

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION
EMAP SURFACE WATERS PROGRAM LEVEL DATABASE
1991-1994 NORTHEAST LAKES DATA
LAKE FISH TISSUE CONTAMINANTS (METALS) DATA

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1. DATA SET IDENTIFICATION

1.1 Title of Catalog Document

EMAP Surface Waters Lake Database
1991-1994 Northeast Lakes

Lake Fish Tissue Contaminants (Metals) Data Summarized by Lake

1.2 Authors of the Catalog Entry

U.S. EPA NHEERL Western Ecology Division
Corvallis, OR

1.3 Catalog Revision Date

November 1996

1.4 Data Set Name

FTMET

1.5 Task Group

Surface Waters

1.6 Data Set Identification Code

0110

1.7 Version

001

1.8 Requested Acknowledgment

These data were produced as part of the U.S. EPA's Environmental Monitoring and Assessment Program (EMAP). If you publish these data or use them for analyses in publications, EPA requires a standard statement for work it 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 Surface Waters Program, it has not been subjected to Agency review, and therefore does not necessarily reflect the views of the Agency and no official endorsement of the conclusions should be inferred."

2. INVESTIGATOR INFORMATION

2.1 Principal Investigator

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2.2 Investigation Participant - Sample Collection

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Harvard University
New York State Museum of Natural History
Oregon State University
SUNY Syracuse College of Environmental Sciences and Forestry
Queens University
University of Maine
U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
Office of Research and Development
Regions 1 and 2

3. DATA SET ABSTRACT

3.1 Abstract of the Data Set

The primary function of the lake fish data are to provide a snapshot of the fish assemblage present in the lake at the time of sampling. The fish community represents an integral component of lake biological integrity and represents a snapshot of a publicly visible reflection of lake quality.

3.2 Keywords for the Data Set

Fish assemblage, fish community, fish species identification, fish tissue contamination

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 a probability-based statistical survey design.

4.2 Data Set Objective

This data set is part of a demonstration project to evaluate approaches to monitoring lakes in EMAP. The data set contains the results of multihabitat, multi-gear sample of the fish assemblage taken during mid-summer. A subsample of fish were selected for analysis of metal concentrations in tissue of a whole fish sample submitted for analysis.

4.3 Data Set Background Discussion

The fish community within a lake is an integral component of lake biological integrity and represents a publicly visible reflection of lake quality. Contamination of the fish community is a direct threat to the health of the fish community as well as to the human population consuming these fish. This data set contains the metal contaminant concentrations in whole-fish tissue sample collected at each lake.

4.4 Summary of Data Set Parameters

Fish Tissue Contaminants parameters include wet weight concentrations of metal compounds such as silver, aluminum, cadmium, lead, chromium, copper, and iron.

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

To obtain a sample of the fish assemblage within a lake during a two month sampling window from July through mid-September. To obtain enough individuals of a single species suitable for tissue contaminant analysis.

5.1.2 Sample Collection Methods Summary

The assemblage was sampled using multiple gears distributed in multiple habitats throughout the lake. Habitats sampled were the shallow and deep pelagic zones and the riparian zone of the lake. Trap nets, minnow traps, gill nets and beach seines were the sampling gear used. A subsample of five or more fish from a single species was selected for analysis of metal contaminants in the whole fish.

5.1.3 Sampling Start Date

July 1991

5.1.4 Sampling End Date

September 1994

5.1.5 Platform

Sampling was conducted from small boats.

5.1.6 Sampling Gear

Gill nets, traps nets, beach seines, minnow traps

5.1.7 Manufacturer of Instruments

NA

5.1.8 Key Variables

NA

5.1.9 Sampling Method Calibration

NA

5.1.10 Sample Collection Quality Control

See Baker et al. (1997).

5.1.11 Sample Collection Method Reference

Baker, J.R., G.D. Merritt, and D.W. Sutton (eds.). 1997. Environmental Monitoring and Assessment Program - Surface Waters: Field Operations Manual for Lakes.

Chaloud, D.J. and D.V. Peck. 1994. Environmental Monitoring and Assessment Program - Surface Waters: Integrated Quality Assurance Project Plan for the Surface Waters Resource Group.

5.1.12 Sample Collection Method Deviations

NA

5.2 Data Preparation and Sample Processing

5.2.1 Sample Processing Objective

See Baker et al. (1997) and Chaloud and Peck (1994).

5.2.2 Sample Processing Methods Summary

See Baker et al. (1997) and Chaloud and Peck (1994).

5.2.3 Sample Processing Method Calibration

See Baker et al. (1997) and Chaloud and Peck (1994).

5.2.4 Sample Processing Quality Control

See Baker et al. (1997) and Chaloud and Peck (1994).

5.2.5 Sample Processing Method Reference

See Baker et al. (1997) and Chaloud and Peck (1994).

6. DATA MANIPULATIONS

6.1 Name of New or Modified Values

None.

6.2 Data Manipulation Description

See Chaloud and Peck (1994).

7. DATA DESCRIPTION

7.1 Description of Parameters

| Parameter Name | Data Type | Len | Format | Parameter Label |
|----------------|-----------|-----|--------|---|
| AG | Num | 8 | | Wet wt. concentration Silver (ug/g) |
| AGT | Char | 8 | | Silver flag |
| AL | Num | 8 | | Wet wt. concentration Aluminum (ug/g) |
| ALT | Char | 8 | | Aluminum flag |
| AS | Num | 8 | | Wet wt. concentration Arsenic (ug/g) |
| AST | Char | 8 | | Arsenic flag |
| CD | Num | 8 | | Wet wt. concentration Cadmium (ug/g) |
| CDT | Char | 8 | | Cadmium flag |
| CR | Num | 8 | | Wet wt. concentration Chromium (ug/g) |
| CRT | Char | 8 | | Chromium flag |
| CU | Num | 8 | | Wet wt. concentration Copper (ug/g) |
| CUT | Char | 8 | | Copper flag |
| DATE_COL | Num | 8 | MMDYY | Start date of sample |
| DRY | Num | 8 | | 100 - % moisture (100 - MOISTURE) |
| FE | Num | 8 | | Wet wt. concentration Iron (ug/g) |
| FET | Char | 8 | | Iron flag |
| HG | Num | 8 | | Wet wt. concentration Mercury (ug/g) |
| HGT | Char | 8 | | Mercury flag |
| LAB_REP | Num | 8 | | Analytical lab duplicate analysis |
| LAKENAME | Char | 30 | | Lake Name |
| LAKE_ID | Char | 6 | | Lake Identification Code |
| LAT_DD | Num | 8 | | Lake Latitude (decimal degrees) |
| LON_DD | Num | 8 | | Lake Longitude (decimal degrees) |
| MOISTURE | Num | 8 | | % moisture of composite sample |
| MSL_CODE | Char | 10 | | Battelle lab sample code ID (1992 only) |
| NI | Num | 8 | | Wet wt. concentration Nickel (ug/g) |
| NIT | Char | 8 | | Nickel flag |
| PB | Num | 8 | | Wet wt. concentration Lead (ug/g) |
| PBT | Char | 8 | | Lead flag |
| SAMPLED | Char | 20 | | Site sampling status |
| SAMP_ID | Num | 8 | | Sample identification code (barcode) |
| SE | Num | 8 | | Wet wt. concentration Selenium (ug/g) |
| SET | Char | 8 | | Selenium flag |
| SN | Num | 8 | | Wet wt. concentration Tin (ug/g) |
| SNT | Char | 8 | | Tin flag |
| SPECIES | Char | 25 | | Genus and species of sample |
| VISIT_NO | Num | 8 | | Visit Number |
| YEAR | Num | 8 | | Sample year |
| ZN | Num | 8 | | Wet wt. concentration Zinc (ug/g) |
| ZNT | Char | 8 | | Zinc flag |

7.1.1 Precision to Which Values are Reported

7.1.2 Minimum Value in Data Set by Parameter

| Name | Min |
|----------|----------|
| AG | 0.003 |
| AL | 0.26 |
| AS | 0.013 |
| CD | 0.003 |
| CR | 0.034 |
| CU | 0.125 |
| DRY | 19.1 |
| FE | 6.7 |
| HG | 0.009 |
| LAB_REP | 1 |
| LAT_DD | 39.2262 |
| LON_DD | -78.8519 |
| MOISTURE | 25.9 |
| NI | 0.048 |
| PB | 0.01 |
| SAMP_ID | 1 |
| SE | 0.112 |
| SN | 0 |
| VISIT_NO | 1 |
| YEAR | 1992 |
| ZN | 8.407 |

7.1.3 Maximum Value in Data Set by Parameter

| Name | Max |
|----------|-----------|
| AG | 0.185 |
| AL | 114.478 |
| AS | 10.282352 |
| CD | 0.527961 |
| CR | 2.166732 |
| CU | 21.845 |
| DRY | 74.1 |
| FE | 1446.48 |
| HG | 2.62973 |
| LAB_REP | 2 |
| LAT_DD | 47.1998 |
| LON_DD | -67.30111 |
| MOISTURE | 81.8 |
| NI | 4.428662 |
| PB | 1.481 |
| SAMP_ID | 311872 |
| SE | 8.51 |
| SN | 1.477 |
| VISIT_NO | 2 |
| YEAR | 1994 |
| ZN | 80.3 |

7.2 Data Record Example

7.2.1 Column Names for Example Records

AG,AGT,AL,ALT,AS,AST,CD,CDT,CR,CRT,CU,CUT,DATE_COL,DRY,FE,FET,HG,HGT
 LAB_REP,LAKENAME,LAKE_ID,LAT_DD,LON_DD,MOISTURE,MSL_CODE,NI,NIT,PB,PBT
 SAMPLED,SAMP_ID,SE,SET,SN,SNT,SPECIES,VISIT_NO,YEAR,ZN,ZNT

7.2.2 Example Data Records

., " ", 5.801748, " ", 3.75, "U", 0.1, "U", 1.947421, " ", 0.961556, "", 08/21/94, ., .,
 21.589093, " ", 0.316017, " ", ., "NORTH SPRINGFIELD BESERVOIR", "VT750L",
 43.3468, 72.5065, 72.99, " ", 0.70226, " ", 0.027, "", "Yes", 311872, 3.75, "U", ., .,
 " ", "Perca flavescens", 2, 1994, 17.326915, " "

., " ", 16.608, " ", 3.75, "U", 0.1, "U", 0.454644, " ", 0.797184, "", 06/29/94, ., ., 42.134496,
 " ", 0.03114, " ", ., "STOUGHTONPOND", "VT751L", 43.381, 72.501, 79.24, " ", 0.125, "U",
 0.08304, "", "Yes", 311798, 3.75, "U", ., ., " ", "Salmo gairdneri", 1, 1994, 23.352924, " "

., " ", 6.485248, " ", 3.75, "U", 0.1, "U", 0.802032, " ", 0.209132, "", 06/30/94, ., ., 34.43132,
 " ", 0.090552, " ", ., "TILDYSPOND", "VT752L", 44.644, 72.2043, 78.44, " ", 0.260876,
 "", 0.025, "U", "Yes", 311783, 3.75, "U", ., ., " ", "Perca flavescens", 1, 1994, 20.630764,
 ""

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-78 Degrees 51 Minutes 6.84 Seconds West (78.8519 Decimal Degrees)

8.2 Maximum Longitude

-67 Degrees 18 Minutes 4.00 Seconds West (67.30111 Decimal Degrees)

8.3 Minimum Latitude

39 Degrees 13 Minutes 34.32 Seconds North (39.2262 Decimal Degrees)

8.4 Maximum Latitude

47 Degrees 11 Minutes 59.28 Seconds North (47.1998 Decimal Degrees)

8.5 Name of Area or Region

Northeast: EPA Regions I and II which includes Connecticut, Massachusetts,
 Maine, New Hampshire, New Jersey, New York, Vermont, Rhode Island

9. QUALITY CONTROL / QUALITY ASSURANCE

9.1 Data Quality Objectives

See Chaloud and Peck (1994)

9.2 Quality Assurance Procedures

See Chaloud and Peck (1994)

9.3 Unassessed Errors

NA

10. DATA ACCESS

10.1 Data Access Procedures

10.2 Data Access Restrictions

10.3 Data Access Contact Persons

10.4 Data Set Format

10.5 Information Concerning Anonymous FTP

10.6 Information Concerning Gopher and WWW

10.7 EMAP CD-ROM Containing the Data

11. REFERENCES

Baker, J.R., G.D. Merritt, and D.W. Sutton (eds.). 1997. Environmental Monitoring and Assessment Program - Surface Waters: Field Operations Manual for Lakes. EPA/620/R-97/001. U.S. Environmental Protection Agency. Office of Research and Development. Washington, D.C.

Chaloud, D.J. and D.V. Peck. 1994. Environmental Monitoring and Assessment Program - Surface Waters: Integrated Quality Assurance Project Plan for the Surface Waters Resource Group. U.S. Environmental Protection Agency. Office of Research and Development.

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