaries were determined by environmental factors, which impact benthic community compositions in the bay including salinity, sediment type, and bottom depth. Each area was visited on four to six sampling cruises annually and single benthic samples were collected from the fixed and three random sties in each small area.

-July 1994-June 1995. The habitat strata were redefined in 1994 using EMAP criteria to "piggy-back" on EMAP sampling results. Three sampling strata were defined, the mainstem (including Tangier and Pocomoke Sounds, the Potomac River and remaining tributaries). Twenty-seven samples were allocated to the Mainstem, twenty-eight to the Potomac River and eleven to the other tributaries in Maryland.

-July 1995-Present. The habitat strata were redefined again in 1995 to better suit state of Maryland information needs. Six strata were defined, the Potomac River, the Patuxnet River, the upper Maryland Bay (all Chesapeake Bay Mainstem above/north the Bay Bridge), the Lower Maryland Bay (all Chesapeake Bay Mainstem below/South of the Bay Bridge), the Eastern Tributaries (all tributaries to Chesapeake Bay on the Eastern shore), and the Western Tributaries (all tributaries to Chesapeake Bay on the Western shore, excluding the Potomac and Patuxnet Rivers). Twenty-five samples were allotted to each stratum.

>Stations, which were randomly selected from each stratum as follows:

- Random stations were selected by overlay grids on navigational charts.
- Each stratum was mapped and numbers assigned to all grid locations falling within the stratum.
- Sampling locations was chosen for each strata at random by a computer generated random number. If a selected grid could not be sampled, another grid was randomly selected until the number of samples per strata desired was reached. In 1995, selection of a random point started being done within a Geographic Information System.

*EPA-National Coast Assessment sampling was conducted during the 2005-2006 time frames. Sampling for this program used randomly selected Chesapeake Bay Program monitoring sites

Time_Period_of_Content:

Time_Period_Information:

Range_of_Dates/Times:

Beginning_Date: 07/01/1984

Ending_Date: Present

Currentness_Reference:

ground condition

Status:

Progress: Complete

Maintenance_and_Update_Frequency: Annually

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -77.2936

East_Bounding_Coordinate: -75.9222

North_Bounding_Coordinate: 39.4794

South_Bounding_Coordinate: 37.9947

Keywords:

Theme:

Theme_Keyword_Thesaurus: None

Theme_Keyword: Water

Theme_Keyword: Watersheds

Theme_Keyword: Water Quality

Theme_Keyword: Benthos

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: Chesapeake Bay

Place_Keyword: Potomac River

Place_Keyword: Choptank River

Place_Keyword: Patuxent River

Place_Keyword: Maryland

Place_Keyword: Patapsco River

Place_Keyword: Chester River

Stratum:

Stratum_Keyword_Thesaurus: None

Stratum_Keyword: Sediments

Stratum_Keyword: Botttom

Temporal:

Temporal_Keyword_Thesaurus: None

Temporal_Keyword: Monthly

Temporal_Keyword: Annually

Temporal_Keyword: Seasonally

Access_Constraints: None

Use_Constraints:

Dataset credit required

Point_of_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Jacqueline Johnson

Contact_Organization: Interstate Commission on Potomac River Basin

Contact_Position: Chesapeake Bay Program Living Resources Data Manager/ Analyst

Contact_Address:

Address_Type: mailing and physical address

Address:

US EPA Chesapeake Bay Program Office

Address:

410 Severn Avenue, Suite 109

City: Annapolis

State_or_Province: Maryland

Postal_Code: 21403

Country: USA

Contact_Voice_Telephone: 1-800-968-7229 ext. 729

Contact_Voice_Telephone: 410-267-5729

Contact_Facsimile_Telephone: 410-267-5777

Contact_Electronic_Mail_Address: jjohnson@chesapeakebay.net

Hours_of_Service: 7:30 A.M to 2:30 P.M. Monday Through Friday

Contact_Instructions:

unavailable

Data_Set_Credit:

Data Originators

Security_Information:

Security_Classification_System: None

Security_Classification: None

Security_Handling_Description: None

Native_Data_Set_Environment:

Unknown

Cross_Reference:

Citation_Information:

Originator: Jacqueline Johnson

Publication_Date: 12/31/1998

Title:

Chesapeake Bay Program Benthic Database

Edition: Version 3.0

Geospatial_Data_Presentation_Form: database

Publication_Information:

Publication_Place: Annapolis, MD

Publisher: US EPA Chesapeake Bay Program

Other_Citation_Details:

None

Online_Linkage: www.chesapeakebay.net

Cross_Reference:

Citation_Information:

Originator: Jacqueline Johnson

Publication_Date: 20000101

Publication_Time: Unknown

Title:

2000 Users' Guide to Chesapeake Bay Program Biological and Living Resources Data
Edition: Version 1
Geospatial_Data_Presentation_Form: document
Publication_Information:
Publication_Place: Annapolis, MD
Publisher: USEPA CHESAPEAKE BAY PROGRAM OFFICE
Other_Citation_Details:
 Unknown
Online_Linkage: https://archive.chesapeakebay.net/pub/living_resources/guide2000.pdf

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Data_Quality_Information:

Attribute_Accuracy:

Attribute_Accuracy_Report:

Benthic samples were collected by a staff member of VERSAR Incorporated. Water quality parameters were collected with a Hydrolab Datasonde III or Hydrolab H2O. In the field benthic samples were collected with either Hydraulic Grab, Ponar Grab or Post Hole Digger, [starting in 1989 a WildCo Box Corer was also used for sampling] followed by field sieving through a 0.5 mm sieve. Organisms and detritus retained in sieve were transferred into labeled jars and preserved in 10% buffered formalin with rose Bengal. The bottom depth at each stratum determined the type of gear used to collect benthos. A hand operated box core was used on all strata with a total depth less than three meters. At Station depths between 3 and 9 meters a hydraulic grab was used. Sampling of deeper habitats was performed with either a Ponar grab or a WildCo box corer. 20ml and 100ml sample were taken from a bottom grab and frozen for sediment chemical and grain size parameters. Upon completion of field sampling, samples were inspected for proper labeling and logged into a master control notebook. Three replicate were designated for processing and one was archived. Samples were stored on shelves in the laboratory by sample date until they were processed. Alternatively, samples were transferred to the Cove Corporation for processing. Each sample was tracked on an archive log sheet maintained in the project files. In the lab all samples were sieved through either a 0.5 mm screen using an elutriative process. Organisms were sorted from detritus under a dissecting microscope and identified to the lowest practical taxonomic level and counted. Oligochaetes and chironomids were mounted on slides and examined under a compound microscope for genus and species identification. Approximately 10 % of samples are reprocessed as a QA/QC check. Species identifications are verified by comparison to voucher specimens. For additional details please see <http://archive.chesapeakebay.net/pubs/subcommittee/amqawg/doc-MDbenthicQAPP01.PDF>.

Logical_Consistency_Report:

Not Applicable

Completeness_Report:

All sorting and identifying operations were conducted, QA/QC checked in accordance with the Versar ESM Operations Benthic Laboratory Operations Manual. All variables were checked for accuracy and admissibility by computer program.

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

From 1984-1996: Station latitudes and longitudes were determined by Loran-C. Loran-C is accurate to +/-1500 ft. From 1996 to present: Station latitudes and longitudes are determined by differential GPS using NAD 83 coordinates. All positions in the datasets have been converted to NAD83 coordinates.

Vertical_Positional_Accuracy:

Vertical_Positional_Accuracy_Report:

Benthic grab samples are taken at the sediment surface. Total station depths is determined by the depth sensor on Hydrolab Surveyor II, YSI CTD, a ships fathometer or other CTD type instrument.

*Lineage:**Source_Information:**Source_Citation:**Citation_Information:*

Originator: Roberto Llanso-Current PI

Originator: Ananda Ranasinghe-Previous PI

Originator: Steve Weisberg-Previous PI

Originator: Fredrick Hollings-Previous PI

Originator: Versar Incorporate

Publication_Date: 20000101

Title:

Maryland Long Term Benthic Monitoring Program

Edition: Unknown

Geospatial_Data_Presentation_Form: database

Publication_Information:

Publication_Place: Annapolis, MD

Publisher: US EPA Chesapeake Bay Program

Other_Citation_Details:

None

Online_Linkage: www.chesapeakebay.net

Type_of_Source_Media: digital database file

*Source_Time_Period_of_Content:**Time_Period_Information:**Range_of_Dates/Times:*

Beginning_Date: 07/01/1984

Ending_Date: Present

Source_Currentness_Reference:

ground condition

Source_Citation_Abbreviation:

None

Source_Contribution:

None

*Process_Step:**Process_Description:*

All sorting and identifying operations were conducted, QA/QC checked in accordance with the Versar ESM Operations Benthic Laboratory Operations Manual. All variables were checked for accuracy and admissibility by computer program. Please see the following document for additional details

<http://archive.chesapeakebay.net/pubs/subcommittee/amqawg/doc-MDbenthicQAPP01.PDF>

Source_Used_Citation_Abbreviation:

None

Process_Date: Unknown

*Process_Step:**Process_Description:*

Metadata imported.

Source_Used_Citation_Abbreviation:

C:\DOCUME~1\jjohnson\LOCALS~1\Temp\xml6A.tmp

*Process_Step:**Process_Description:*

Metadata imported.

Source_Used_Citation_Abbreviation:

G:\LR\OTHER_LR_DATA\metdata_move\finished\md_BENTH\mdbedoc_2008.xml

Process_Date: 20081002

Process_Time: 13162400

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Spatial_Data_Organization_Information:

Indirect_Spatial_Reference_Method:

Chesapeake Bay and tidal tributaries in Maryland

Direct_Spatial_Reference_Method: Point

Point_and_Vector_Object_Information:

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: Entity point

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: Area point

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Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Geographic:

Latitude_Resolution: 30

Longitude_Resolution: 30

Geographic_Coordinate_Units: Decimal degrees

Geodetic_Model:

Horizontal_Datum_Name: North American Datum of 1983

Ellipsoid_Name: Geodetic Reference System 80

Semi-major_Axis: 6378206.4

Denominator_of_Flattening_Ratio: 294.98

Vertical_Coordinate_System_Definition:

Depth_System_Definition:

Depth_Datum_Name: Chart datum; datum for sounding reduction

Depth_Resolution: .1

Depth_Distance_Units: meters

Depth_Encoding_Method: Attribute values

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Entity_and_Attribute_Information:

Overview_Description:

Entity_and_Attribute_Detail_Citation:

Maryland Chesapeake Bay Program Water Quality Monitoring:Benthic Monitoring

Component Project Documentation

https://archive.chesapeakebay.net/pub/Living_Resources/benth/ MDBEDOC.PDF

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Distribution_Information:

*Distributor:**Contact_Information:**Contact_Person_Primary:**Contact_Person:* Jacqueline Johnson*Contact_Organization:* Interstate Commission on Potomac River Basin*Contact_Position:* Chesapeake Bay Program Living Resources Data Manager/Analyst*Contact_Address:**Address_Type:* mailing and physical address*Address:*

410 Severn Avenue, Suite 109

City: Annapolis*State_or_Province:* Maryland*Postal_Code:* 21403*Country:* USA*Contact_Voice_Telephone:* 1-800-968-7229 ext. 729*Contact_Voice_Telephone:* 410-267-5729*Contact_Facsimile_Telephone:* 410-267-5777*Contact_Electronic_Mail_Address:* jjohnson@chesapeakebay.net*Hours_of_Service:* 7:30 a.m. to 2:300 p.m. Monday Through Friday*Contact_Instructions:*

unavailable

Distribution_Liability:

I, the data requestor, agree to acknowledge the Chesapeake Bay Program and any other agencies and institutions as specified by the Chesapeake Bay Program Office as data providers. I agree to credit the data originators in any publications, reports or presentations generated from this data. I also accept that, although these data have been processed successfully on a computer system at the Chesapeake Bay Program, no warranty expressed or implied is made regarding the accuracy or utility of the data on any other system or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. This disclaimer applies both to individual use of the data and aggregate use with other data. It is strongly recommended that careful attention be paid to the contents of the data documentation file associated with these data. The Chesapeake Bay Program shall not be held liable for improper or incorrect use of the data described and/or contained herein.

*Standard_Order_Process:**Digital_Form:**Digital_Transfer_Information:**Format_Name:* ASCII*Digital_Transfer_Option:**Online_Option:**Computer_Contact_Information:**Network_Address:**Network_Resource_Name:* www.chesapeakebay.net*Offline_Option:**Offline_Media:* CD-ROM*Recording_Capacity:**Recording_Density:* 650*Recording_Density_Units:* megabytes*Recording_Format:* ISO 9660*Compatibility_Information:*

None

Fees: None*Ordering_Instructions:*

All requests for data on media must be made in writing

Turnaround: 7-10 working days for data on media*Custom_Order_Process:*

None
Technical_Prerequisites:
 None
Available_Time_Period:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 07/01/1984
Ending_Date: Present

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Metadata_Reference_Information:
Metadata_Date: 20000522
Metadata_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Jacqueline Johnson
Contact_Organization: Interstate Commission on Potomac River Basin
Contact_Position: Chesapeake Bay Program Living Resources Data Manager/Analyst
Contact_Address:
Address_Type: mailing and physical address
Address:
 US EPA Chesapeake Bay Program Office
Address:
 410 Severn Avenue, Suite 109
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21403
Country: USA
Contact_Voice_Telephone: 1-800-968-7229 ext. 729
Contact_Voice_Telephone: 410-267-5729
Contact_Facsimile_Telephone: 410-267-5777
Contact_Electronic_Mail_Address: jjohnson@chesapeakebay.net
Hours_of_Service: 7:30 a.m. to 2:30 p.m. Monday Through Friday
Contact_Instructions:
 unavailable
Metadata_Standard_Name: NBII Content Standard for National Biological Information Infrastructure
 Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Access_Constraints: None
Metadata_Use_Constraints:
 None
Metadata_Security_Information:
Metadata_Security_Classification_System: None
Metadata_Security_Classification: Unclassified
Metadata_Security_Handling_Description:
 None

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