CATALOG DOCUMENTATION
MAIA-ESTUARIES SUMMARY DATABASE
1998 STATIONS
FISH LENGTH AND PATHOLOGY DATA: “FISHPATH”

TABLE OF CONTENTS

1. DATASET IDENTIFICATION

1.1 Title of Catalog document
MAIA-Estuaries Summary Database
1998 Stations
Fish Pathology Data by Station

1.2 Authors of the Catalog entry
John Kiddon, U.S. EPA NHEERL-AED
Harry Buffum, OAO Corp.

1.3 Catalog revision date
July 30, 2000

1.4 Dataset name
FISHPATH

1.5 Task Group
MAIA Estuaries

1.6 Data Set Identification Code
014

1.7 Version
001

1.8 Request for Acknowledgment
EMAP requests that all individuals who download EMAP data acknowledge the source of these data in any reports, papers, or presentations. If you publish these data, please include a statement similar to: "Some or all of the data described in this article were produced by the U. S. Environmental Protection Agency through its Environmental Monitoring and Assessment Program (EMAP)”.

2. INVESTIGATOR INFORMATION (for full addresses see Section 13)

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2.2 Sample Collection Investigators
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2.3 Sample Processing Investigators
Not applicable

3. DATASET ABSTRACT

3.1 Abstract of the Data Set
The FISHPATH data file contains information about the incidence and location of pathologies (lumps, growths, ulcers, and finrot) in fish collected at the MAIA stations during 1998. The fish examined were a representative subset of all fish collected in both standard and nonstandard trawls. The parameters included in the file are: the frequency and location of pathologies, station and trawl identifiers, a code identifying the species, a fish sequence number which distinguishes individuals within a trawl, the fish fork length (mm), and a parameter that indicates whether the fish was collected in a standard or nonstandard trawl. There is one record for each fish inspected.

3.2 Keywords for the Data Set
Fish pathology, fish fork length

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective
The main objectives of the MAIA-Estuaries program are: (1) to evaluate the ecological condition of the Mid-Atlantic estuaries by measuring key properties of the water, sediment, and the community of organisms; (2) to focus attention on small estuaries in order to develop better monitoring approaches for these critical systems; and (3) to develop partnerships among federal and state environmental organizations.

The Environmental Monitoring and Assessment Program (EMAP) is an EPA research and monitoring program designed to provide unbiased assessments of the condition of selected resources over a wide region. A key feature of the program is a probabilistic sampling strategy that randomly selects sampling sites and assigns weighting factors based on area to all measured results. EMAP's strategy was adopted by the Mid-Atlantic Integrated Assessment (MAIA) program, which was designed to assess the conditions of the estuaries, forests, streams and lakes, and agricultural lands in the eight-state Mid-Atlantic region. This file contains data measured in MAIA estuaries during the summer of 1998. Samples were collected for water and sediment analyses primarily in 1997, with a few additional sites sampled in 1998. Fish samples were collected only in 1998. Several estuaries were designated as intensive sites and were sampled in greater detail (see STATIONS file).

The partners in MAIA-Estuaries program are: (1) The U.S. Environmental Protection Agency (USEPA), including both the Atlantic Ecology Division (AED) and the Gulf Ecology Division (GED); (2) National Park Service (NPS) under their project "Maryland Coastal Bays Monitoring"; (3) National Oceanographic and Atmospheric Administration (NOAA) which conducted sampling both in the Delaware Bay (DB) under their "National Status and Trends Program" and in the Carolinian Province

(CP); and (4) The Chesapeake Bay Program (CBP), which is a consortium of federal, state, and local governments and nongovernmental organizations. Each partner was responsible for collecting, processing, and reviewing data. The USEPA Atlantic Ecology Division was responsible for final assembly and review of all data. Laboratories contracted to process samples are specified by the parameter LABCODE included in all data files (Section 4.4). Details regarding use of partner and LABCODE information are presented in the EVENTS metadata file.

4.2 Data Set Objective

The objective of the FISHPATH file is to report the incidence of pathologies in a subset of fish collected in standard and nonstandard trawls. The fork length of each fish is also reported.

4.3 Background Discussion

The MAIA program conducted regular fish surveys during the summer of 1998 to characterize the structure and health of the fish communities. The stations sampled were selected according to the probabilistic design described in Section 4.1. These stations were not identical with the stations sampled for water and sediment quality analyses conducted primarily in 1997; therefore, it is not possible to directly compare these different analyses station by station. However, it is statistically valid to compare results among *classes* of estuaries, *e.g.*, large versus small estuaries, Delaware Estuary versus Chesapeake Estuary, *etc.*

The information collected in the fish surveys are reported in five data files. FTRAWL includes the number of unique species and the number of fish per standard trawl. FISHSPEC contains the number of fish per species and their average fork length per standard trawl. FISHPATH specifies the frequency and location of pathologies observed in a ship-board inspection, and FSH_SPLN lists the percent macrophage aggregates observed in a histopathology examination. TISSCHEM reports the concentrations of over 100 chemical analytes measured in composites samples of summer flounder or blue crabs collected at a station. The lookup table FTAXON lists the common and scientific names of all fish identified in the MAIA program. Standard trawls of uniform speed and duration were employed when conducting the fish surveys characterizing the community structure at a site. Additional nonstandard trawls were performed to catch fish for chemical or pathology analyses if sufficient numbers of fish were not available from the standard trawl. Fish from the auxiliary trawls were not included in the standardized counts used to describe community structure.

4.4 Summary of Data Set Parameters

*STATION	Station identifier
*EVNTDATE	Date of sampling event
*FTRAWLID	Trawl identifier
*TAX_CODE	Taxonomic code
*FSEQNUM	Fish sequence number
F_LENGTH	Fish fork length (mm)
LUMPS	Fish pathology: lumps (Y/N)
LUMPLOC	Locations of lumps
GROWTHS	Fish pathology: growths (Y/N)
GRTHLOC	Locations of growths
ULCERS	Fish pathology: ulcers (Y/N)
ULC_LOC	Locations of ulcers
FINROT	Fish pathology: fin erosion (Y/N)
FROTLOC	Locations of finrot
TRLTYPE	Standard or nonstandard fish trawl? (S/N)
YEAR	Year of sampling

* denotes parameters that should be used as key fields when merging data files

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition / Field Sampling

The sample collection methods used by EPA-ORD field crews (PARTNER=AED and GED) will be described here. Any significant variations by other MAIA partners are noted in Section 5.1.12.

5.1.1 Sampling Objective

To collect a representative sample of fish at a station using a standard trawl. Additional nonstandard trawls were conducted when necessary to collect enough fish for histopathology analyses.

5.1.2 Sample Collection and Ship-Board Processing: Methods Summary

The fish trawl was conducted using a funnel-shaped net that filters fish from the near bottom waters. Fish were herded into the net by ground wire and an overhanging panel. Standard trawls were 10 ± 2 minutes in duration with a towing speed of 2-3 knots through the water against the prevailing current (1-3 knots relative to the bottom). An auxiliary, nonstandard trawl was performed to collect fish of four target species if an insufficient quantity were obtained in the standard trawl. The target species were spot (*Leiostomus xanthurus)*, white perch (*Morone americana*), summer flounder (*Paralichthys dentatus*), and weakfish (*Cynoscion regalis*). Fish from the auxiliary trawls were used for chemical or pathology analyses only, and were not included in the standardized survey counts used to characterize the fish community structure.

The data reported in the FISHPATH file pertain to fish collected in both standard and nonstandard trawls. All fish in the standard trawls were identified and counted on board ship immediately following the trawl. Fork lengths were measured on the first 30 individuals of each species or on all fish if fewer than 30 individuals of a species were collected. At the same time, a visual inspection for obvious signs of pathology (lumps, growths, ulcers, or finrot) was conducted on all fish measured for length. An auxiliary trawl was conducted if insufficient numbers of the target species (spot, white perch, summer flounder and weakfish) were collected in the standard trawl. The spleens of the target fish were processed as described in FSH_SPLN, and a subset of fish and crabs were tagged and frozen as described in TISSCHEM. Remaining fish were discarded.

5.1.3 Beginning Sampling Date

13 July 1998

5.1.4 Ending Sampling Date

14 October 1998

5.1.5 Sampling Platform

All program partners collected samples from various gasoline or diesel powered boats, 25 to 27 feet in length.

5.1.6 Sampling Equipment

The trawl net is a funnel-shaped high-rise sampling trawl. The net includes a 16 meter tow line, a chain sweep, 5 cm mesh wings, and a 2.5 cm cod end.

5.1.7 Manufacturer of Sampling Equipment

Not applicable

5.1.8 Key Variables

Not applicable

5.1.9 Sample Collection: Calibration

The sampling gear does not require calibration.

5.1.10 Sample Collection: Quality Control

A trawl was considered void if one or more of the following conditions occurred:

1. Trawl could not be completed because of boat malfunction, vessel traffic, or major disruption of gear (trawls aborted after a minimum of 8 minutes were acceptable if the net was retrieved in a standard manner)
2. Boat speed exceeded the prescribed range
3. The cod-end became untied
4. The trawl continued for more than 12 minutes or less than 8 minutes
5. The net was filled with mud or debris
6. A portion of the catch was lost prior to processing
7. The tow wire, bridle, head rope, foot rope, or up and down lines became separated
8. The net was torn in a way that significantly altered the efficiency of the net

If a successful trawl could not be performed within 1½ hours, the site was considered unsampleable. Quality assurance audits were performed to verify the identification and measurement techniques of the field crew. Sample and composite identification numbers were verified during field QA audits. The receiving laboratory verified frozen field samples received against packing invoice, and the samples were stored in a freezer at -20 degrees C until analyzed.

5.1.11 Sample Collection: References

Strobel, C.J. 1998. Environmental Monitoring and Assessment Program - Mid-Atlantic Integrated Assessment. Estuaries Component, Field Operations and Safety Manual. USEPA, Office of Research and Development, NHEERL-AED, Narragansett, RI. July 1998.

5.1.12 Sample Collection: Alternate Methods

Not applicable

5.2 Data Preparation and Sample Processing

All parameters reported in this file were measured aboard ship immediately following the trawl (see Section 5.1).

5.2.1 Sample Processing Objective

Not applicable

5.2.2 Sample Processing: Methods Summary

Not applicable

5.2.3 Sample Processing: Calibration

Not applicable

5.2.4 Sample Processing: Quality Control

Not applicable

5.2.5 Sample Processing: References

Not applicable

5.2.6 Sample Processing: Alternate Methods

Not applicable

6. DATA ANALYSIS AND MANIPULATIONS

6.1 Name of New or Modified Values
Not applicable

6.2 Data Manipulation Description
Not applicable

7. DATA DESCRIPTION

7.1 Description of Parameters

7.1.1 Components of the Data Set

PARAMETER	TYPE	LENGTH	LABEL
STATION	Char	10	Station Name
EVNTDATE	Num	8	Date of Sampling Event
FTRAWLID	Num	8	Fish Trawl Identifier
TAX_CODE	Char	8	Taxonomic Code
FSEQNUM	Num	8	Fish Sequence Number
F_LENGTH	Num	8	Fork Length of Fish (mm)
LUMPS	Char	1	Fish Pathology: Lumps (Y/N)
LUMPLOC	Char	20	Location of Lumps
GROWTHS	Char	1	Fish Pathology: Growths (Y/N)
GRTHLOC	Char	20	Location of Growths
ULCERS	Char	1	Fish Pathology: Ulcers (Y/N)
ULC_LOC	Char	20	Location of Ulcers
FINROT	Char	1	Fish Pathology: Fin Erosion (Y/N)
FROTLOC	Char	20	Location of Fin Erosion
TRLTYPE	Char	1	Standard/Nonstandard Trawl (S/N)
YEAR	Num	4	Year of Sampling

7.1.2 Precision of Reported Values
As indicated in Sections 7.1.3 and 7.1.4.

7.1.3 Minimum Value in Dataset
F_LENGTH 19

7.1.4 Maximum Value in Dataset
F_LENGTH 860

7.2 Data Record Example

7.2.1 Column Names for Example Records

STATION EVNTDATE FTRAWLID TAX_CODE FSEQNUM F_LENGTH LUMPS LUMPLOC

GROWTHS GRTHLOC ULCERS ULC_LOC FINROT FROTLOC TRLTYPE YEAR

7.2.2 Example Data Records

STATION	EVNTDATE	FTRAWLID	TAX_CODE	FSEQNUM	F_LENGTH	LUMPS	LUMPLOC
MA98-0079	7/13/98	5194300	MOROAMER	11	225	N	
MA98-0079	7/13/98	5194300	MOROAMER	12	190	N	
MA98-0079	7/13/98	5194300	MOROAMER	13	145	N	
MA98-0079	7/13/98	5194300	MOROAMER	14	155	N	

GROWTHS	GRTHLOC	ULCERS	ULC_LOC	FINROT	FROTLOC	TRLTYPE	YEAR
N		Y	ANUS	N	S		1998
N		N		N	S		1998
N		N		N	S		1998
N		N		N	S		1998

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude (Westernmost)
-77.4339 decimal degrees

8.2 Maximum Longitude (Easternmost)
-74.7230 decimal degrees

8.3 Minimum Latitude (Southernmost)
34.9670 decimal degrees

8.4 Maximum Latitude (Northernmost)
40.1470 decimal degrees

8.5 Name of area or region
MAIA Region. The geographic area covered by this research includes the Delaware Estuary, the Chesapeake Bay, the Delmarva coastal bays, the Albemarle-Pamlico Sound and their contiguous estuaries.

9. QUALITY CONTROL AND QUALITY ASSURANCE

9.1 Measurement Quality Objectives
Measurement quality objectives are outlined in the EMAP VA Provonce Quality Assurance Project Plans (Valente et al., 1990, Valente and Schoenherr, 1991, Valente et al., 1992, Valente and Strobel, 1993). Accuracy and completeness goals are:

Counting	90% accuracy goal	90% completeness goal
Taxon Identification	90% accuracy goal	90% completeness goal

9.2 Data Quality Assurance Procedures
One record for each standard and nonstandard trawl performed at each station is kept. Inspection of the sampling gear for tears or improper assemblage is done at the beginning of every trawl event.

10. DATA ACCESS

10.1 Data Access Procedures
Data can be downloaded from the web

10.2 Data Access Restrictions
None

10.3 Data Access Contact Persons
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10.4 Dataset Format
ASCII (CSV) and SAS Export files

10.5 Information Concerning Anonymous FTP
Not available

10.6 Information Concerning WWW
See Section 10.1 for WWW access

10.7 EMAP CD-ROM Containing the Dataset
Data not available on CD-ROM

11. REFERENCES

Holland, A.F., ed. 1990. Near Coastal Program Plan for 1990: Estuaries. EPA 600/4-90/033. U.S. EPA, Office of Research and Development, NHEERL-AED, Narragansett, RI. November 1990.

Kokkinakis, S.A., Hyland, J.L., and Robertson, A. 1994. Carolinian Demonstration Project - 1994 Field Operations Manual. Joint National Status and Trends/Environmental Monitoring and Assessment Program. NOAA/NOS/ORCA, Silver Spring, MD.

Strobel, C.J. 1998. Environmental Monitoring and Assessment Program - Mid-Atlantic Integrated Assessment. Estuaries Component, Field Operations and Safety Manual. U.S. EPA, Office of Research and Development, NHEERL-AED, Narragansett, RI. Forthcoming.

Strobel, C.J. 1998. Mid Atlantic Integrated Assessment / Environmental Monitoring and Assessment Program - Estuaries: Virginian Province Quality Assurance Project Plan. U.S. EPA, Office of Research and Development, NHEERL-AED, Narragansett, RI. June 1998.

12. TABLE OF ACRONYMS

AED	Atlantic Ecology Division
EMAP	Environmental Monitoring and Assessment Program
EPA	U.S. Environmental Protection Agency
RTP	Research Triangle Park, NC
FTP	File Transfer Protocol
GED	Gulf Ecology Division
m2	Square meters
NHEERL	National Health and Environmental Effects Research Laboratory
NOAA	National Oceanic and Atmospheric Administration
ORD	Office of Research and Development
QA/QC	Quality Assurance/Quality Control
WWW	World Wide Web

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