VIRGINIA CHESAPEAKE BAY PROGRAM MESOZOOPLANKTON MONITORING SURVEY DATA DICTIONARY

Virginia Chesapeake Bay Water Quality Monitoring Program: Mesozooplankton Component
- Taxonomic Data Dictionary
- Jellyfish Count and Biovolume Data Dictionary
- Event Data Dictionary

NOTES:
1) THIS PROGRAM WAS TERMINATED AS OF 31 DECEMBER 2002
2) THIS DICTIONARY WAS REVISED ON 31 JANUARY 2007 AND SUPERSEDES ALL OTHER DICTIONARIES FOR THE VIRGINA MESOZOOPLANKTON DATA

The Commonwealth of Virginia, in cooperation with the US EPA Chesapeake Bay Program, has monitored plankton species abundance and composition in the Virginia Chesapeake Bay mainstem and tributaries since 1985. The current program is designed to give comprehensive spatial and temporal information on phytoplankton. Sampling was performed in conjunction with the Virginia phytoplankton and water quality monitoring programs.

NAMES AND DESCRIPTIONS OF ASSOCIATED DATA DICTIONARY FILE
The 2000 Users Guide to Chesapeake Bay Program Biological and Living Resources Monitoring Data

#PROJECT TITLE:
Virginia Chesapeake Bay Monitoring Program: Lower Chesapeake Bay Mesozooplankton Study

CURRENT PRINCIPAL INVESTIGATORS:

THIS PROGRAM WAS TERMINATED AS OF 31 DECEMBER 2002; THE FOLLOWING WERE THE INVESTIGATOR AND PROJECT MANAGERS AT TIME OF PROJECT TERMINATION.

>Program Manager: Frederick Hoffman, Virginia Department of Environmental Quality
>Prinicipal Investigators: Dan Dauer, Kenneth Carpenter, Harold Marshall, Old Dominion University.
>Programmer/Analyst: Michael Lane, Old Dominion University
>Data Coordinator: Anne Gover, Cory Christman Old Dominion University
>Previous Principal Investigators: Raymond Birdsong, Old Dominion University (Deceased)

#CURRENT FUNDING AGENCIES:
Not Applicable

#PROJECT COST:
Not Applicable

#QA/QC OFFICER: Forest Crock, Old Dominion University

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#LOCATION OF STUDY
Chesapeake Bay and its Tidal Tributaries in the Commonwealth of Virginia

#DATE INTERVALS
19850101-20021231

#ABSTRACT
The initial objectives of this study were to characterize the composition and abundance, and the spatial and temporal patterns of the mesozooplankton populations in the lower Chesapeake Bay and several major tributaries, and to examine relationships between water quality conditions and observed zooplankton composition and abundance. A major goal of the study is the establishment of a long term data base that is being used to identify trends in zooplankton spatial-temporal patterns of development over time and in relation to changes in Bay water quality conditions and other plankton components (Birdsong, 1992; Mateja et al., 1995). Sampling of tributary stations did not begin until January 1986. Sampling in the Elizabeth River did not begin until January of 1989. Beginning in 1997 a second sampling cruise was added for station in tidal fresh area (TF3.3, TF4.2, TF5.5) to better measure food availability in andaromous fish spawning areas. In 1998 sampling at Elizabeth River station SBE2 was discontinued. Collection of Biomass data at all stations was also discontinued. Sampling for mesozooplankton at all stations ended in October 2002 due to the termination of the zooplankton portion of the monitoring program in December 2002. Note due to contract changes starting in January 1996, station LE5.5 had a coordinate change. This station move was not documented until August 2005. Due to this station relocation, all data collected at the altered location had the station name changed to LE5.5-W in August 2005.

#STATION NAMES AND DESCRIPTIONS:

CB6.1	Main Channel, Mid-Bay
CB6.4	Main Channel, Mid-Bay
CB7.3E	Eastern Shore Channel Southern End
CB7.4	Baltimore Channel, Bay Mouth
LE3.6	Off Mouth of Rappahannock River
WE4.2	Off Mouth of York River
LE5.5	Off Mouth of James River
LE5.5-W	Off Mouth of James River
SBE2	South Branch Elizabeth River
SBE5	South Branch Elizabeth River, Off VEPCO
TF3.3	Rappahannock River, Buoy N40
RET3.1	Rappahannock River, N Buoy R10
TF4.2	Pamunkey River Off White House
RET4.3	York River Buoy C57
TF5.5	James River Red Buoy 107
RET5.2	James River Off Swann's Point

STATION NAMES, LATITUDES (decimal degrees), LONGITUDES (decimal degrees), TOTAL DEPTH (meters), LATITUDES (degrees, minutes and decimal seconds), AND LONGITUDES (degrees, minutes and decimal seconds). These station positions represent target values and are not actual values. They are the values used by the Chesapeake Bay Program as a whole to coordinate data for the stations. All station positions are NAD83 coordinates.

STATION	LATITUDE	LONGITUDE	TOTAL_DEPTH	LATITUDE (DMS)	LONGITUDE (DMS)
CB6.1	37.58833	-76.1625	13.1	37 35' 18"	-77 50' 15"
CB6.4	37.23639	-76.2083	10.5	37 14' 11"	-77 47' 30"
CB7.3E	37.22861	-76.0542	17.8	37 13' 43"	-77 56' 45"
CB7.4	36.99556	-76.0208	13.8	36 59' 44"	-77 58' 45"
LE3.6	37.59667	-76.285	9.8	37 35' 48"	-77 42' 54"
LE5.5	36.99889	-76.3136	21.4	36 59' 48"	-76 18' 12"
LE5.5-W	36.99903	-76.31328	6.0	36 59’ 56”	-76 18’ 49”
RET3.1	37.92014	-76.8214	5.8	37 55' 12.488"	-77 10' 43.138"
RET4.1	37.52514	-76.8697	5.1	37 31' 30.522"	-77 7' 49.131"
RET4.3	37.50681	-76.788	5.2	37 30' 24.522"	-77 12' 43.14"
RET5.2	37.21015	-76.793	8.3	37 12' 36.533"	-77 12' 25.145"
SBE2	36.81265	-76.3058	13.0	36 48' 45.533"	-77 41' 39.212"
SBE5	36.76987	-76.2961	10.0	36 46' 11.534"	-77 42' 14.215"
TF3.3	38.01874	-76.908	6.6	38 1' 7.481"	-77 5' 31.122"
TF4.2	37.57987	-77.0216	6.4	37 34' 47.52"	-78 58' 42.113"
TF5.5	37.31293	-77.2328	9.0	37 18' 46.534"	-78 46' 2.087"
WE4.2	37.24167	-76.3867	14.1	37 14' 30"	-77 36' 48"

Station positions are given in decimal degrees. Station depths are given in meters, based on a nine-year average (1985-1994) of Virginia Department of Environmental Quality, water quality hydrographic data collected concurrently with the primary production samples.

METHODOLOGY DESCRIBING CHAIN OF CUSTODY FOR LAB SAMPLES
The zooplankton field chief was the custodian for all samples collected, verified proper labeling of bottles, complete field data entries, the collection of the samples, preservative used and transport to the laboratory. They also supervise the calibration and availability of field equipment. Samples are turned over to the laboratory chief who oversees the sample processing, analysis and recording of the raw data. The principal investigator and laboratory chief for quality assurance routinely check taxonomic identifications, raw data sheets and other stages of the collection and analysis procedures.

BIOLOGICAL ENUMERATION TECHNIQUES

Chesapeake Bay Program Analytical Method Code-

METHOD	DATA_TYPE	CODE	TITLE
BM102	BM	102	ODU MESOZOOPLANKTON BIOMASS
JF103	JF	103	ODU JELLYFISH METHOD
MZ102	MZ	102	ODU MESOZOOPLANKTON METHOD
MZ102B	MZ	102	ODU MESOZOOPLANKTON METHOD
MZ103	MZ	103	ODU MESOZOOPLANKTON METHOD

>Zooplankton Settled Volume Determinations

-Chesapeake Bay Program Analytical Method Code-BM102
NOTE: BIOMASS DETERMINATIONS WERE DISCONTINUED IN 1996-DATA AVAILIBLE BY REQUEST.
The ash-free dry weights are determined following the normal biomass drying and weighing procedures. Following the initial weighing, the dried samples are directly placed into the muffle furnace for incineration. The samples are incinerated in the furnace at a temperature of 550 degrees C for 4 hours. The samples are allowed to cool to room temperature and then transferred to desiccators for storage until weighing. Drying, cooling and weighing are repeated until the successive weights vary by less than 5% over a one-day interval. Exposure from the desiccators never exceeds 5 minutes.

>Gelatinous Zooplankton Enumeration
-Chesapeake Bay Program Analytical Method Code-JF103
NOTE: NO JELLYFISH DATA AVAILABLE PRIOR TO 1996
Beroe (BEROE, BEROEVOL), Hydrozoans (HYDRO, HYDROVOL), Mnemiopsis (MNEMIOP, MNEMVOL), and true Jellyfish ((JELLY, JELLYVOL) were removed from samples and sorted in the field after sample preservation, their numbers and settled volumes were recorded from the net that was used as the count sample.

>Zooplankton Species Composition and Abundance Enumeration

-Chesapeake Bay Program Analytical Method Code-MZ102
From January 1985-February 1998, processing and analysis of samples is conducted by the coefficient of variation stabilizing method (Alden et al. 1982). Size fractionation of each sample produces 5 size classes (200, 300,600, 850, 2000 microns). Size classes in which the organisms are too numerous to count in their entirety are split with a Folsom plankton splitter until an appropriate sample size is reached for statistically valid counts of the dominant species. The chosen error level of 35% requires that each species of interest be counted to achieve a range of between 20 nd 42 individuals in any given split. Species observed to be subdominant in the final split are counted until they have achieved the range for the 35% error level. The taxon abundance is recorded as numbers per unit volume.

-Chesapeake Bay Program Analytical Method Code-MZ102B
From March 1998 to January 2000, processing and analysis of samples was conducted using a modification of the coefficient of variation stabilizing method (Alden et al. 1982). Size fractionation of each sample produces 6 size classes (75, 200, 300, 600, 850, 2000 microns). Size classes in which the organisms are too numerous to count in their entirety are split with a Folsom plankton splitter until an appropriate sample size is reached for statistically valid counts of the dominant species. The chosen error level of 35% requires that each species of interest be counted to achieve a range of between 20 nd 42 individuals in any given split. Species observed to be subdominant in the final split are counted until they have achieved the range for the 35% error level. Taxon abundance is recorded as numbers per unit volume.

-Chesapeake Bay Program Analytical Method MZ103
From February 2000 to 2002, a hierarchical counting technique is employed to obtain density estimates. This procedure consists of first counting at least 60 individuals of the most dominant forms (e.g. Acartia tonsa) in a small sub sample (usually 1 - 2 milliliters), followed by 5- and 10- milliliter sub samples from which all species that had counts less than 60 in the previous sub sample are counted. Macro zooplankton (amphipods, shrimp, etc.) are identified when observed in sub samples. In addition, all samples, after the standard hierarchical counting technique, were filtered through an 850-micrometer sieve. Mesozooplankton that were retained in the 850-micrometer sieve that were not previously identified in the sub samples and/or macro zooplankton were counted and identified.

FORMULA, CALCULATIONS AND CONVERSION
>SAMPLE VOLUME
The following formula is used to calculate distance traveled by the bongo net during a tow.

DISTANCE=(STOP-START)*BLADE CONSTANT

Where
STOP is the number of revolutions recorded on the bongo net flow meter at the end of the tow,
START is the number of revolutions on the meter at the beginning of the tow,
DISTANCE is the distance traveled by the bongo net during the tow.
The blade constant is equal to 26873/999999.

The sample volume is calculated using the following equation:

SAMPLE VOLUME= DISTANCE*AREA
Where AREA + 0.18776 square meters.

>ZOOPLANKTON DENSITY

-For Variance Stabilization techniques MZ102A an MZ102B
Densities are first calculated for each size class and then a total density is calculated. The size classes range from 200 to 2000 microns and represent the sieve sizes used to separate organisms into categories prior to identification and enumeration.

SC2000= ((2**SC2000S)*SC2000C)/VOL
SC850 = ((2**SC850S)*SC850C)/VOL
SC600 = ((2**SC600S)*SC600C)/VOL
SC300 = ((2**SC300S)*SC300C)/VOL
SC200 = ((2**SC2000S)*SC200C)/VOL
*SC75 = ((2**SC75S)*SC75C)/VOL
T_DENS= SC2000+SC850+SC600+SC300+SC200+SC75

*SC75- for samples collected after March 1998
SC<N>= Density of size class N
SC<N>S= Number of splits for size class N
SC<N>C= Number counted in split for size class N

-For Henson Stemple technique MZ103
The following equation is used to convert raw counts to density for each taxon identified:

DENSITY = A * (B/(C * FVOL_M3))

Where DENSITY = density in numbers per cubic meter
A = number of individuals counted in the sub sample
B = volume in milliliters of sample from which sub samples are taken
C = sub sample volume in milliliters
FVOL_M3 = volume of water filtered by the bongo nets in cubic meters

MONITORING VARIABLE QA\QC PLAN FOR PROJECT
The principal investigator and laboratory chief for quality assurance routinely check the taxon identifications, raw data sheets and other stages of the collection and analysis procedures. See EPA Quality assurance plan for extensive details on http://www.chesapeakebay.net.

VARIABLE NAMES, MEASUREMENT UNITS, AND DESCRIPTIONS

>PARAMETER: ASH_WT (Total Ash Weight as Milligrams per Cubic Meter), ASHWT (Total Ash Weight as Grams per Sample), ASH_FRWT (Ash Free Dry Weight as Milligrams per Cubic Meter), AFDW (Ash Free Dry Weight as Grams per Sample)
-COLLECTION METHODS:
NOTE: BIOMASS DETERMINATIONS WERE DISCONTINUED IN 1996-DATA AVAILIBLE BY REQUEST.
Two stepped oblique; replicate tows with paired bongo nets are taken at each station through the entire water column. Steps are taken in 1-4 meter increments depending on total station depth. There are always 5 step levels per station. Tows last between 5 to 10 minutes depending on zooplankton abundance. One of the paired nets is used for taxonomic purposes (counting), the other for biomass measurements.
-SAMPLE PRESERVATIVES: N/A
-SAMPLE STORAGE ENVIRONMENT: N/A

-TIME IN STORAGE: None
-LAB TECHNIQUES WITH REFERENCES:
The ash-free dry weights are determined following the normal biomass drying and weighing procedures. Following the initial weighing, the dried samples are directly placed into the muffle furnace for incineration. The samples are incinerated in the furnace at a temperature of 550 degrees C for 4 hours. The samples are allowed to cool to room temperature and then transferred to a dessicator for storage until weighing. Drying, cooling and weighing are repeated until the successive weights vary by less than 5% over a one-day interval. Exposure from the dessicator never exceeds 5 minutes.

>PARAMETER: BEROEVOL (Volume of Beroe in Milliliters per Sample), CNIDAVOL (Volume of All Cnidaria in Milliliters per Sample), HYDRAVOL (Volume of Hydromedusae in Milliliters per Sample), JELLYVOL (Number of Sea Nettles Per Sample), MNEMVOL (Volume of Mnemiopsis in Milliliters per Sample)
-COLLECTION METHODS:
NOTE: NO JELLYFISH DATA AVAILABLE PRIOR TO 1996
Two stepped oblique; replicate tows with paired bongo nets are taken at each station through the entire water column. Steps are taken in 1-4 meter increments depending on total station depth. There are always 5 step levels per station. Tows last between 5 to 10 minutes depending on zooplankton abundance. One of the paired nets is used for taxonomic purposes (counting), the other for biomass measurements. The net for the biovolume was randomly selected.
-SAMPLE PRESERVATIVES: Formalin
-SAMPLE STORAGE ENVIRONMENT: Room temperature
-TIME IN STORAGE: 2 to 4 days
-LAB TECHNIQUES WITH REFERENCES:
Beroe (BEROE, BEROEVOL), Hydrozoans (HYDRO, HYDROVOL), Mnemiopsis (MNEMIOP, MNEMVOL), and true Jellyfish ((JELLY, JELLYVOL) were removed from samples and sorted in the field after sample preservation, their numbers and settled volumes were recorded from the net that was used as the count sample.

>PARAMETER: COUNT (# of a Mesozooplankton Taxon per Cubic Meter)
-COLLECTION METHODS: Two stepped oblique; replicate tows are taken at each station through the entire water column. Steps are taken in 1-4 meter increments depending on total station depth. There are always 5 step levels per station. Tows last between 5 to 10 minutes depending on zooplankton abundance. One of the paired nets is used for taxonomic purposes (counting), the other for biomass measurements. The count sample is preserved.
-SAMPLE PRESERVATIVE: Buffered Formalin
-SAMPLE STORAGE ENVIRONMENT: Room Temperature
-TIME IN STORAGE: 2-3 Months
-LABORATORY TECHNIQUES WITH REFERENCES:

Alden, R.W., R.C. Dahiya and R.J. Young. 1982. A method for the enumeration of zooplankton samples. J. exp. Mar. Biol. Ecol.59:185-209.

Birdsong, R.S. 1992. Zooplankton monitoring program. In: Virginia Chesapeake Bay water quality and living resources monitoring programs: Comprehensive Technical Report, 1985- 1989. Old Dominion University AMRL Tech. Rept. No. 848, (Zooplankton) i- iv, 1-54. Norfolk, Va.

Mateja, G. et al. 1995. The lower Chesapeake Bay Mesozooplankton Monitoring Program:Methodology and Progress to date. Virginia J. Science, (abs), Vol.46:

>PARAMETER: DRY_WT (Total Dry Weight as Milligrams per Cubic Meter), DRYWT (Total Dry weight as Grams per Sample)
-COLLECTION METHODS:
NOTE: BIOMASS DETERMINATIONS WERE DISCONTINUED IN 1996-DATA AVAILIBLE BY REQUEST.
Two stepped oblique; replicate tows with paired bongo nets are taken at each station through the entire water column. Steps are taken in 1-4 meter increments depending on total station depth. There are always

5 step levels per station. Tows last between 5 to 10 minutes depending on zooplankton abundance. One of the paired nets is used for taxonomic purposes (counting), the other for biomass measurements.
-SAMPLE PRESERVATIVES: Frozen
-SAMPLE STORAGE ENVIRONMENT: Frozen
-TIME IN STORAGE: Frozen until thawed for drying
-LAB TECHNIQUES WITH REFERENCES: Only materials from detritus-free samples are processed. Samples are dried in pre-weighed crucibles in a drying oven at 60 degrees Celsius. Drying time varies depending on the sample volume, but one week is typically sufficient to stabilize the weight. Dried samples are removed to a dessector and weighed when cool.

>PARAMETER: FVOL_M3 (Volume Water Filtered for Sample in meters cubed)
-COLLECTION METHODS: Digital General Oceanics flow meters
-SAMPLE PRESERVATIVES: None
-SAMPLE STORAGE ENVIRONMENT: None
-TIME IN STORAGE: None
-LAB TECHNIQUES WITH REFERENCES: Number of revolutions (final reading minus initial reading, taken from the flow meter) is recorded in the field for each sample collected. Volume filtered is calculated from the standard conversion formula provided by the manufacturer. NOTE THESE VALUES ARE UNAVAILABLE FOR DATA PRIOR TO 1993.

>PARAMETER: LATITUDE (in decimal degrees), LONGITUDE (in decimal degrees)
-COLLECTION METHODS: Loran-C, NAD27-Before July 1985; GPS, NAD83 After-July 1995
ALL DATA CONVERTED TO NAD83 COORDINATES IN DATASETS.
-SAMPLE PRESERVATIVES: None
-SAMPLE STORAGE ENVIRONMENT: None
-TIME IN STORAGE: None
-LAB TECHNIQUES WITH REFERENCES: Station positions in data set are approximations of actual positions in the field. Station latitudes and longitudes are input into a Loran-C/GPS receiver and sampling begins when boat reaches pre-programmed coordinates. Loran-C is accurate to +/-1500 feet. The actual Loran/GPS coordinates for each sampling event are not currently recorded in data set.

>PARAMETER: LAYER (Layer of Water Column in Which Sample was Taken),
-COLLECTION METHODS: Hydrolab CTD
-SAMPLE PRESERVATIVES: None
-SAMPLE STORAGE ENVIRONMENT: None
-TIME IN STORAGE: None
-LAB TECHNIQUES WITH REFERENCES: The Layer sampled in this study is the whole water column, WC. The WC Layer is the entire water column without regard to P_DEPTH.

>PARAMETER: SALZONE (Salinity Zone)
-COLLECTION METHODS: Hydrolab CTD
-SAMPLE PRESERVATIVES: None
-SAMPLE STORAGE ENVIRONMENT: None
-TIME IN STORAGE: None
-LAB TECHNIQUES WITH REFERENCES: Water column salinity, temperature and depth were recorded prior to zooplankton tows. Salinity values are averaged over the entire water column and a zone is determined. Salinity Ranges are as follows: Fresh 0-0.5 ppt (F), Oligohaline >0.5-5.0 ppt (O), Mesohaline >5.0-18 ppt (M) and Polyhaline >18 ppt (P).

>PARAMETER: P_DEPTH (Depth 0.5 Meters Above the Pycnocline)
-COLLECTION METHODS: Hydrolab CTD
-SAMPLE PRESERVATIVES: None
-SAMPLE STORAGE ENVIRONMENT: None
-TIME IN STORAGE: None

-LAB TECHNIQUES WITH REFERENCES: Parameter not relevant with whole water column samples. However in Virginia, P_DEPTH is set as one-third total water column depth. Total depth for each station was determined in the field based hydrographic data collected concurrently with the plankton samples.
>PARAMETER: TOTAL_DEPTH (Total Station Depth in Meters)
-COLLECTION METHODS: Hydrolab CTD
-SAMPLE PRESERVATIVES: None
-SAMPLE STORAGE ENVIRONMENT: None
-TIME IN STORAGE: None
-LAB TECHNIQUES WITH REFERENCES: TDEPTH for each station is based on Hydrographic data collected concurrently with the plankton samples. Total Station depths were not reported prior to 1997.

>DATA ENTRY METHOD: From 1989 to 2000- Mesozooplankton counts were entered and calculated in a QUATTRO spread sheet directly from the bench sheets by the principle investigator and output as ASCII files. These files were then compared. Data keypunched to microcomputer and/or mainframe terminal. From 2000-2002- Mesozooplankton counts were entered and calculated in a FOXPRO Database system directly from the bench sheets by the principle investigator and output as ASCII files.

>DATA VERIFICATION: From 1989 to 2000-Double-entry with comparison of two files in SAS. Re-entry until both copies match exactly. From 2000-2002-Bench sheets were double entered into FOXPRO Database system and re-entered until copies matched bench sheets.

SPECIES INHOUSE CODES, REFERENCE CODES AND SCIENTIFIC NAMES
> INHOUSE SPECIES LIST: Old Dominion University in-house zooplankton species codes and Latin Names are as follows:

SPEC_CODE	TSN	SOURCE_LBL
1	0048943	Ectopleura dumortier
2	0048996	Pennaria tiarella
3	0049023	Dipurena strangulata
4	0049034	Linvillea agassizi
5	0048898	Turritopsis nutricula
6	0049344	Podocoryne minima
7	0048777	Bougainvillia rugosa
8	0048849	Nemopsis bachei
9	0049185	Amphinema dinema
10	0050815	Proboscidactyla ornata
11	0049514	Obelia spp.
12	0050567	Eucheilota ventricularis
13	0050552	Lovenella gracilis
14	0050671	Phialucium carolinae
15	0051048	Liriope tetraphylla
16	0051094	Aglantha digitale
17	0051236	Cunina octonaria
18	0051644	Chrysoara quinquecirrha
19	0051671	Cyaena capilatta
20	0051701	Aureila aurita
21	0053917	Mnemiopsis leidyi
22	0053956	Beroe ovata
23	0059490	unknown Nematoda
24	0155466	Phoronis architecta
25	0067786	Asabellides oculata
26	0067718	unknown Ampharetidae
27	0065152	Palaenotus heteroseta
28	0065148	unknown Chrysopetalidae

SPEC_CODE	TSN	SOURCE_LBL
29	0066126	unknown Goniadidae
30	0065467	unknown Hesionidae
31	0067042	unknown Magellonidae
32	0066010	unknown Nephytidae
33	0065917	Nereis succinea
34	0065870	unknown Nereidae
35	0067342	unknown Opheliidae
36	0067709	Pectinaria gouldii
37	0065321	Paranaitis speciosa
38	0065228	unknown Phyllodocidae
39	0064397	unknown Polynoididae
40	0066801	Polydora ligni
41	0066937	Paraprionospio pinnata
42	0066897	Spiophanes bombyx
43	0066781	unknown Spionidae
44	0065587	unknown Syllidae
45	0064357	unknown trochophore
46	0079273	Yoldia limatula
47	0079326	unknown Arcidae (Anadaridae)
48	0079454	Mytilus edulis
49	0079451	unknown Mytilidae
50	0079872	Crassostrea virginica
51	0080651	Mysella sp.
52	0081496	Mercenaria mercenaria
53	0080959	Mulina lateralis
54	0081006	unknown Solenidae
55	0072611	unknown Calyptraeidae
56	0072918	Polinices duplicatus

SPEC_CODE	TSN	SOURCE_LBL
57	0072878	unknown Naticidae
58	0073552	Mitrella lunata
59	0082379	Loliguncula brevis
60	0083545	unknown Pycnogonida
61	0083677	unknown Crustacea
62	0083967	Podon polyphemoides
63	0083961	Evadne nordmanni
64	0083962	Evadne tergestina
65	0083963	Evadne spinifera
66	0085322	Paracalanus spp.
67	0085324	Paracalanus crassirostris
68	0085877	Temora longicornis
69	0085864	Eurytemora americana
70	0085765	Centropages furcatus
71	0085766	Centropages hamatus
72	0085767	Centropages typicus
73	0086047	Labidocera aestiva
74	0086046	Labidocera wollastoni
75	0086054	Pontella pennata
76	0086097	ACARTIA HUDSONICA
77	0086087	Acartia longiremus
78	0086088	Acartia tonsa
79	0086546	Euterpina acutifrons
80	0086335	Harpacticus gracilis
81	0086446	Tisbe furcata
82	0167676	Morone spp. larvae
83	0083956	Holopedium sp.
84	0163342	unknown Cyprinidae larvae
85	0088577	Corycaeus venustus
86	0088595	Farranula gracilis
87	0089593	Chthamalus fragilis
88	0089599	unknown Balanidae
89	0089599	unknown barnacle nauplius
90	0090062	Neomysis americana
91	0090139	Mysidopsis bigelowi
92	0089977	Heteromysis formosa
93	0095889	Acetes americanus zoea
94	0095916	Lucifer faxoni zoea
95	0095605	Penaeus aztecus zoea
96	0095648	Trachypenaeus constrictus zoea
97	0096221	Macrobrachium ohione zoea
98	0096383	Palaemonetes spp. zoea
99	0096600	unknown Alpheidae zoea
100	0096735	unknown Ogyridae zoea
101	0096746	unknown Hippolytidae zoea
102	0097110	Crangon septemspinosa zoea
103	0097733	Callianassa spp. zoea
104	0098209	Upogebia affinis zoea
105	0098081	Euceramus praelongus zoea
106	0098083	Polyonyx gibbesi zoea
107	0097807	Pagurus longicarpus zoea

SPEC_CODE	TSN	SOURCE_LBL
108	0097809	Pagurus pollicarus zoea
109	0097774	unknown Paguridae zoea
110	0098134	Emerita talpoida zoea
111	0098104	Lepidopa websteri zoea
112	0098691	Arenaeus cribrarius zoea
113	0098696	Callinectes sapidus zoea
114	0098714	Ovalipes ocellatus zoea
115	0098718	Portunus gibbesii zoea
116	0098721	Portunus spinimanus zoea
117	0098689	Portunidae spp. zoea
118	0098679	Cancer irroratus zoea
119	0098759	Eurypanopeus depressus zoea
120	0098764	Hexapanopeus angustifrons zoea
121	0098764	Hexapanopeus angustifrons megal
122	0098776	Neopanope texana sayi zoea
123	0098776	Neopanope texana sayi megalopa
124	0098748	unknown Xanthidae zoea
125	0098998	Pinnixia chaetopterana zoea
126	0098998	Pinnixia chaetopterana megalopa
127	0098999	Pinnixia cylindrica zoea
128	0099002	Pinnixia sayanna zoea
129	0098993	Pinnixia spp. zoea
130	0098975	Pinnotheres maculatus zoea
131	0098976	Pinnotheres ostreum megalopa
132	0098976	Pinnotheres ostreum crab
133	0099084	Uca spp. zoea
134	0086382	Zausodes arenicolus
135	0099084	Uca spp. megalopa
136	0098453	Libinia spp. zoea
137	0098455	Libinia emarginata megalopa
138	0099143	Squilla empusa zoea
139	0083677	unknown Crustacea zoea
140	0156862	unknown Asteroidea
141	0157325	unknown Ophiuroidea
142	0084176	Moina branchiata
143	0158774	Sagitta enflata
144	0093594	Corophium lacustre
145	0168469	Perca flavescens larvae
146	0158854	unknown Ascidacean
147	0161838	Anchoa hepsetus larvae
148	0161839	Anchoa mitchilli larvae
149	0161839	Anchoa mitchilli eggs
150	0164460	Gobiesox strumosus larvae
151	0164499	Lophius americanus larvae
152	0165994	Menidia menidia larvae
153	0166488	Hippocampus erectus larvae
154	0166451	Syngnathus fuscus larvae
155	0169259	Bairdiella chrysoura eggs
156	0169241	Cynoscion regalis larvae
157	0169276	Menticirrhus saxatilis larvae
158	0169288	Pogonias cromis eggs

SPEC_CODE	TSN	SOURCE_LBL
159	0169539	Chaetodipterus faber larvae
160	0171156	Hypsoblennius hentzi larvae
161	0171789	Gobiosoma bosci larvae
162	0171673	Ammodytes americanus larvae
163	0172746	Scopthalmus aquosus larvae
164	0172746	Scopthalmus aquosus eggs
165	0172982	Trinectes maculatus larvae
166	0172982	Trinectes maculatus eggs
167	0173062	Symphurus plagiusa larvae
168	0173290	Sphaeroides maculatus larvae
169	0098778	Panopeus herbstii zoea
170	0172566	Peprilus paru larvae
171	0088580	Corycaeus speciosus
172	0171164	Chasmodes bosquianus larvae
173	0078156	unknown Nudibranchia
174	0098081	Euceramus praelongus megalopa
175	0165984	unknown Atherinidae larvae
176	0169259	Bairdiella chrysoura larvae
177	0079119	unknown Pelecypoda
178	0098083	Polyonyx gibbesi megalopa
179	0169267	Leiostomus xanthurus larvae
180	0171746	unknown Gobiidae larvae
181	0064358	unknown Polychaeta
182	0085307	Eucalanus pilieatus
183	0086212	Ectinosoma cutiforne
184	0078089	Clione limacina
185	0083874	Daphnia pulex
186	0098679	Cancer irroratus megalopa
187	0095599	unknown crab megalopa
188	0098714	Ovalipes ocellatus megalopa
189	BAY0300	Daphnia lumholtzi
190	0096736	Ogyrides spp. zoea
191	0088575	Corycaeus amazonicus
192	0088540	Oncaea sp.
193	0098453	Libinia spp. megalopa
194	0096606	Alpheus normanni zoea
195	0090745	unknown Cumacea
196	0089599	unknown barnacle cypris
197	0161837	Anchoa spp. larvae
198	0158727	Sagitta spp.
199	0098993	Pinnixia spp. megalopa
200	0097774	unknown Paguridae megalopa
201	0069459	unknown Gastropoda
202	0085264	Nannocalanus sp.
203	0098976	Pinnotheres ostreum zoea
204	0155166	unknown Tardigrada
205	0098058	unknown Porcellanidae zoea
206	0098696	Callinectes sapidus megalopa
207	0098058	Porcellanid spp. megalopa
208	0095602	unknown penaeid zoea
209	0097774	unknown Paguridae crab

SPEC_CODE	TSN	SOURCE_LBL
210	0169237	unknown Sciaenidae eggs
211	0084026	Lydigia quadrangularis
212	0050844	unknown Hydridae
213	0169237	unknown Sciaenidae larvae
214	0083836	Penilia avirostris
215	0083923	Scaphloberis kingi
216	0098720	Portunus spinicarpus megalopa
217	0097731	Naushonia crangonoides zoea
218	0161061	unknown fish eggs
219	0083888	Daphnia ambigua
220	0161061	unknown fish larvae
221	0169239	Cynoscion nebulosus larvae
222	0159632	unknown Thalaicean
223	0088576	Corycaeus elongatus
224	0168142	Lepomis macrochirous
225	0048741	unknown Anthomedusae
226	0083899	Simocephalus sp.
227	0088692	Mesocyclops edax
228	0086110	unknown Harpacticoida
229	0086330	unknown Harpacticus spp.
230	0049469	unknown Leptomedusae
231	0097775	Pagurus sp. zoea
232	0051636	unknown Semaeostomae
233	0086445	Tisbe spp.
234	0085744	Metridia Princeps
235	0083936	Bosmina spp.
236	0085263	Calanus spp.
237	0085866	Eurytemora hirudinoides
238	0085863	Eurytemora affinis
239	0085862	Eurytemora spp.
240	0085849	Pseudodiaptomus coronatus
241	0086134	Canuella elongata
242	0085741	Medridia Lucens
243	0090698	Metamysidopsis spp.
244	0127917	unknown Chironomidae larvae
245	0088628	Saphirella spp.
246	0083122	Unknown Hydrachnidae
247	0067899	unknown Terebellidae
248	0088530	unknown Cyclopoida
249	0159682	Branchiostoma caribaeum
250	0156857	unknown Echinodermata
251	0069290	unknown Hirudinea
252	0086442	Clytemnestra rostrata
253	0090267	Bowmaniella dissimilis
254	0053856	unknown Ctenophora
255	0048739	unknown hydromedusae
256	0053964	unknown Turbellaria
257	0083965	Podon intermedius
258	0092120	unknown Isopoda
259	0085875	Temora stylifera
260	0086084	Acartia spp.

SPEC_CODE	TSN	SOURCE_LBL
261	0085761	Centropages spp.
262	0085257	unknown Copepoda
264	0085258	unknown Calanoida
265	0088802	Oithona spp.
266	0088811	Oithona calcarva
267	0088571	Corycaeus spp.
268	0095108	unknown Hyperiidae
269	0094903	unknown Stenothidae
270	0165989	Membras martinica larvae
271	0171809	Microgobius thallasinus larvae
272	0169283	Micropogonias undulatus larvae
273	0065588	Autolytus spp.
274	0085326	Paracalanus indicus
275	0083677	unknown shrimp protozoea
276	0099037	Sesarama spp. zoea
277	0161838	Anchoa hepsetus eggs
278	0087757	Diosaccus tenuicornis
279	0083832	unknown Cladocera
280	BAY0161	Myrophis punctatus leptocephalus
281	0093294	unknown Amphipoda
282	0147486	unknown ephyra
283	0156857	unknown brachiolaria larvae
284	0156862	unknown bipinnaria larvae
285	0051483	unknown medusa
286	0166443	Unknown Syngnathidae
287	0166444	Syngathus SP.
288	0083677	unknown Crustacea egg
289	0088831	Sapphirina spp.
290	0098790	Rhithropanopeus harrisii zoea
291	0051483	unknown Scyphozoa
292	BAY0044	Bosmina coregoni maritima
293	0096602	Alpheus heterochaelis zoea
294	0093773	Gammarus spp.
295	0093745	unknown Gammaridae
296	0068422	unknown Oligochaeta
297	0086084	Acartia spp. juv.
298	0169273	Menticirrhus spp. larvae
299	0166446	Syngathus Floridae
300	0089009	Caligus spp.
301	0083938	Bosmina longirostris
303	0088640	Cyclops spp.
304	0088742	TROPOCYCLOPS
305	0084033	Alonella spp.
306	0088691	Mesocyclops sp.
307	0093589	Corophium spp.
308	0092623	Edotea spp.
309	0094519	Monoculodes spp.
310	0084195	unknown Ostracoda
311	0089407	Argulus spp.
312	0093780	Gammarus fasciatus
313	0096893	Lysmata wurdemanni zoea

SPEC_CODE	TSN	SOURCE_LBL
314	0089807	unknown Mysidacea
315	0083875	Daphnia longispina
316	0088343	Canthocamptus spp.
317	BAY0151	Mesocyclops obsoletus
318	0085257	unknown copepod nauplius
319	0165474	Hyporamphus unifasciatus
320	BAY0158	Myicola major
321	0165988	Membras spp. larvae
322	0086055	Pontella meadi
323	0088745	TROPOCYCLOPS PRAFINUS MEXICANUS
324	0098778	Panopeus herbstii megalopa
325	0095647	Trachypenaeus spp. zoea
326	0096750	Hippolyte pleuracantha zoea
327	0088635	Halicyclops sp.
328	0083992	Chydorus sp.
330	0088137	Bryocamptus zschokkei
331	0083972	Leptodora kindtii
332	0083863	Sida crystillina
333	0048738	unknown sea anemone
334	0125923	Chaoborus punctipennis
335	0093959	unknown Haustoriidae
336	0167680	Morone saxatilis larvae
337	0161700	unknown Clupeidae larvae
338	0088731	Paracyclops sp.
339	0088552	Oncaea venusta
340	0083838	Diaphanosoma brachyurum
341	0161732	Brevoortia tyrannus
343	0095599	unknown decapoda
344	0083677	unknown Crustacea nauplii
345	0085874	Temora spp.
346	0083871	Latonopsis fasciculata
349	0085321	Unknown Paracalinidae
350	BAY0198	Paracalanus fimbriatus
351	0084078	Alonopsis spp.
352	BAY0239	Rhithropanopeus hermandii zoea
353	0083960	Evadne sp.
354	0165993	Menidia beryllina larvae
355	0088604	Ergasilus versilcolor
356	0085276	Calanus helgolandicus
357	0171790	Gobisoma ginsburgi larvae
358	0098790	Rhithropanopeus harrissi megalop
359	0096390	Palaemonetes pugio zoea
360	0158650	unknown Chaetognatha
361	0171788	Gobisoma spp. larvae
362	0099080	unknown ocypodidae zoea
363	0099085	Uca minax zoea
364	0058438	Brachionus calyciflorus
365	0084131	Ophryoxus gracilis
366	0085780	Diaptomus sp.
368	0084133	Ilyocryptus spinifera
369	0084035	Alonella rostrata

SPEC_CODE	TSN	SOURCE_LBL
370	BAY0155	Mnemiopsis brachei
371	0068854	unknown Nadidae
372	0085734	Metridia sp.
373	0086047	Labidocera aestiva (juv.)
374	0161701	Alosa sp. larvae
375	0161700	unknown Clupeidae eggs
376	0161704	Alosa mediocris larvae
377	0161706	Alosa pseudoharengus larvae
378	0172905	Pseudopleuronectes americanus
379	0051268	unknown Siphonophora
380	0169241	Cynoscion regalis eggs
381	0083873	Daphnia spp.
382	0118831	unknown dipteran larvae
383	0083868	Pseudosida bidentata
385	0128223	Pentaneura monilis
386	0058239	unknown Rotifera
387	0087800	Robertsonia chesapeakensis
388	0098964	unknown Pinnotheridae zoea
389	0098759	Eurypanopeus depressus megalopa
390	0161732	Brevoortia tyrannus eggs
391	0085878	Temora turbinata
392	0086100	Tortanus discaudatus
393	0086038	unknown Pontellidae
394	0086412	Aleuthra oblonga
395	0086331	Harpacticus chelifer
396	0085272	Calanus finmarchicus
397	0083906	Ceriodaphnia reticulata
399	0086887	Metis sp.
400	0086595	Paralaophonte brevirostris
401	0083975	Alona gutatta
402	0083974	Alona sp.
403	0083980	Alona quadrangularis
404	0084017	Eurycercus lamellatus
405	0155457	unknown Phoronidae
406	0095427	Caprella geometrica
407	0092440	Aegathoa medialus
408	0166365	Gasterosteus aculeatus
409	0167678	Morone americana
410	0079118	Unknown Bivalve glochidium
411	0050848	Unknown Hydracarnia
412	0155462	Unknown Phoronida
413	0172735	Paralichthys dentatus
414	0172714	Unknown Bothidae
415	0159664	Unknown Appendiculariam
416	0045782	Globoratalia sp.
417	0044030	Unknown Foraminifera
418	0085369	Pseudocalanus spp.
419	0085371	Pseudocalanus minatus
420	BAY0293	Diadaicus trunicornus
421	0158785	Sagitta Elegans
422	0064358	Unknown Polycheate larvae

SPEC_CODE	TSN	SOURCE_LBL
423	0090062	Noemysis americana juvenile
424	0099208	Unknown Insect larvae
425	0088796	Ecotcyclops spp.
426	0088719	Eucyclops spp.
427	0083907	Ceriodaphinia quadrangularia
428	0083905	Ceriodaphinia sp.
429	0084049	Pleuroxus striatus
430	0057411	Unknown Nemitine larvae
431	0098696	Callinectes sapidus juveniles
432	0082370	Loligo spp.
433	0161722	Clupea harengus
434	0089807	Unknown Mysidacea larvae
435	0085318	Rhincalanus nastus
444	0088720	Eucyclops aglis
445	0088789	Diacyclops thomasi
446	0088770	Acanthocyclops vernalis
447	0088797	Ectocyclops phaelatus
448	0088733	Paracyclops affinis
449	0169288	INVALID USE 158
450	0169288	Pogonias chromis larvae
451	0101593	unknown odontids
460	0088762	Acanthocyclops sp. copepedite
461	0085263	Calanus sp. copepedite
462	0089009	Caligus sp. copepedite
463	0086148	Canuella sp. copepedite
464	0085761	Centrapages sp. copepedite
465	0088571	Corycaeus sp. copepedite
466	0088640	Cyclops sp. copepedite
467	0088775	Diacyclops sp. copepedite
468	0088719	Eucyclops sp. copepedite
469	0088737	Macrocyclops sp. copepedite
470	0088691	Mesocyclops sp. copepedite
471	0088731	Paracyclops sp. copepedite
472	0088796	Ectocyclops sp. copepedite
473	0085780	Diaptimus sp. copepedite
474	0088599	Ergasilis sp. copepedite
475	0085300	Eucalanus sp. copepedite
476	0085862	Eurytemora sp. copepedite
477	0088635	Halicyclops sp. copepedite
478	BAY0301	Nannocyclops sp. copepedite
479	0088802	Oithona sp. copepedite
480	0088540	Ocacea sp. copepedite
481	0088731	Paracyclops sp. copepedite
482	0085369	Pseudocalanus sp. copepedite
483	0085848	Pseudodiaptimus sp. copepedite
484	0085316	Rhincalanus sp. copepedite
485	0088024	Robertsonia sp. copepedite
486	0085874	Temora sp. copepedite
487	0086445	Tisbe sp. copepedite
488	0086099	Tortanus sp. copepedite
489	0085322	PARACALANUS COPE

SPEC_CODE	TSN	SOURCE_LBL
661	0082696	PHYLUM ARTHROPODA
701	0058348	Keratella sp.
702	0058440	Brachionus havanensis

SPEC_CODE	TSN	SOURCE_LBL
813	0082708	CLASS ARACHOIDNEA
9999	BAY0292	Unknown Beads

VARIABLES NAMES AND DESCRIPTIONS FOR DATA FILES
Structure for data files on: http://www.chesapeakebay.net/

> MESOZOOPLANKTON TAXONOMIC RECORDS

Name	Type	Width	Variable Definitions:
SOURCE	Text	10	Data Collection Agency
STATION	Text	15	Sampling Station
SAMPLE_DATE	Date/Time	8	Sampling date (YYYYMMDD)
LAYER	Text	3	Layer in Water Column Which Composite Sample was Taken
SAMPLE_NUMBER	Number	4	Sample Replicate Number
GMETHOD	Text	3	Chesapeake Bay Program Sampling Gear Code
TSN	Text	7	ITIS Taxon Serial Number
LATIN_NAME	Text	45	Species Latin Name
LIFE_STAGE	Text	50	Life stage of individual- Chesapeake Bay Program Life Stage Code
METHOD	Text	8	Parameter Method Analysis Code
PARAMETER	Text	10	Parameter
VALUE	Number	8	Parameter Value
UNITS	Text	15	Parameter Reporting Units.
NODCCODE	Text	12	NODC Species Code
SPEC_CODE	Text	14	Source Species Taxon Code
R_DATE	Date/Time	8	Version Date of Data (YYYYMMDD)

> MESOZOOPLANKTON SAMPLING EVENT RECORDS

Name	Type	Width	Variable Description
DATA_TYPE	Text	2	CBP Data Type Code
SOURCE	Text	10	Data Collection agency
SAMPLE_TYPE	Text	2	Collection type
LAYER	Text	3	Layer in water column from which sample was Taken
SAMPLE_DATE	Date/Time	8	Sample date (YYYYMMDD)
LATITUDE	Number	8	Latitude in Decimal Degrees (NAD83)
LONGITUDE	Number	8	Longitude in Decimal Degrees (NAD83)
P_DEPTH	Number	4	Composite Sample Cut Off Depth (meters)
R_DATE	Date/Time	8	Data version date (YYYYMMDD)
SALZONE	Text	2	Salinity Zone
SAMPLE_VOLUME	Number	8	Total Volume of Sample
UNITS	Text	15	Units for Sample Volume
STATION	Text	15	Sampling Station
TOTAL_DEPTH	Number	4	Total Station Depth (meters)
SAMPLE_TIME	Date/Time	8	Sampling Time (HHMM)

>MESOZOOPLANKTON BIOVOLUME AND JELLY FISH SURVEY FILES

Name	Type	Width	Variable Description:

SOURCE	Text	10	Data Collection Agency
CRUISE	Text	6	Chesapeake Bay Program Cruise Number
STATION	Text	15	Sampling Station
SAMPLE_DATE	Date/Time	8	Sampling Date (YYYYMMDD)
LAYER	Text	3	Layer in Water Column in Which Sample was Taken
SAMPLE_NUMBER	Number	4	Replicate Number
GMETHOD	Text	3	Chesapeake Bay Program Gear Method Code
TSN	Text	7	Taxon Serial Number
LATIN_NAME	Text	45	Species Latin Name
LIFE_STAGE	Text	50	Chesapeake Bay Program Life Stage Description
METHOD	Text	8	Chesapeake Bay Program Analytical Analysis Method Code
PARAMETER	Text	10	Reporting Parameter
VALUE	Number	8	Parameter Value
UNITS	Text	15	Parameter Reporting Units
NODCCODE	Text	12	National Oceanographic Data Center Species Code
SPEC_CODE	Text	14	Agency Species Code
R_DATE	Date/Time	8	Version Date of Data (YYYYMMDD)

>The following field may also appear in a downloaded data set:

Name	Type	Width	Variable Definitions
BASIN	Text	20	Chesapeake Bay Basin Designation
HUC8	Text	8	USGS Eight Digit Hydrologic Unit Code
CATALOGING_UNIT_DESCRIPTION	Text	50	USGS Cataloging Unit Code Description
FIPS	Text	5	Federal Information Processing Code
STATE	Text	3	Federal Information Processing Code State Designation
COUNTY_CITY	Text	30	Federal Information Processing Code City or County Designation
LL_DATUM	Text	5	Latitude and Longitude Geographic Datum
CBSEG_1998	Text	6	1998 Chesapeake Bay Segment Designation
CBSEG_1998_DESCRIPTION	Text	50	1998 Chesapeake Bay Segment Designation Description

#VARIABLE NAMES AND DESCRIPTIONS FOR SPECIES KEY
Structure for data files on : http://www.chesapeakebay.net/

Name	Type	Width	Variable Descriptions
SPEC_CODE	Text	14	Source In-House Species Codes
SOURCE	Text	6	Data Source Identifier
DATA_TYPE	Text	2	Data Type Identifier Code
SOURCE_LBL	Text	45	Source Species Latin Name
LBL	Text	45	National Oceanographic Data Center Species Latin Name
TSN	Text	7	ITIS Taxon Serial Number
R_DATE	Date/Time	8	Version Date of Data (YYYYMMDD)
VOLUME	Number	8	Cell Biomass Estimator
SIZE	Text	30	Taxa Size-Fraction Identifier

LIFE_STG Text 3 Chesapeake Bay Program Life Stage Code

REFERENCE CODES IN DATA FILE AND TAXONOMIC KEY
See 2000 Users Guide to Chesapeake Bay Program Biological and Living Resources Monitoring Data
for full listing.

>MISSING SAMPLING_TIME VALUES: Missing values have been replaced with 00:00

>SOURCE: Data Collection Agency
ODU - Old Dominion University

>STATION: See section STATION NAMES AND DESCRIPTIONS

>SAMPLE_TYPE: Sample Collection Type
C - Composite Field Sample, Sample made of sub-sample from multiple depths.

>SOURCE: Data Collection Agency
ODU - Old Dominion University

>SPEC_CODE: In house Species codes or ODUCODE, See Old Dominion University species names and codes listed above

>CRUISE: Chesapeake Bay Program Cruise Number See THE 2000 USERS GUIDE for complete listing of CBP cruise numbers

> DATA_TYPE: Data Type

BE	Benthic
FL	Fluorescence
MI	Microzooplankton
MZ	Mesozooplankton
PD	Primary Production
PH	Phytoplankton
PP	Picoplankton

>GMETHOD: Sampling Gear Code
76 - 202 micron mesh Bongo net with 50 cm opening

>LAYER: Layer of Water Column in which Sample was Taken
AP- Above Pycnocline
BP- Below Pycnocline
WC- Whole Water Column
NOTE: Definition of Pycnocline provided in Virginia Phytoplankton Event File documentation

>LIFE_STAGE - Chesapeake Bay Program Life Stage Code
00 EGG
11 NAUPLII
12 COPEPODITE
31 ZOEA
33 MEGALOPS
92 POST LARVAE
97 LARVAE
98 ADULT

See Guide to Living Resources Data Documentation for full listing

>SALZONE: Salinity Zone
F - Fresh (0 TO 0.5 PPT)
O - Oligohaline (>0.5 TO 5.0 PPT)
M - Mesohaline (>5.0 TO 18.0 PPT)
P - Polyhaline (> 18.0 PPT)
*E- An F,O,M, or P followed by an E indicate an estimated salinity range based on salinity data collected within a week of the biological sampling event. Used only when no actual salinity data available.

>NODCCODE and LATIN NAME: National Oceanographic Data Center Species Codes Version 8.
Note for current listing of Chesapeake Bay Program Species and their codes, see http://www.chesapeakebay.net/species/. Organisms with out current NODC Codes have been assigned partial NODC codes containing alphabetic where no code has been assigned.

>BASIN: Chesapeake Bay Tributary Designation
BAY- Chesapeake Bay
ELZ- Elizabeth River
JAM- James River
YRK- York River
RAP- Rappahanock River

>TSN: Interagency Taxonomic Information System- Taxon Serial Numbers. Note for current listing of Chesapeake Bay Program Species and their codes see http://www.chesapeakebay.net/species/. Organisms without current serial numbers have ALL been assigned TSN of BAYXXXX.

> CBSEG_1998: Chesapeake Bay Program Monitoring Segment

CBSEG_1998	DESCRIPTION
CB6PH	CHESAPEAKE BAY-POLYHALINE REGION
CB7PH	CHESAPEAKE BAY-POLYHALINE REGION
CB8PH	CHESAPEAKE BAY-POLYHALINE REGION
JMSOH	JAMES RIVER-OLIGOHALINE REGION
JMSPH	JAMES RIVER-POLYHALINE REGION
JMSTF	JAMES RIVER-TIDAL FRESH REGION
MOBPH	MOBJACK BAY-POLYHALINE REGION
PMKOH	PAMUNKEY RIVER-OLIGOHALINE REGION
PMKTF	PAMUNKEY RIVER-TIDAL FRESH REGION
RPPMH	RAPPAHANNOCK RIVER-MESOHALINE REGION
RPPOH	RAPPAHANNOCK RIVER-OLIGOHALINE REGION
SBEMH	SOUTH BRANCH ELIZABETH RIVER-MESOHALINE REGION
YRKMH	YORK RIVER-MESOHALINE REGION

>FIPS: Federal Information Processing Codes

FIPS	STATE	COUNTY
51095	VA	JAMES CITY
51097	VA	KING AND QUEEN
51103	VA	LANCASTER
51127	VA	NEW KENT
51131	VA	NORTHAMPTON
51149	VA	PRINCE GEORGE
51159	VA	RICHMOND

51199	VA	YORK
51550	VA	CHESAPEAKE CITY
51650	VA	HAMPTON
51740	VA	PORTSMOUTH
51810	VA	VIRGINIA BEACH

>HUC8: USGS Hydrologic Unit Codes

HUC8	CATALOGING_UNIT_DESCRIPTION
02080101	LOWER CHESAPEAKE BAY
02080104	LOWER RAPPAHANNOCK
02080106	PAMUNKEY
02080107	YORK
02080206	LOWER JAMES
02080208	HAMPTON ROADS

>METHOD: Chesapeake Bay Program Lab Method Code Designation

MZ102
MZ102B
MZ103
JF103
BM102

>PARAMETER and UNIT: Measured Parameter and reporting units.

PARAMETER	UNITS
COUNT	Number of Zooplankton (#/meter cubed)
BEROEVOL	Volume of Beroe (ml/sample)
CNIDAVOL	Cnidaria Volume (ml/sample)
CTENOVOL	Ctenophore Volume (ml/sample)
HYDRAVOL	Volume of Hydromedusae(ml/sample)
JELLYVOL	Number of Jellyfish (#/sample)
MNEMVOL	Volume of Mnemiopsis (ml/sample)
ASH_FRWT	Ash Free Dry Weight (mg/m**3)
ASH_WT	Total Ash Weight (mg/m**3)
ASHFREWT	Ash Free Dry Weight (g/sample)
ASHWT	Total Ash Weight (g/sample)
DRY_WT	Total Dry Weight (mg/m**3)
DRYWT	Total Dry Weight (g/sample)

NUMERIC VARIABLE NAMES - WARNING AND ERROR BOUNDS

VARIABLE	VALID RANGES
BIOVOL	0-2000
COUNT	1- 99999999.999
FVOL_M3	0000-999999, Blank denotes missing value
LATITUDE	See section STATION NAMES AND DESCRIPTIONS
LONGITUDE	See section STATION NAMES AND DESCRIPTIONS
MAXDEPTH	0.5-32.0
P_DEPTH	0.5 - 32.0
R_DATE	19950301-20030130
SAMPLE_NUMBER	1, 2
SAMPLE_DATE	19850101-20021231
TOTAL_DEPTH	0.5 - 32.0
SAMPLE_TIME	06:00-17:00, 00:00 denotes missing time

#IMPORTANT DATA REVISIONS

THE LIVING RESOURCES DATA MANAGER RECOMMENDS THAT ALL DATA ANALYSIS BE PERFORMED WITH THE MOST RECENT DATA SETS VERSIONS AVAILABLE. HOWEVER IF YOU HAVE BEEN WORKING WITH OLDER DATA SETS THE FOLLOWING ARE IMPORTANT CHANGES TO BE AWARE OF.

6/30/96- All plankton data was resubmitted to the Chesapeake Bay Program office due to discrepancies in sampling dates between synchronously collected samples. Sampling dates were corrected to field logs and resubmitted to the Data Center. Please do not use data with an R_DATE prior to 06/01/96.

6/30/96- Note that BARNACLE NAUPLII and LARVAE were reported in the Mesozooplankton data from January 1985-December 1992. After January 1993 these organisms were reported in the Microzooplankton data only.

10/11/95- ODUCODE- ODU added the code 9999 to their Species list. This code refers to small plastic beads found in plankton tows on the Elizabeth River. The beads are though to be used for sandblasting in the nearby shipyards.

8/31/95- GMETHOD was changed to 76. Code 76 refers 202 micron mesh Bongo net with 0.5 meter opening. For an extensive gear code list see Table 17, PAGE F-9 APPENDIX F, of the Living Resources Data management plan, 1989. This is a change from GMETHOD code in previous versions of the data set. This does not represent a change in actual sampling gear.

8/31/93- LBL all Latin Names and spelling for names have been corrected to the National Oceanographic Data Center accepted spelling.

8/31/95- The actual volume of water sampled during zooplankton tows is not available in data sets prior to 1993. The value was collected and used to determine abundances but was not retained in historic data sets.

8/31/95- CRUISE NUMBERS - BAY004-BAY211 were supplied by the Chesapeake Bay Program office. See the Guide to Living Resources Data Sets for complete listing of Cruise periods.

8/31/95- SER_NUM Old Dominion University did not use a serial number system for sample tracking before 1995 so this variable is not available in prior data.

8/31/95- P_Depth This variable is not applicable under the current sampling protocol.

JANUARY 1996- collection of all wet weight and ash-free dry weight data has been discontinued.

JANUARY 1997-Sampling at station SBE2 was discontinued.

SUMMER 1997 - The Living Resources Data manager supplied salinity zones to the zooplankton Data based on salinity data collected by the Virginia Water Quality Monitoring Program. Values were derived from Water Quality Hydrographic data collected concurrently with the mesozooplankton. If data was not available for the of sampling but was collected within a one week window of sampling date, the water quality data
was used to determine a salinity zone. However the salinity zone is marked with an E to denote being estimated.

JULY, 1998- An additional sieve screen (75um) was added to the sieve series used for sample processing.
The size of the additional screen was changed in august, 1998 to 64 um. This change in protocol was made to assess its ability to estimate abundances of copepod nauplii and other small zooplankton. This change
Does not significantly affect data collected by the other sieve sizes. The data collected for these size fractions was not included in the totals for this data submittal. It is anticipated that data for the 64
Size fraction will be included in all data collected after December 1998.

FEBRUARY 2000- The sample enumeration protocol was changed to a Henson Stemple protocol.

SUMMER 2000- All Latitude and Longitude positions converted to NAD83 coordinates.

April 2002
The Maryland and Virginia mesozooplankton monitoring programs implemented modifications to their respective laboratory counting protocols in 1998 in order to better estimate species richness in Maryland and to eliminate large sieving losses of smaller taxa in Virginia. A 1998 - 1999 Mesozooplankton Split Sample Study indicates the desired outcomes of the modifications were only partially accomplished. The "new" Versar counting method (Method code MZ101C) has improved Versar's ability to measure species richness, an important Bay-wide indicator, and the "new" ODU counting method (Method code MZ102B) has increased ODU's taxa counts per sample. However, the "new" ODU method still produces split sample results with significantly lower total counts than those of Versar. It appears to selectively undercount key taxa, particularly the immature (copepodite) life stage of calanoid copepods, a common and frequently dominant taxonomic group. The study determined that counts produced with the "new" ODU protocol have variances that are much higher than counts produced with the Versar protocol, hence the ODU counts are less precise. Furthermore, the number of taxa identified per sample was on average lower in the ODU counts. The "old" (Method Code MZ102A) and "new" (Method code MZ102B) ODU counting protocols should be discontinued and a counting protocol patterned after the ICES recommended protocol (Harris et al. 2000) should be instated (Method Code MZ103). Backward comparability with the pre-1998 Chesapeake Bay Program mesozooplankton data will unfortunately be lost in Virginia for most mesozooplankton taxa, but Maryland and Virginia results will become comparable and the CBP monitoring programs should be able to calculate and use multiple, Bay-wide mesozooplankton indicators. For extensive details in regards to quality assurance issues please see the CBP Phytoplankton Split sample portion of the Chesapeake Bay Quality Assurance Program at:

http://www.chesapeakebay.net/qualityassurance.htm

WINTER 2002- This monitoring program was terminated. The data record ends in October of 2002.

08/11/2005. Note due to contract changes starting in January 1996, station LE5.5 had a coordinate change. This station move was not documented until August 2005. Due to this station relocation, all data collected at the altered location had the station name changed to LE5.5-W in August 2005.

January 2007- When all sampling terminated in October 2002, approximately 1,000 archived split samples dating from 1996 to 2002 were in storage at Old Dominion University. In 2005, the Bay Program took formal custody of these sample in hopes that in the future these archived samples could be reprocess with the pipette sub-sampling technique. Funding for recounting a portion of the archive samples became available form CBPO in early 2006. 72 archived Virginia mesozooplankton samples were recounted by Versar, Inc., the contractor to the State of Maryland for the entire historic Maryland zooplankton program. Samples target for recount in this effort were samples collected during the summer (July- September) in mesohaline and polyhaline waters since their was a need for validation samples for the zooplankton Indexes of Biotic integrity in various stages of development at that time. Both the original Old Dominion University count data and the recounted data from Versar appear in the database. Versar recount data will have a method code of MZ101C. Please refer to the Maryland Mesozooplankton monitoring program project documentation for enumeration protocol details. The following samples were part of the 2006 recount effort.

STATION	SAMPLE_DATE
CB6.1	7/9/1996
CB6.1	7/24/1996
CB6.1	8/5/1996
CB6.1	8/26/1996
CB6.1	9/8/1997
CB6.1	7/6/1998
CB6.1	7/6/1999
CB6.1	9/11/2000
CB6.1	8/14/2002
CB6.1	9/16/2002
CB6.4	7/24/1996
CB6.4	8/5/1996
CB6.4	8/12/1997
CB6.4	7/6/1998
CB6.4	8/7/2000
CB6.4	9/14/2000
CB6.4	7/15/2002
CB7.3E	8/7/1996
CB7.3E	7/15/1997
CB7.3E	9/3/1998
CB7.3E	7/6/1999
CB7.3E	8/5/1999
CB7.3E	9/21/1999
CB7.3E	7/11/2000

STATION	SAMPLE_DATE
CB7.3E	9/19/2002
CB7.4	7/22/1996
CB7.4	8/13/1997
CB7.4	8/10/1998
CB7.4	9/3/1998
CB7.4	7/6/1999
CB7.4	8/5/1999
CB7.4	9/21/1999
CB7.4	9/11/2000
LE3.6	7/9/1996
LE3.6	7/24/1996
LE3.6	8/5/1996
LE3.6	8/26/1996
LE3.6	7/15/1997
LE3.6	7/6/1998
LE3.6	9/1/1998
LE3.6	7/6/1999
LE3.6	8/9/2000
LE5.5	7/22/1996
LE5.5-W	9/21/1999
RET3.1	8/5/1998
RET3.1	7/8/1999
RET3.1	8/5/1999
RET3.1	8/9/2001

STATION	SAMPLE_DATE
RET3.1	9/12/2002
RET4.3	7/10/1996
RET4.3	7/24/1996
RET4.3	8/6/1996
RET4.3	7/10/1997
RET4.3	7/23/1997
RET4.3	7/20/1998
RET4.3	8/19/1998
RET4.3	9/9/1998
RET5.2	9/23/1997
RET5.2	8/17/1999
SBE5	7/8/1996
SBE5	7/23/1996
SBE5	7/8/1997
SBE5	9/15/1999
SBE5	9/21/2000
TF3.3	7/8/1999
TF3.3	8/24/1999
WE4.2	7/24/1996
WE4.2	8/5/1996
WE4.2	7/6/1998
WE4.2	9/1/1998

#KEY WORDS (EXCLUDING VARIABLE NAMES)
Mesozooplankton Counts
Mesozooplankton Densities
Mesozooplankton Monitoring
Mesozooplankton Taxon

THIS IS THE END OF THE VIRGINIA CHESAPEAKE BAY PROGRAM MESOZOOPLANKTON MONITORING DATA DICTIONARY