CATALOG DOCUMENTATION
EMAP SURFACE WATERS PROGRAM LEVEL DATABASE
1991-1994 NORTHEAST LAKES DATA
LAKE FISH METRICS 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 Metrics 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
FSHMET

1.5 Task Group
Surface Waters

1.6 Data Set Identification Code
0108

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:

2. INVESTIGATOR INFORMATION

2.1 Principal Investigator
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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

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 multi-habitat,
multi-gear sample of the fish assemblage taken during midsummer.

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. This
data set contains a list of metrics derived from the species composition
within the lake at the time of sampling. The metrics summarize the species
relative abundance information by collapsing it into a series of metrics
representing trophic guilds, habitat preferences, tolerance capacities and
measures of biodiversity.

4.4   Summary of Data Set Parameters
Fish Assemblage metrics include counts of individuals and species collected
which can be grouped into several functional classifications, as well as
percent of species collected in the same classifications. The classifications
include feeding functions such as insectivores and piscivores, species
similarities such as minnow species, native/non-native classification, and
pollution tolerance or intolerance.

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.

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.

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
DATE_COL	Num	8	MMDDYY	Start date of sample collection
EXOT_IND	Num	8		# of non-native individuals
EXOT_SP	Num	8		# of non-native species
HSEN_IND	Num	8		# of habitat sensitive individuals
HSEN_SP	Num	8		# of habitat sensitive species
INT_IND	Num	8		# of intolerant individuals
INT_SP	Num	8		# of intolerant species
INV_IND	Num	8		# of insectivorous (invertivores) indiv.
INV_SP	Num	8		# of insectivorous (invertivores) spp.
LAKENAME	Char	30		Lake Name
LAKE_ID	Char	6		Lake Identification Code
LAT_DD	Num	8		Lake Latitude (decimal degrees)
LITH_IND	Num	8		# of non-guarding lithophile individuals
LITH_SP	Num	8		# of non-guarding lithophile species
LON_DD	Num	8		Lake Longitude (-decimal degrees)
MINN_IND	Num	8		# of native minnow individuals
MINN_SP	Num	8		# of native minnow species
MXGS_IND	Num	8		# of nat. minnows (excluding g. shiner)
MXGS_SP	Num	8		# of nat. minnow spp. excl. g. shiner
NAT_IND	Num	8		# of native individuals
NAT_SP	Num	8		# of native species
OMNI_IND	Num	8		# of omnivorous individuals
OMNI_SP	Num	8		# of omnivorous species
PISC_IND	Num	8		# of piscivorous individuals
PISC_SP	Num	8		# of piscivorous species
P_EXO_IN	Num	8		% of individuals as non-natives
P_EXO_SP	Num	8		% of species as non-natives
P_HSN_IN	Num	8		% of individuals as habitat sensitives
P_HSN_SP	Num	8		% of species as habitat sensitives
P_INT_IN	Num	8		% of individuals as intolerants
P_INT_SP	Num	8		% of species as intolerants
P_INV_IN	Num	8		% of individuals as insectivores
P_INV_SP	Num	8		% of species as insectivores
P_LTH_IN	Num	8		% of individuals as non-guard. lithophil
P_LTH_SP	Num	8		% of species as non-guarding lithophiles
P_MIN_IN	Num	8		% of individuals as native minnows
P_MIN_SP	Num	8		% of species as native minnows
P_OMN_IN	Num	8		% of individuals as omnivores
P_OMN_SP	Num	8		% of species as omnivores
P_PIS_IN	Num	8		% of individuals as piscivores
P_PIS_SP	Num	8		% of species as piscivores
P_SEN_IN	Num	8		% of indiv. as sensitive (intol/hab-sen)
P_SEN_SP	Num	8		% of spp. as sensitive (intol/hab-sen)
P_TOL_IN	Num	8		% of individuals as tolerants
P_TOL_SP	Num	8		% of species as tolerants
P_TOP_IN	Num	8		% of individuals at top of food chain
P_TOP_SP	Num	8		% of species at top of food chain

7.1 Description of Parameters, continued

```
P_XGS_IN   Num    8           % of indiv. as nat-minn. excl. g. shiner
P_XGS_SP   Num    8           % of spp. as nat-minn. excl. g. shiner
SAMPLED    Char   20          Site sampling status
SEN_IND    Num    8           # of sensitive (intol/hab-sen) individ.
SEN_SP     Num    8           # of sensitive (intol/hab-sen) species
TOL_IND    Num    8           # of tolerant individuals
TOL_SP     Num    8           # of tolerant species
TOP_IND    Num    8           # of individuals at top of food chain
TOP_SP     Num    8           # of species at top of food chain
TOT_IND    Num    8           total # of individuals caught
TOT_SP     Num    8           total # of species caught
VISIT_NO   Num    8           First or Second Visit (this year)
YEAR       Num    8           Sample Year
```

7.1.1 Precision to Which Values are Reported

Species and individual counts are reported as whole numbers. Percentages are reported to two decimal places.

7.1.2 Minimum Value in Data Set by Parameter

```
Name       Min
------------
EXOT_IND 0
EXOT_SP  0
HSEN_IND 0
HSEN_SP  0
INT_IND  0
INT_SP   0
INV_IND  0
INV_SP   0
LAT_DD   39.2262
LITH_IND 0
LITH_SP  0
LON_DD   -78.8519
MINN_IND 0
MINN_SP  0
MXGS_IND 0
MXGS_SP  0
NAT_IND  0
NAT_SP   0
OMNI_IND 0
OMNI_SP  0
PISC_IND 0
PISC_SP  0
P_EXO_IN 0
P_EXO_SP 0
P_HSN_IN 0
P_HSN_SP 0
P_INT_IN 0
P_INT_SP 0
P_INV_IN 0
P_INV_SP 0
```

7.1.2   Minimum Value in Data Set by Parameter, continued

```
P_LTH_IN 0
P_LTH_SP 0
P_MIN_IN 0
P_MIN_SP 0
P_OMN_IN 0
P_OMN_SP 0
P_PIS_IN 0
P_PIS_SP 0
P_SEN_IN 0
P_SEN_SP 0
P_TOL_IN 0
P_TOL_SP 0
P_TOP_IN 0
P_TOP_SP 0
P_XGS_IN 0
P_XGS_SP 0
SEN_IND  0
SEN_SP   0
TOL_IND  0
TOL_SP   0
TOP_IND  0
TOP_SP   0
TOT_IND  0
TOT_SP   0
VISIT_NO 1
YEAR     1991
```

7.1.3   Maximum Value in Data Set by Parameter

```
Name     Max
------------
EXOT_IND 3423
EXOT_SP  12
HSEN_IND 931
HSEN_SP  4
INT_IND  899
INT_SP   6
INV_IND  1242
INV_SP   8
LAT_DD   47.2125
LITH_IND 2258
LITH_SP  9
LON_DD   -67.30111
MINN_IND 2305
MINN_SP  7
MXGS_IND 2305
MXGS_SP  7
NAT_IND  2794
NAT_SP   26
OMNI_IND 3810
OMNI_SP  11
PISC_IND 1335
```

7.1.3   Maximum Value in Data Set by Parameter, continued

```
PISC_SP  10
P_EXO_IN 100
P_EXO_SP 100
P_HSN_IN 92
P_HSN_SP 75
P_INT_IN 100
P_INT_SP 100
P_INV_IN 91.8
P_INV_SP 50
P_LTH_IN 100
P_LTH_SP 100
P_MIN_IN 100
P_MIN_SP 100
P_OMN_IN 100
P_OMN_SP 100
P_PIS_IN 100
P_PIS_SP 100
P_SEN_IN 100
P_SEN_SP 100
P_TOL_IN 100
P_TOL_SP 100
P_TOP_IN 76.1
P_TOP_SP 50
P_XGS_IN 100
P_XGS_SP 100
SEN_IND  943
SEN_SP   6
TOL_IND  3810
TOL_SP   12
TOP_IND  242
TOP_SP   5
TOT_IND  3820
TOT_SP   30
VISIT_NO 2
YEAR     1994
```

7.2 Data Record Example

7.2.1   Column Names for Example Records
DATE_COL,EXOT_IND,EXOT_SP,HSEN_IND,HSEN_SP,INT_IND,INT_SP,INV_IND,INV_SP,
LAKENAME,LAKE_ID,LAT_DD,LITH_IND,LITH_SP,LON_DD,MINN_IND,MINN_SP,MXGS_IND,
MXGS_SP,NAT_IND,NAT_SP,OMNI_IND,OMNI_SP,PISC_IND,PISC_SP,P_EXO_IN,P_EXO_SP,
P_HSN_IN,P_HSN_SP,P_INT_IN,P_INT_SP,P_INV_IN,P_INV_SP,P_LTH_IN,P_LTH_SP,
P_MIN_IN,P_MIN_SP,P_OMN_IN,P_OMN_SP,P_PIS_IN,P_PIS_SP,P_SEN_IN,P_SEN_SP,
P_TOL_IN,P_TOL_SP,P_TOP_IN,P_TOP_SP,P_XGS_IN,P_XGS_SP,SAMPLED,SEN_IND,
SEN_SP,TOL_IND,TOL_SP,TOP_IND,TOP_SP,TOT_IND,TOT_SP,VISIT_NO,YEAR

7.2.2   Example Data Records

```
08/21/94,100,4,1,1,2,2,34,3,"NORTH SPRINGFIELD RESERVOIR","VT750L",43.3468,
78,1,-72.5065,21,3,11,2,483,9,298,5,250,4,17.1,30.8,0.2,7.7,0.3,15.4,5.8,23.1,
13.3,7.7,3.6,23.1,50.9,38.5,42.7,30.8,0.3,15.4,27.7,30.8,8.2,15.4,1.9,15.4,
"Yes",2,2,162,4,48,2,585,13,2,1994

06/29/94,45,3,0,0,9,1,0,0,"STOUGHTON POND","VT751L",43.381,201,3,-72.501,42,2,
21,1,299,5,230,5,114,3,13.1,37.5,0,0,2.6,12.5,0,0,58.4,37.5,12.2,25,66.9,62.5,
33.1,37.5,2.6,12.5,67.2,50,8.4,12.5,6.1,12.5,"Yes",9,1,231,4,29,1,344,8,1,1994

06/30/94,124,1,2,1,2,1,0,0,"TILDYS POND","VT752L",44.644,39,1,-72.2043,2,1,2,1,
156,4,177,3,101,1,44.3,20,0.7,20,0.7,20,0,0,13.9,20,0.7,20,63.2,60,36.1,20,0.7,
20,58.2,40,0,0,0.7,20,"Yes",2,1,163,2,0,0,280,5,1,1994
```

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 12 Minutes 45.00 Seconds North (47.2125 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

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.

12. TABLE OF ACRONYMS

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