

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION
REGIONAL ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM - REGION 1
1993-1994 FISH TISSUE CONTAMINATION IN MAINE LAKES
LAKE FIELD DATA

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1. DATA SET IDENTIFICATION

1.1 Title of Catalog document

Regional Environmental Monitoring and Assessment Program - Region 1
1993-94 Fish Tissue Contamination in Maine Lakes
Lake Field Data Set

1.2 Author of the Catalog entry

Melissa Hughes, OAO Corporation

1.3 Catalog revision date

10 March 1998

1.4 Data set name

FIELD DAT

1.5 Task Group

Region 1

1.6 Data set identification code

00003

1.7 Version

001

1.8 Requested Acknowledgment

If you plan to publish these data in any way, 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 Regional EMAP 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 Investigators

Barry Mower
Jeanne DiFranco
Linda Bacon
David Courtemanch
State of Maine Department of Environmental Protection

2.2 Investigation Participant-Sample Collection

Not applicable

3. DATA SET ABSTRACT

3.1 Abstract of the Data Set

The R-EMAP Region 1 Lake Field data set provides data and information resulting from and recorded during a Water Quality visit to a lake. Information on the crew and weather were recorded. Alkalinity data from several depths is presented, as well as secchi depth. These are factors that may affect a fish's or lake's sensitivity to contamination.

3.2 Keywords for the Data Set

Lake, Maine, surface water, field data, alkalinity, secchi depth

4. OBJECTIVES AND INTRODUCTION

4.1 Program and Project Objectives

4.1.1 Program Objective

Regional Environmental Assessment and Monitoring Program (R-EMAP) was initiated to test the applicability of the EMAP approach to answer questions about ecological conditions at regional and local scales. Using EMAP's statistical design and indicator concepts, R-EMAP conducts projects at smaller geographic scales and in shorter time frames.

4.1.2 Project Objective

The primary goal of this study was to estimate the levels of contamination in fish populations, and the risk these levels pose to human and wildlife consumers. The primary objective was to determine concentrations of cadmium, lead, mercury, PCBs and selected pesticides in fish collected from Maine lakes.

4.2 Data Set Objective

The objective of the Field data set was to characterize the weather conditions during each water quality visit and to characterize each lake for alkalinity and clarity.

4.3 Data Set Background Discussion

From a population of 1800 Maine lakes that have been surveyed by the Maine DIFW and have principal fisheries, one hundred and fifty lakes were selected using the EMAP sampling design and 125 were sampled. Correlations with factors that may affect a fish's or lake's sensitivity to contamination were examined secondarily. These factors include species, size, age, geography, geology, water and sediment chemistry, hydrology, trophic state and air flow patterns. The results will be used to develop preventive actions and management techniques.

4.4 Summary of Data Set Parameters

Alkalinity was measured in the field from surface, mid and bottom samples. Transparency was recorded using a secchi disk and a water scope, while weather conditions were recorded based on ambient conditions.

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

Collect water samples for alkalinity measurements. Take accurate weather and secchi depth readings.

5.1.2 Sample Collection Methods Summary

DIFW bathymetric maps were used to determine the deepest part of each lake. Water samples were collected from this point. Kemmerer or Van Dorn water bottles were used to collect water samples. Water samples for total alkalinity were collected at one meter below the surface, at the top of the hypolimnion (in stratified lakes) and at one meter above the bottom.

5.1.3 Sampling Start Date

June 1993
September 1994

5.1.4 Sampling End Date

September 1993
September 1994

5.1.5 Platform

Not applicable.

5.1.6 Sampling Equipment

Kemmerer or Van Dorn water bottles

5.1.7 Manufacturer of Sampling Equipment

Not known

5.1.8 Key Variables

All information was recorded in the field based on weather conditions and field or sample measurements.

5.1.9 Sampling Method Calibration

Not applicable.

5.1.10 Sample Collection Quality Control

Water samples were collected first to ensure an undisturbed water column.

5.1.11 Sample Collection Method Reference

DiFranco et. al., 1995. Fish Tissue Contamination in Maine Lakes. Data Report. State of Maine Department of Environmental Protection, Bureau of Land and Water Quality, Division of Environmental Assessment. September 1995.

5.2 Data Preparation and Sample Processing

Total alkalinity was measured using drop count titration (bromcresol green-methyl red endpoint).

6. DATA MANIPULATIONS

Not applicable

6.1 Name of new or modified values

Not applicable

6.2 Data Manipulation Description

Not applicable

6.3 Data Manipulation Examples

Not applicable.

7. DATA DESCRIPTION

7.1 Description of Parameters

CONTENTS

Data Set Name: FIELD DAT Observations: 129
Engine: V612 Variables: 22

#	Parameter SAS Name	Data Type	Len	Format	Parameter Label
1	REG	Char	5	\$5.	IFW Region
2	LAKE	Char	25	\$25.	Lake abbreviation
3	MIDAS	Char	6	\$6.	Lake identification number
4	SAMPDATE	Num	8	MMDDYY8.	Sampling date
5	TIME	Char	6	\$6.	Time of sampling
6	SURVEYOR	Char	15	\$15.	Names of sampling crew
7	WINDDIR	Char	9	\$9.	Wind direction
8	WINDVEL	Char	9	\$9.	Wind velocity estimate (mph)
9	WEATHER	Char	10	\$10.	0=clear,1=cloudy bright,3=heavy overcast

7.1 Description of Parameters, continued

#	Parameter SAS Name	Data Type	Len	Format	Parameter Label
10	SECCHI	Num	8	7.1	Secchi transparency reading
11	UNITS	Char	6	\$6.	Units for secchi reading; f=feet, m=meters
12	ALK1	Num	8	5.1	Surface alkalinity sample depth
13	ALKTOP	Num	8	8.1	Alkalinity (mg/l) -surface sample
14	ALK2	Num	8	6.1	Depth of metalimnetic alkalinity sample
15	ALKMID	Num	8	7.1	Alkalinity (mg/l) of metalimnetic sample
16	ALK3	Num	8	5.1	Depth of bottom alkalinity sample
17	ALKBOT	Num	8	8.1	Alkalinity (mg/l)- bottom sample
18	SEDDEPTH	Num	8	10.	Depth from which sediment samples were obtained
19	NOSSED	Num	8	7.	Number of sediment dredge samples taken
20	SEDNOTES	Char	85	\$85.	Sediment notes
21	GENNOTES	Char	81	\$81.	General notes
22	SECCHI_M	Num	8	13.1	Secchi depth (m)

7.1.6 Precision to which values are reported

Data were reported to one decimal place.

7.1.7 Minimum value in data set

Variable	Minimum
SECCHI	0.4
ALK1	0
ALKTOP	1.0
ALK2	1.0
ALKMID	1.0
ALK3	3.0
ALKBOT	2.0
SEDDEPTH	0.0
NOSSED	0.0
SECCHI_M	0.4

7.1.8 Maximum value in data set

Variable	Maximum
SECCHI	35.5
ALK1	5.0
ALKTOP	74.0
ALK2	37.0
ALKMID	74.0
ALK3	95.0
ALKBOT	106.0
SEDDEPTH	38.0
NOSSED	6.0
SECCHI_M	10.8

7.2 Data Record Example

7.2.1 Column Names for Example Records

REG;LAKE;MIDAS;SAMPDATE;TIME;SURVEYOR;WINDDIR;WINDVEL;WEATHER;SECCHI;UNITS;ALK 1;
ALKTOP;ALK2;ALKMID;ALK3;ALKBOT;SEDDEPTH;NOSED;SEDNOTES;GENNOTES;SECCHI_M;

7.2.2 Example Data Records

REG;LAKE;MIDAS;SAMPDATE;TIME;SURVEYOR;WINDDIR;WINDVEL;WEATHER;SECCHI;UNITS;ALK 1;
ALKTOP;ALK2;ALKMID;ALK3;ALKBOT;SEDDEPTH;NOSED;SEDNOTES;GENNOTES;SECCHI_M;
G;CROSS L;1674;08/02/93;1530;COTE/TYLER;S;4;2;9.0;F;1.0;19.0;12.0;22.0;13.0;30.0;14;
3; VERY FINE SILT OOZY NOT SANDY GREYBROWN IN COLOR;NO COMMENTS;2.7;
G;CHURCHILL L;2856;08/03/93;1628;COTE/TYLER;SE;07;1;3.0;M;1.0;12.0;10.0;10.0; 19.0;
12.0;20;3;THE DREDGE IS ALMOST FULL AND SEDIMENT BOTTOM IS MUCH SOFTER THAN CROSS
LAKE 1674;SEDIMENT SAMPLES COLLECTED WITH NO PROBLEMS;3.0;
G;EAGLE L;1634;08/04/93;1105;COTE/TYLER;S;06;1;21.0;F;1.0;15.0;8.0;16.0;95.0; 15.0;
0;0;SEDIMENT SAMPLES WERE COLLECTED AT ANOTHER LOCATION SINCE DEP DID NOT SEND 100
FT LINE LAT 47 2 20.1 N LN 68 33 10.7 W SED IS HARD TO GET DUE TO VEGETATION;6.4;

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-71 Degrees 00 Minutes 47 Decimal Seconds

8.2 Maximum Longitude

-67 Degrees 10 Minutes 30 Decimal Seconds

8.3 Minimum Latitude

43 Degrees 15 Minutes 21 Decimal Seconds

8.4 Maximum Latitude

47 Degrees 07 Minutes 11 Decimal Seconds

8.5 Name of area or region

EPA Region 1

The sampling area included the entire state of Maine.

9. QUALITY CONTROL AND QUALITY ASSURANCE

9.1 Data Quality Objectives

The data quality objective for aqueous samples was to have no more than a 30% relative percent difference.

9.2 Data Quality Assurance Procedures

Collection of one set of field duplicate samples for each region ensured that duplicates were collected from a minimum of 5% of the project lakes for all parameters sampled, as required in the Project Work/QA Plan.

10. DATA ACCESS

10.1 Data Access Procedures

Data can be downloaded from the WWW site or contact personnel listed in Section 10.3.

10.2 Data Access Restrictions

Not Applicable

10.3 Data Access Contact Persons

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10.4 Data Set Format

Data files are in ASCII semi-colon delimited format.

10.5 Information Concerning Anonymous FTP

Data cannot be accessed via ftp.

10.6 Information Concerning WWW

Data can be downloaded from the WWW site.

10.7 EMAP CD-ROM Containing the Data Set

Data are not available on CD-ROM

11. REFERENCES

DiFranco et. al., 1995. Fish Tissue Contamination in Maine Lakes. Data Report. State of Maine Department of Environmental Protection, Bureau of Land and Water Quality, Division of Environmental Assessment. September 1995.

Maine Department of Environmental Protection et al. 1993. Project Work/Quality Assurance Plan, Fish Tissue Contamination in Maine Lakes. Maine Department of Environmental Protection, Maine Department of Inland Fisheries and Wildlife and USEPA Region 1 Environmental Services Division. September 20, 1993.

12. TABLE OF ACRONYMS

ACRONYM	DESCRIPTION
DEP	Maine Department of Environmental Protection
DIFW	Maine Department of Inland Fisheries and Wildlife
EMAP	Environmental Monitoring and Assessment Program
EPA	Environmental Protection Agency
HetL	Maine Department of Human Services Health and Environmental Testing Laboratory

MIDAS Maine Information Display Analysis System - unique number assigned
 to each Maine lake

PCBs polychlorinated biphenyls

QA Quality Assurance

QA/QC Quality Assurance/Quality Control

REMAP Regional Environmental Monitoring and Assessment Program

UMO National Biological Survey and Sawyer Environmental Chemistry
 Laboratories at the University of Maine at Orono

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