CATALOG DOCUMENTATION
NATIONAL COASTAL ASSESSMENT- NORTHEAST DATABASE
YEARS 2000-2006
BENTHIC TAXON ABUNDANCE DATA: "BEN_ABUN"

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1. DATASET IDENTIFICATION

1.1 Title of Catalog document
National Coastal Assessment-Northeast Region Database
Years 2000-2006
Benthic Taxon Abundance Data

1.2 Authors of the Catalog entry
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1.3 Catalog revision date
October 2009

1.4 Dataset name
BEN_ABUN

1.5 Task Group
National Coastal Assessment-Northeast

1.6 Dataset identification code
008

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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2.3 Sample Processing Investigators

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3. DATASET ABSTRACT

3.1 Abstract of the Dataset

The BEN_ABUN file reports the identity and abundance of benthic species found in grab samples collected in NCA Estuaries in the Northeast Region in the year 2000-2006. One record is presented for each taxon per grab at a station. Each record includes the taxonomic name of the organism; the abundance of each taxa per grab; the taxonomic level represented by the record, (species, genus, family, etc); and the size of grab sampler used to collect the sediment. The lookup table BEN_TAX presents the common and scientific names and other information about each taxa.

3.2 Keywords for the Dataset

Benthic species, taxa, invertebrates, community composition, taxonomic identity,

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective

The National Coastal Assessment (NCA) is a national monitoring and assessment program with the primary goal of providing a consistent evaluation of the estuarine condition in U.S. estuaries. It is an initiative of the Environmental Monitoring and Assessment Program (EMAP), and is a partnership of several federal and state environmental agencies, including: EPA's Regions, Office of Research and Development, and Office of Water; state environmental protection agencies in the 24 marine coastal states and Puerto Rico; and the United States Geological Survey (USGS) and the National Oceanic and Atmospheric Agency (NOAA). The NCA program was initiated in 2000 and completed in 2006.

Stations were randomly selected using EMAP's probabilistic sampling framework and were sampled once during a summer index period (June to October). A consistent suite of indicators was used to measure conditions in the water, sediment, and in benthic and fish communities. The measured data may be used by the states to meet their reporting requirements under the Clean Water Act, Section 305(b). The data were also used to generate a series of national reports characterizing the condition of the Nation's estuaries http://www.epa.gov/nccr/.

4.2 Dataset Objective

The identity and abundance of the benthic organisms are reported for each grab sample collected.

4.3 Dataset Background Discussion

Refer to Section 4.4 for a list of dataset parameters. Additional information about selected parameters are discussed in this section.

This datafile provides the taxa name (LAT_NAME) and identification number (TSN) as provided by the contract laboratory performing the analysis. The TSN is a taxonomic serial number assigned by the Integrated Taxonomic Identification System or ITIS (http://www.itis.usda.gov/about_itis.html). Occasionally, differences are evident in the Latin names provided by the laboratory and those assigned by ITIS. Also, ITIS periodically updates its database of Latin names. Therefore, NCA maintains a datafile BEN_TAX, which is searchable by TSN code and lists the Latin name (TSN_NAME) believed to be most current and accurate. BEN_TAX also lists all available phylogenic information (regarding names for phylum, class, order, family, genus, and species) for a TSN code. When TSN codes are unavailable for a taxa, a temporary EMAP identification number (a five-digit number preceded by an "E"). BEN_TAX is available, along with other datafiles, at the summary database.

Different grab samplers were used by NCA partners as is designated by the parameter GRABSIZE. The Table below indicates the sampler used by ST_COOP and Year. Maine, NH, MA, RI, CT, MD, and VA exclusively used Young-modified Van Veen grab samplers with a sampling area of 0.04 m2 each year. NY used either a Young-modified Van Veen grab samplers (0.04 m2) or a Smith McIntyre sampler (0.1 m2). NJ-C/NJ and NJ-DB/DB used either a Ponar sampler (0.04 m2) or a Smith McIntyre sampler (0.1 m2).

Count of records by ST_COOP, GRABSIZE, and Year:

Count of records		Year							
ST_COOP	GRABSIZE	2000	2001	2002	2003	2004	2005	2006	Grand Total
ME	0.04	954	1312	768	687	484	495	700	5400
NH	0.04	726	572	356	380	352	219	224	2829
MA	0.04	1095	1429		520	717	744	831	5336
RI	0.04	866	690		372	435	731	623	3717
CT	0.04	734	816	290	221	469	327	693	3550
NY	0.04	488	615	894	606	422			3025
	0.1	130	68	72					270
NJ-C	0.04	343	997	382	356	732			2810
	0.1	51	198	125	67	58			499
NJ	0.04						319	670	989
	0.1						92		92
NJ-DB	0.04	125	325	261	183	223			1117
	0.1	129	200	167	184	269			949
DB	0.04						102	108	210
	0.1						231	199	430
DE	0.04	261	331	188	252	328			1360
DI	0.04						348	118	466

MD	0.04						233	287	520
VA	0.04						522	665	1187
Grand Total		5902	7553	3503	3828	4489	4363	5118	34756

The Table below lists the number of records analyzed by the indicated labs by ST_COOP and year. While some indications of minor systematic laboratory biases may be evident for some analytes and labs, the biases were not considered great enough to exclude the results from the database. The parameter LABCODE can be used to more carefully examine the results for laboratory bias. Addresses of the participating labs follow the Table.

Count of number of records by LABCODE, ST_COOP, and Year:

Count of records		Year							
LABCODE	ST_COOP	2000	2001	2002	2003	2004	2005	2006	Grand Total
NAT BEN	ME	954							954
	NH	726							726
	MA	1095							1095
	RI	866							866
	CT	734							734
	NY	618							618
	NJ-C	394							394
	NJ-DB	254							254
	DE	261							261
NAT BEN1	ME		1123						1123
	NH		572						572
	MA		1247						1247
	RI		456						456
	CT		551						551
	NY		683						683
	NJ-C		1195						1195
	NJ-DB		525						525
NAT BEN2	ME		189						189
	MA		182						182
	RI		234						234
	CT		265						265
	DE		331						331
NAT_BVA	ME			768	687				1455
	NH			356	380				736
	MA				520				520
	RI				372				372
	CT			290	221				511
	NY			966	606				1572
	NJ-C				423				423
	NJ-DB				367				367
	DE			188	252				440

NAT_TAI	NJ-C			507				507
	NJ-DB			428				428
NAT	ME				484	495	700	1679
	NH				352	219	224	795
	MA				717	744	831	2292
	RI				435	731	623	1789
	CT				469	327	693	1489
	NY				422			422
	NJ-C				790			790
	NJ					411	670	1081
	NJ-DB				492			492
	DB					333	307	640
	DE				328			328
	DI					348	118	466
MD	MD					233	287	520
VA	VA					522	665	1187
Grand Total		5902	7553	3503	3828	4489	4363	5118	34756

Different analytic labs have been used by NCA to identify benthic organisms in sample. These have included:

MD	Versar, Inc. 9200 Rumsey Rd., Columbia, MD 21045
NAT_BVA	Barry A. Vittor & Associates, Inc. 8060 Cottage Hill Rd. Mobile, AL 36695
NAT_TAI	TAI Environmental Sciences Division of Strand Associates, Inc 1717 Old Shell Rd Mobile, AL 36604
VA	Benthic Ecology Laboratory, Old Dominion University, Norfolk, VA 23529

4.4 Summary of Dataset Parameters

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

*STATION	Station name
*STAT_ALT	Alternate Site Code (A, B, C)
*EVNTDATE	Event date
*LAT_NAME	Taxa Latin name
ABUNDANC	Number of organisms of a taxon found in a grab sample
ID_LEVEL	Taxonomic level of taxa (species, genus, family, etc.)
GRABSIZE	Size of benthic grab sampler (0.04 m2 or 0.1 m2)
TSN	ITIS taxonomic serial number
LABCODE	Laboratory performing analysis

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition / Field Sampling

The sample collection methods used by USEPA trained field crews will be described here. Any significant variations by NCA partners are noted in Section 5.1.12. Details regarding NCA partners are reported in the STATIONS data file.

5.1.1 Sampling Objective

Benthic grab samples were collected for the identification and enumeration of benthic organisms. Additional sediment sub-samples were collected for the analysis of sediment chemical constituents, sediment grain-size analyses, and toxicity testing.

5.1.2 Sample Collection: Methods Summary

One 'grab' sample was collected from each station using a Young-modified Van Veen grab sampler. The grabs were nominally 440 cm^2 in area and 10 cm deep. A sub-sample 2.5 cm in diameter and the depth of the grab was taken from each grab for grain-size analysis. The remaining sediments were live-sieved in the field with a 0.5 mm mesh screen. Organisms retained on the screen were placed in plastic containers and fixed in 10% buffered formalin with rose bengal stain for preservation.

5.1.3 Beginning Sampling Dates

7 July 2000

5.1.4 Ending Sampling Dates

5 October 2006

5.1.5 Sampling Platform

Samples were collected from gasoline or diesel powered boats, 18 to 133 feet in length.

5.1.6 Sampling Equipment

A 1/25 m2, stainless steel (coated with Kynar), Young-modified Van Veen grab sampler was used to collect sediments.

5.1.7 Manufacturer of Sampling Equipment

Young's Welding, Sandwich, MA

5.1.8 Key Variables

Not applicable

5.1.9 Sample Collection: Calibration

The sampling gear does not require any calibration, although it was inspected regularly for damage by mishandling or impact on rocky substrates.

5.1.10 Sample Collection: Quality Control

Care was taken to minimize disturbance to the sediment grabs. Grabs that were incomplete, slumped, less than 7 cm in depth, or comprised chiefly of shelly substrates were discarded. The chance of sampling the same location was minimized by repositioning the boat (five meters downstream) after three sampling attempts.

5.1.11 Sample Collection: References

Strobel, C.J. 2000. Environmental Monitoring and Assessment Program: Coastal 2000 - Northeast component: field operations manual. Narragansett (RI): U.S. Environmental Protection Agency, National Health and Environmental Effects Research Laboratory, Atlantic Ecology Division. Report nr EPA/620/R-00/002. 68 p.

5.1.12 Sample Collection: Alternate Methods

See discussion of alternate grab samplers in Section 4.3.

5.2 Data Preparation and Sample Processing

5.2.1 Sample Processing Objective

To identify and count all infaunal and epifaunal organisms present in benthic grab samples.

5.2.2 Sample Processing: Methods Summary

All taxa in a grab sample were sorted by a technician and then identified and counted by a skilled taxonomist. Only organisms larger than 0.5 mm were processed; therefore groups such as turbellarian flatworms, nematodes, ostracods, harpacticoid copepods and foraminifera were excluded from the identification process.

5.2.3 Sample Processing: Calibration

Not applicable

5.2.4 Sample Processing: Quality Control

A minimum of 10% of all samples sorted by each technician were resorted to monitor performance and provide feedback to maintain acceptable standards. Only skilled taxonomists conducted the organism identification. A minimum of 10% of samples were re-checked by other qualified taxonomists for accuracy in identification and enumeration. Species lists from different labs were cross-checked. Inconsistencies in nomenclature were corrected as necessary.

5.2.5 Sample Processing: References

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

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 Dataset

VARIABLE	TYPE	LENGTH	LABEL
STATION	Char	9	Coastal 2000 Station Name
STAT_ALT	Char	1	Alternate Site Code (A,B,C)
EVNTDATE	Date	8	Event Date
LAT_NAME	Char	40	Taxa Latin Name
ABUNDANC	Num	4	Taxa Abundance in sample
ID_LEVEL	Char	15	Taxonomic Level of Identification
GRABSIZE	Char	10	Size of Benthic Grab Sampler
TSN	Char	10	ITIS Taxonomic Serial Number
LABCODE	Char	7	Lab/Contract Identifier

7.1.2 Precision of Reported Values

Abundance counts are reported as whole numbers

7.1.3 Minimum Value in Dataset

ABUNDANC 0

7.1.4 Maximum Value in Dataset

ABUNDANC 21192

7.2 Data Record Example

STATION	STAT_ALT	EVNTDATE	grabsize	lat_name
CT03-0021	A	8/20/2003	0.04 sq. m	Acteocina canaliculata
CT03-0021	A	8/20/2003	0.04 sq. m	Actiniaria
CT03-0021	A	8/20/2003	0.04 sq. m	Ampelisca

tsn	abundanc	labcode	ID_LEVEL
76117	4	NAT_BVA	Species
52485	1	NAT_BVA	Order
93321	1	NAT_BVA	Genus

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude (Westernmost)

-77.304 decimal degrees

8.2 Maximum Longitude (Easternmost)

-66.946 decimal degrees

8.3 Minimum Latitude (Southernmost)

36.564 decimal degrees

8.4 Maximum Latitude (Northernmost)

45.1848 decimal degrees

8.5 Name of area or region

The National Coastal Assessment Northeast Region covers the northeastern US coastline from Maine to Virginia.

9. QUALITY CONTROL AND QUALITY ASSURANCE

9.1 Measurement Quality Objectives

The measurement quality objectives of the EMAP-Estuaries program specifies that sorting, counting and identification procedures be accurate to within 10% (see U.S. EPA 2001).

9.2 Data Quality Assurance Procedures

A minimum of 10% of all samples processed were resorted by a second qualified technician. A minimum of 10% of all samples processed by each taxonomic technician was checked by a second senior taxonomist to verify the accuracy of species identification and enumeration.

9.3 Actual Measurement Quality :

Not applicable

10. DATA ACCESS

10.1 Data Access Procedures

Data can be downloaded from the web

http://www.epa.gov/emap/nca/html/regions/index.html

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

No gopher access, see Section 10.1 for WWW access

10.7 EMAP CD-ROM Containing the Dataset

Data not available on CD-ROM

11. REFERENCES

Strobel, C.J. 2000. Environmental Monitoring and Assessment Program: Coastal 2000 - Northeast component: field operations manual. Narragansett (RI): U.S. Environmental Protection Agency, National Health and Environmental Effects Research Laboratory, Atlantic Ecology Division. EPA/620/R-00/002. 68 p.

U.S. EPA. 2001. National Coastal Assessment: Field Operations Manual. U.S. Environmental Protection Agency, Office of Research and Development, National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, Gulf Breeze, FL. EPA/620/R-01/003. 72 p.

U.S. EPA. 2001. Environmental Monitoring and Assessment Program (EMAP): National Coastal Assessment Quality Assurance Project Plan 2001-2004. U.S. Environmental Protection Agency, Office of Research and Development, National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, Gulf Breeze, FL. EPA/620/R-01/002. 189 p.

12. TABLE OF ACRONYMS

AED	Atlantic Ecology Division (USEPA)
DB	Delaware Bay
cm	Centimeter
EMAP	Environmental Monitoring and Assessment Program
EPA	U.S. Environmental Protection Agency
GED	Gulf Ecology Division (USEPA)
mm	Millimeter
m2	Square meter
USEPA	United States Environmental Protection Agency
WWW	World Wide Web

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