CATALOG DOCUMENTATION
EMAP-ESTUARIES PROVINCE LEVEL DATABASE
LOUISIANIAN PROVINCE 1991-1994
FISH/INVERTEBRATE SUMMARY DATA

TABLE OF CONTENTS

1. DATA SET IDENTIFICATION

1.1 Title of Catalog Document

EMAP-Estuaries Province Level Database
Louisianian Province
Fish Abundance, Diversity, Pathology, and Marine Debris Data
Summarized for a Station

1.2 Compilation and Editing Catalog entry

Virginia Engle, U.S. Environmental Protection Agency - NHEERL/GED
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1.3 Catalog Revision Date

March 4, 1999

1.4 Data File Name

FISH_SUM

1.5 Task Group

ESTUARIES

1.6 Data set identification code

00047, 00087, 00127, 00167

1.7 Version number for a data set

001

1.8 Requested acknowledgment

If you plan to publish these data in any way, EPA requires a standard statement for work is has supported:

"Although the data described in this article have been funded wholly or in part by the U.S. Environmental Protection Agency through its EMAP Estuaries Program, it has not been subjected to Agency review, and therefore does not necessarily reflect the views of the Agency and no official endorsement should be inferred."

2. INVESTIGATOR INFORMATION

2.1 Principal Investigator

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2.2 Sample Collection Investigator

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2.3 Sample Processing Investigator

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2.4 Data Analysis Investigator

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2.5 Additional Investigators

N/A

3. DATA SET ABSTRACT

3.1 Abstract of the Data Set

The Fish Summary data file is a synopsis of various averages of successful standard trawl(s) conducted at a station. The total number of nektonic species and individuals of all species caught in the standard trawl(s) is reported. Material of anthropogenic or natural origins may have been collected in the trawl. Manmade trash includes: plastics, cans, glass, wood, etc. Natural material includes natural wood and other organic debris. A summary of gross pathology is also reported.

3.2 Keywords for the Data Set

Species, natural material, species abundance, trash, pathology, marine debris

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective

The Environmental Monitoring and Assessment Program (EMAP) was designed to periodically estimate the status and trends of the Nation's ecological resources on a regional basis. EMAP provides a strategy to identify and bound the extent, magnitude and location of environmental degradation and improvement on a regional scale based on randomly located station sites. Only the randomly located Base Sampling Sites were included in this data set.

4.2 Data Set Objective

The objective of the Fish/Invertebrate Summary data file was to collect information to characterize nektonic assemblages in the estuaries of the Louisianian Province.

4.3 Data Set Background Information

Estuarine nekton have economic, recreational, and ecological value. Abundant nektonic organisms, particularly in communities characterized by multiple species and feeding type, suggest a productive estuarine food web. Several subsets of nekton were selected for the EMAP-Estuaries fish community profile: finfish; blue crab; and brown, white and pink shrimp.

Finfish are particularly good candidates for use as potential indicators of estuarine condition. Most fish ecologists agree that the assemblage of fish that occurs at a sampling site is affected by water and sediment quality parameters and habitat conditions. Because of their longevity and dominant position at the upper end of the food web, fish responses integrate many short-term and small-scale environmental perturbations. Fish are known to respond to most of the major environmental stressors of concern in estuaries,

including eutrophication, habitat modification and pathogenic or toxic contamination. Since the blue crab and shrimp are significant to the Gulf Coast economy, these shellfish species were selected to determine if environmental stressors that may or may not affect the finfish community would have the same affect on these valuable fisheries.

A major purpose of evaluating fish/invertebrate community composition was to determine whether regional information on fish and invertebrate community characteristics could be used as an indicator of environmental quality.

4.4 Summary of Data Set Parameters

The raw data for species composition and abundance were recorded in the field after the completion of each successful standard trawl. Fish or invertebrate target species were preserved for tissue chemistry or reference pathology analysis. All fish observed to have pathological defects were preserved for detailed histopathological examination.

4.5 Year-Specific Information about Data

In 1991, only one fish trawl was designed into the station sampling schema. Occasionally, however, circumstances prevented the completion of one successful trawl resulting in no fish collection data or tissue chemistry samples for that particular station. Beginning in 1992, the Louisianian Province allowed for up to three fish trawls per stations and averaged the indicators between the first of two successfully completed trawls. This increased the chances that nekton specific data would be more accurately represented and tissue chemistry samples would be available for each site. Occasionally, however, a field crew would conduct more then three (3) trawls in order to obtain enough tissue samples for chemistry analysis. Any trawl conducted after the first three (3) attempts was not used for any of the summary calculations. The actual number of trawls taken for each stations is reflected in the Fish Abundance data file.

For sampling years 1991-1994, the finfish, spot, (Leiostomus xanthurus) were collected and preserved to be used specifically as reference histopathology samples.

5. METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

Conduct two (2) successful standard fish trawls at a Sampling Site suitable for the characterization of fish species composition, abundance and length.

5.1.2 Sample Collection Methods Summary

A balloon trawl (funnel-shaped net) was deployed from the sampling vessel using a hydraulic powered boom and winch

system and dragged over the bottom in the general vicinity of the sampling station to capture bottom and near-bottom fishes and crustaceans. The duration of a trawl was 10+- 2 minutes and the rate of speed over bottom was 2-3 knots. Following a successful trawl, the net was hauled aboard and the catch was released into a plastic trough or fish sorting table.

All fish and invertebrates of interest were sorted and identified to species and a total count taken for each species. Up to 30 individuals of a given species were measured to the nearest 0.1 cm - fork length (when applicable or overall length for fishes; tip of rostrum to tip of telson for shrimp; and carapace width (spine to spine) for crabs. The pertinent fish data were recorded on preprinted, standardized field sheets (Fish Data Sheets) for later transcription into the field computer system.

5.1.3 Beginning Sampling Date

09 July 1991
08 July 1992
06 July 1993
06 July 1994

5.1.4 Ending Sampling Date

10 September 1991
11 September 1992
19 August 1993
15 September 1994

5.1.5 Sampling Platform

Each team was supplied with a 25-foot SeaArk work boat equipped with a 7.5 L gas engine fitted with a Bravo outdrive, an "A" frame boom assembly and hydraulic winch. On-board electronics consist of: a Loran C unit, GPS (beginning in 1993), radar unit, 2 VHF radios, cellular phone, compass, a depth finder, a tool kit, and all required and suggested safety equipment. One completely outfitted spare boat was stored at the Field Operations Center (EPA Lab) as backup.

5.1.6 Sampling Equipment

The net used was a 4.9 m (16 ft) -wide, balloon (high profile) trawl with 2.5 cm (1 in) stretched mesh in the bosom, wings, and cod end; no liner was used. The trawl was equipped with 41 X 76 cm (16 X 30 in) wooded doors.

5.1.7 Manufacturer of Sampling Equipment

5.1.8 Key Variables

5.1.9 Sampling Method Calibration

5.1.10 Sample Collection Quality Control

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

5.1.10.1 A ten (10) minute tow could not be completed because of hangdown, boat malfunction, vessel traffic, or major disruption of gear. However, a tow was considered acceptable if it was necessary to retrieve the net after at least eight minutes due to impending hazards, as long as the net was retrieved in the standard manner.

5.1.10.2 Boat speed or speed over the bottom was beyond the prescribed, acceptable range.

5.1.10.3 The cod-end of the net was not tied shut.

5.1.10.4 The trawl continued for more than twelve minutes or less than eight minutes.

5.1.10.5 The net was filled with mud or debris.

5.1.10.6 A portion of the catch was lost prior to processing.

5.1.10.7 The tow wire, bridle, headrope, footrope, or up and down lines parted.

5.1.10.8 The net was torn in a way that may have significantly altered the efficiency of the net.

If, due to repeated snags, a successful trawl could not be performed within 1 1/2 hours of starting, no further attempts were made and the Field Operations Center was notified.

If the trawl was successful and fish were caught, the specimens designated for chemistry or pathology analysis were contained appropriately for shipping to various labs. Each species of fish for a particular station were tracked using a barcode system. As the field crew prepared the specimens for shipping, the fish would be grouped by species and type of lab analyses needed then tagged with a waterproof barcode label bearing a unique identification number. A duplicate barcode was place on the appropriate data sheet. Each barcode label was scanned into a datafile using laser barcode readers. This method of tagging provided the EMAP-E team an efficient, accurate and viable accounting of fish shipped to laboratories for further analysis. The laboratories were also supplied with barcode readers so fish received by lab personnel could be documented. The lab receiving files were electronically forwarded to EMAP-E for shipping and receiving reconciliation.

5.1.11 Sample Collection Method Reference

Macauley, J.M. 1991. Environmental Monitoring and Assessment Program-Near Coastal Louisianian Province: 1991 Monitoring Demonstration. Field Operations Manual. EPA/600/X-91/XXX. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J.M. 1992. Environmental Monitoring and Assessment Program: Louisianian Province:1992 Sampling: Field Operations Manual. EPA/ERL-GB No. SR-119. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J.M. 1993. Environmental Monitoring and Assessment Program: Louisianian Province:1993 Sampling: Field Operations Manual. EPA/ERL-GB No. SR-XXX. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J.M. 1994. Environmental Monitoring and Assessment Program: Louisianian Province:1993 Sampling: Field Operations Manual. EPA/ERL-GB No. SR-XXX. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

5.1.12 Sample Collection Method Deviations

None

5.2 Data Preparation and Sample Processing

Sample processing methods not applicable for estimates of fish/invertebrate species composition and abundance.

5.2.1 Data Preparation Objective

N/A

5.2.2 Data Processing Methods Summary

N/A

5.2.3 Sampling Processing Method Calibration

N/A

5.2.4 Sample Processing Quality Control

N/A

5.2.5 Sample Processing Method Reference

N/A

5.2.6 Sample Processing Method Deviations

None

6. DATA MANIPULATIONS

6.1 Name of New or Modified Values

FSP_TOT	Total Fish Taxa (#) in 'n' Trawls
FSP_ABN	Total Individual Fish (#) in 'n' Trawls
MNMDTRSH	Plastic/Cans/Tires/etc in Trawl (Y/N)
NATLMTRL	Dead Fish/Natural Wood in Trawl (Y/N)

6.2 Data Manipulation Description

FSP_TOT	Total number of taxon collected at a station
FSP_ABN	Total number of individuals collected at a station
MNMDTRSH	Presence/absence of material of anthropogenic or natural
NATLMTRL	origin

6.3 Data Manipulation Examples

6.3.1 FSP_TOT (Total Fish Taxon/Trawl) = Summation of the unique taxon codes in the first successful trawl at a station

6.3.2 FSP_ABN (Total Individuals/Trawl) = Sum of the abundances of all taxa in the first successful trawl at a station

6.3.3 MNMDTRSH (Manmade trash in trawl) Y/N - plastic, medical waste, can, tires, glass, paper, manmade wood, sports balls, fishing gear or other manmade trash

6.3.4 NTRLMATL (Natural material in trawl) Y/N - dead fish and natural wood

6.4 Data Manipulation Computer Code File

6.5 Data Manipulation Computer Code Language

6.6 Data Manipulation Computer Code

7. DESCRIPTION OF PARAMETERS

7.1 Description of Parameters

7.1.1 Parameter Name

Field Name	Data Type	Max Field Len	Format	Variable Field Label
STA_NAME	Char	8	$8.	The Station Identifier
FSP_ABN	Num	8	5.	Total Individual Fish (#) in 'n' Trawls
BODYPATH	Num	8	4.	Gross Body Path
BRNCPATH	Num	8	4.	Gross Branchial Path
BUCCPATH	Num	8	4.	Gross Buccal Path

Field Name	Data Type	Max Field Len	Format	Variable Field Label, continued
OCU_PATH	Num	8	4.	Gross Eye Path
FSP_TOT	Num	8	5.	Total Fish Taxa (#) in 'n' Trawls
QA_CODE	Char	4	$8.	QA Code for Fish Trawl
VST_DATE	Num	8	YYMMDD6.	The Date the Sample was Collected
FSB_MABN	Num	8	7.2	Mean # of Organisms in 'n' Trawls
FSB_MEAN	Num	8	7.2	Mean # of Nekton Taxa in 'n' Trawls
FSP_TRWL	Num	8	2.	Trawls (#) included in Summary Data
MNMDTRSH	Char	3	$3.	Manmade Trash in Trawl
NATLMTRL	Char	3	$3.	Naturally Occurring Debris in Trawl

7.1.6 Precision to which values are reported

Total abundance and total number of taxa for a station are reported as whole numbers.

Pathology values are not reported.

7.1.7 Minimum Value in Data Set

1991
1992
1993
1994

FSP_TOT
0
0
0
0

FSP_ABN
0
0
0
0

FSP_MABN
.
0
0
0

FSP_MEAN
.
0
0
0

BODYPATH
0
0
0
0

BRNCPATH
0
0
0
0

BUCCPATH
0
0
0
0

OCU_PATH
0
0
0
0

7.1.8 Maximum Value in Data Set

1991
1992
1993
1994

FSP_TOT
15
15
19
18

FSP_ABN
724
503
903
532

FSP_MABN
.
251.5
451.0
266.0

FSP_MEAN
.
10.5
14.5
 9.0

BODYPATH
 3
11
17
 4

BRNCPATH
 1
 8
 1
 5

BUCCPATH
 0
11
 0
11

OCU_PATH
 2
 1
 4
 1

7.2 Data Record Example

7.2.1 Column Names for Example Records

STA_NAME VST_DATE FSP_TOT FSP_ABN MNMDTRSH NATLMTRL BODYPATH OCU_PATH
BRNCPATH BUCCPATH FSP_TRWL

7.2.2 Example Data Records

OBS	STA_NAME	VST_DATE	FSP_TOT	FSP_ABN	MNMDTRSH	NATLMTRL	BODYPATH	OCU_PATH
1	VA92-451	920810	6	58	N	N	.	.
2	VA92-452	920809	10	198	Y	N	.	.
3	VA92-453	920810	6	143	N	N	.	.
4	VA92-454	920808	17	185	N	Y	.	.
5	VA92-455	920808	2	3	Y	N	.	.

OBS	BRNCPATH	BUCCPATH	FSP_TRWL
1	.	.	1
2	.	.	1
3	.	.	1
4	.	.	1
5	.	.	1

7.3 Related Data Sets

7.3.1 Related Data Set Name

7.3.2 Related Data Set Identification Code

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-97 Degrees 27 Minutes 13.20 Decimal Seconds

8.2 Maximum Longitude

-82 Degrees 39 Minutes 28.20 Decimal Seconds

8.3 Maximum Latitude

30 Degrees 48 Minutes 30.00 Decimal Seconds

8.4 Minimum Latitude

26 Degrees 02 Minutes 55.80 Decimal Seconds

8.5 Name of the area or region

Louisianian Province - Coastal distribution of sampling is along the Gulf of Mexico from the Rio Grande, TX to Anclote Key, FL. States represented: Texas, Louisiana, Alabama, Mississippi, Florida

8.6 Direct Spatial Reference Method

Point

8.7 Horizontal Coordinate System Used

Universal Transverse Mercator

8.8 Resolution of Horizontal Coordinates

0.5

8.9 Units for Horizontal Coordinates

Meters

8.10 Vertical Coordinate System

N/A

8.11 Resolution of Vertical Coordinates

N/A

8.12 Units for Vertical Coordinates

N/A

9. QUALITY CONTROL/QUALITY ASSURANCE

9.1 Measurement Quality Objectives

Measurement quality objectives were outlined in the Quality

Assurance Project Plan. Accuracy and precision goals are outlined below:

Fish Community Composition	Accuracy Goal	Completeness Goal
Counting	10 %	90 %
Taxonomic Identification	10 %	90 %
Length Determinations	+ 5 mm	90 %

9.2 Quality Assurance/Control Methods

Data from trawls which did not meet the requirements of a standard trawl were not included in this data file.

Data were run through series of Quality Control examinations:

9.2.1 The first method involved manually comparing each field data sheet entry against the electronically stored field data. This form of data validation ensured that data entered onto the field data sheets was correctly and completely transcribed. Occasionally, an error would occur that could not be flagged systematically (e.g. Data sheet reflected a length of 11 cm and the electronic data record for the same fish reflected 14 cm. If the length range for this species is 9 cm to 16 cm then neither number is an outlier and a range checking program would not detect the error).

9.2.2 Electronic formatted data would also be run through series of programs which would test the validity of the data and provide a flagging mechanism to indicate that further investigation was required:

9.2.2.1 Outlier checks on lengths and range of habitats.

9.2.2.2 Taxonomic identification (e.g. Common name was Hardhead Catfish but Species code indicates a Gafftopsail Catfish).

9.2.2.3 Variable format issues (e.g. Type an alphabetic "o" for a numeric "0").

9.2.2.4 Comparing fish description data (e.g. Taxonomic ids, lengths, etc.) received from labs with the primary EMAP-E fish database. If fish description data vary between the two set of databases the differences were investigated.

9.3 Actual Measurement Quality

N/A

9.4 Sources of Error

9.5 Known Problems with the Data

9.6 Confidence Level/Accuracy Judgement

9.7 Allowable Minimum Values

9.8 Allowable Maximum Values

9.9 QA Reference Data

10. DATA ACCESS

10.1 Data Access Procedures

A Data Request Package can be requested from a contact under Section 10.3. Data can be downloaded from the WWW site.

10.2 Data Access Restrictions

Data can only be accessed from the WWW site.

10.3 Data Access Contact Persons

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10.4 Data Set Format

Data can be transmitted in a variety of formats derived from SAS data files when a Data Request Form is submitted.

10.5 Information Concerning Anonymous FTP

Not accessible

10.6 Information Concerning World Wide Web

Data can be downloaded from the WWW

10.7 EMAP CD-ROM Containing the Data set

Data not available on CD-ROM.

11. REFERENCES

11.1 EMAP References

Heitmuller, P.T. and R. Valente. 1991. Environmental Monitoring and Assessment Program: EMAP-Estuaries Louisianian Province: 1991 quality assurance project plan. EPA/ERL-GB No. SR-120. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J.M. 1991. Environmental Monitoring and Assessment Program-Near Coastal Louisianian Province: 1991 Monitoring Demonstration. Field Operations Manual. EPA/600/X-91/XXX. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J.M. and J.K. Summers. 1991. Environmental Monitoring and Assessment Program, Near Coastal - Louisianian Province: 1991 Field Reconnaissance Report - East Region. EPA/600/04-91/XXX. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J.M. and J.K. Summers. 1991. Environmental Monitoring and Assessment Program, Near Coastal - Louisianian Province: Field Training Manual - Crew Chiefs. EPA/600/05-91/XXX. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

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Summers, J.K., J.M. Macauley and P.T. Heitmuller. 1991. Environmental Monitoring and Assessment Program. Implementation Plan for Monitoring the Estuarine Waters of the Louisianian Province - 1991 Demonstration. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561. EPA/600/5-91/228.

Summers, J.K., J.M. Macauley, J.M., P.T. Heitmuller, V.D. Engle, A.M. Adams and G.T. Brooks. 1992. Annual Statistical Summary: EMAP-Estuaries Louisianian Province - 1991. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561. EPA/600/R-93/001.

U.S. EPA. 1995. Environmental Monitoring and Assessment Program (EMAP): Laboratory Methods Manual - Estuaries, Volume 1: Biological and Physical Analyses. United States Environmental Protection Agency, Office of Research and Development, Narragansett, RI. EPA/620/R-95/008.

11.2 Background References

Engle, V.D., J.K. Summers, G.R. Gaston. 1994. A Benthic Index of Environmental Condition of Gulf of Mexico Estuaries. Estuaries. 17:372-384.

Summers, J. Kevin, John F. Paul, Andrew Robertson. 1995. Monitoring The Ecological Condition Of Estuaries In The United States. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32651.

12. GLOSSARY AND TABLE OF ACRONYMS

12.1 Acronym used in the Detailed Documentation

12.2 Definition of Acronym

13. PERSONNEL INFORMATION

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