

**Appendix N. Methodological, procedural and taxonomic changes for Old
DominionUniversity's Chesapeake Bay Benthic Biological Monitoring Program**

Appendix N - Section I. Methodological and procedural changes to Old Dominion University's Chesapeake Bay Benthic Monitoring Program.

A. Fixed Point Station Monitoring Program

1. In December 1986, five (5) additional stations were sampled quarterly with the box core through September 1987. Additional stations included CB5.5, CB6.2, CB7.1S, CB7.2, LE3.4.
2. In September 1988, three (3) stations were added to the quarterly box core sampling. One of these stations, LE3.4, had previously been sampled for the four quarters from December 1986 through September 1987. Stations added included LE3.4, LE5.1, LE4.3B.
3. In September 1989, two stations in the Southern Branch of the Elizabeth River were added to the quarterly box core sampling bringing the total number of fixed samples to 21. These two stations, SBE2 and SBE5, remain part of the current fixed sampling program.
4. In March 1994, one station, LE3.4B, was added at the mouth of the Rappahannock River. This station was sampled for two years until it was discontinued after the December 1995 sampling period.
5. Beginning in 1996, the fixed box core sampling at all stations 21 was reduced from four quarterly samples a year to twice a year - June and September. At the same time a random benthic sampling program was initiated (see below).
6. Beginning in 1999, the number of partitions for the third replicate was reduced to two intervals; 0-5 cm and 5-25 cm.
7. In 2004, the sampling frequency at all 21 fixed stations was reduced to once per year with sampling restricted to the same time window as the random sampling program i.e. July 15 through September 30.

B. Random Station Monitoring Program

1. In 2004, in order assess any differences between the Yong Gear and two petite ponar samples, an additional ten (10) randomly selected stations were sampled in each of three strata; the Nansemond River, Mobjack Bay and the tidal freshwater portion of the Mattaponi River.
2. In 2005 and 2006, a subset of the random samples (n= 19 and n=21 respectively) were co-sampled as part of the National Coastal Assessment program. An additional 31 (2005) and 29 (2006) were collected by Virginia DEQ personnel. The community analysis for these additional NCA stations was completed by the Old Dominion University Benthic Ecology Laboratory (BEL).

Appendix N - Section I. Continued.

B. Random Station Monitoring Program

3. In 2006, a total of 28 additional random stations were collected with the Young gear in five substrata; CHKOH, CRRMH, JMSTF1, PMKTF, and RPPOH. These samples were collected to assist with the impaired waters report.
4. In 2007, 50 NCA stations were collected by Virginia DEQ personnel. The community analysis for these stations was also completed by the BEL. All stations samples collected by VA DEQ personnel were the composite of two separate petite ponar samples.

Appendix N - Section II. Taxonomic name changes adopted by Old Dominion University's Chesapeake Bay Benthic Monitoring Program from its inception in 1985 through the present. This lists includes changes that are the result of misspellings, synonymies, re-descriptions, grouping or ungrouping of species complexes. Provided are the currently used taxon name, previously used taxon name, the date when the previous name was first used and last used.

Current Taxon Name	Previous Taxon Name	First Date	Last Date
<i>Ablabesmyia parajanta</i>	<i>Ablabemyia parajanta</i>	19-Mar-88	16-Aug-01
<i>Ablabesmyia parajanta</i>	<i>Albabesmyia parajanta</i>	13-Mar-85	01-Apr-86
<i>Aegathoa medialis</i>	<i>Aegathoa medialis?</i>	19-Jun-91	13-Sep-04
<i>Americamysis bigelowi</i>	<i>Mysidopsis bigelowi</i>	25-Sep-86	25-Aug-04
<i>Americhelidium americanum</i>	<i>Synchelidium americanum</i>	18-Jun-90	08-Aug-01
<i>Ameroculodes</i> species complex	<i>Monoculodes edwardsi</i>	27-Jun-85	27-Sep-01
<i>Ameroculodes</i> species complex	<i>Monoculodes intermedius</i>	14-Mar-85	31-Aug-00
<i>Ampelisca</i> spp.	<i>Ampelisca</i> spp. juveniles	19-Dec-86	23-Feb-96
<i>Anachis translirata</i>	<i>Anachis translinata</i>	19-Dec-86	23-Mar-93
<i>Apocorophium acutum</i>	<i>Corophium acutum</i>	17-Mar-88	27-Sep-01
<i>Apocorophium lacustre</i>	<i>Corophium lacustre</i>	13-Mar-85	15-Sep-04
<i>Apocorophium simile</i>	<i>Corophium simile</i>	13-Mar-85	27-Sep-01
<i>Arabella iricolor-multidentata</i> complex	<i>Arabella iricolor</i>	15-Dec-85	23-Jul-98
<i>Argulus</i> spp.	<i>Argulus</i> sp.	21-Jun-86	25-Sep-86
<i>Asellus</i> spp.	<i>Ascellus</i> spp.	03-Aug-04	03-Aug-04
<i>Astyris lunata</i>	<i>Mitrella lunata</i>	16-Mar-85	13-Sep-00
<i>Balanoglossus aurantiacus</i>	<i>Balanoglossus auranticus</i>	16-Dec-85	21-Feb-96
<i>Bhawania heteroseta</i>	<i>Paleanotus heteroseta</i>	12-Mar-85	27-Sep-01
<i>Biffarius biformis</i>	<i>Callianassa biformis</i>	16-Dec-86	18-Sep-00
<i>Bivalvia</i> sp. B	<i>Bivalvia</i> sp. B	15-Jul-04	13-Sep-04
<i>Bivalvia</i> spp.	<i>Bivalvia</i> spp.	13-Mar-85	13-Sep-06
<i>Boonea bisuturalis</i>	<i>Odostomia bisuturalis</i>	16-Mar-85	16-Mar-85
<i>Brachyura</i> spp.	<i>Brachyura</i>	01-Aug-02	29-Jul-05
<i>Branchiostoma caribaeum</i>	<i>Branchiostoma virginiae</i>	26-Jun-02	15-Sep-04
<i>Branchiostoma caribaeum</i>	<i>Branchiostoma virginiae</i>	16-Mar-87	28-Sep-01
<i>Branchiura sowerbyi</i>	<i>Branchiura sowerbyi</i>	29-Mar-86	10-Aug-06
<i>Brania wellfleetensis</i>	<i>Brania wellfleetensis</i>	26-Jun-85	01-Sep-04
<i>Busycon</i> spp.	<i>Busycon</i> sp. (juveniles)	29-Jun-85	17-Jul-00
<i>Cabira incerta</i>	<i>Cabira incorta</i>	15-Dec-86	15-Dec-86
<i>Capitella capitata</i> complex	<i>Capitella capitata</i>	26-Jun-85	17-Aug-04
<i>Capitellides jonesi</i>	<i>Capitella jonesi</i>	04-Mar-89	13-Aug-99
<i>Cassidinidea ovalis</i>	<i>Cassidinidea lunifrons</i>	18-Sep-85	14-Sep-04
<i>Caulleriella</i> sp. B (Blake)	<i>Caulleriella killariensis</i>	13-Mar-85	13-Sep-04
<i>Caulleriella</i> spp.	<i>Caulleriella</i> sp. A	26-Sep-96	04-Aug-97
<i>Cerapus tubularis</i>	<i>Cerapes tubularis</i>	12-Jun-95	14-Jun-95
<i>Ceriantheopsis americanus</i>	<i>Cerianthus americanus</i>	15-Dec-85	09-Aug-04
<i>Chiridotea coeca</i>	<i>Chirodotea coeca</i>	15-Dec-85	21-Dec-89
<i>Chiridotea nigrescens</i>	<i>Chirodotea nigrescens</i>	25-Jun-85	13-Jun-95
<i>Chiridotea</i> spp.	<i>Chirodotea</i> spp.	18-Dec-90	18-Dec-90
<i>Cirrophorus lyriformis</i>	<i>Cirrophorous lyriformis</i>	03-Sep-93	07-Aug-06
<i>Corbicula fluminea</i>	<i>Corbicula manilensis</i>	24-Sep-86	19-Sep-01
<i>Cryptochironomus parafulvus</i>	<i>Cryptochironomous parafulvus</i>	01-Dec-89	13-Jun-95
<i>Cyathura burbancki</i>	<i>Cyathura burbanki</i>	04-Aug-97	15-Jul-04

Appendix N - Section II. Continued.

Current Taxon Name	Previous Taxon Name	First Date	Last Date
<i>Demonax microphthalmus</i>	<i>Demonax microphthalmus</i>	13-Jun-02	21-Aug-06
<i>Dipolydora caulleryi</i>	<i>Polydora caulleryi</i>	16-Dec-85	09-Aug-00
<i>Dipolydora socialis</i>	<i>Polydora socialis</i>	18-Jun-90	04-Jun-96
<i>Donax variabilis</i>	<i>Donax variabilis</i>	15-Jul-04	15-Jul-04
<i>Dorvillea rudolphi</i>	<i>Schistomeringos rudolphi</i>	17-Sep-85	19-Sep-01
<i>Dyspanopeus sayi</i>	<i>Neopanope sayi</i>	15-Dec-85	08-Mar-95
<i>Elasmopus laevis</i>	<i>Elasmopus levis</i>	19-Jun-87	06-Jun-01
<i>Epitonium</i> spp.	<i>Epitonium</i> sp.	16-Mar-85	23-Sep-97
<i>Erichthonius brasiliensis</i>	<i>Erichthonius brasiliensis</i>	12-Mar-85	15-Jul-04
<i>Gammarus</i> spp.	<i>Gammarus</i> sp.	13-Mar-85	05-Sep-96
<i>Genetyllis castanea</i>	<i>Phyllodoce castanea</i>	20-Sep-85	04-Mar-89
<i>Gilvossius setimanus</i>	<i>Callianassa atlantica</i>	25-Sep-86	18-Sep-01
<i>Glyptotendipes</i> spp.	<i>Glycotendipes</i> spp.	11-Jan-89	11-Jan-89
<i>Gyptis crypta</i>	<i>Gyptis vittata</i>	26-Jun-85	16-Aug-00
<i>Harmothoe</i> spp.	<i>Harmothoe</i> sp. A	15-Dec-86	14-Sep-95
<i>Hesionura elongata</i>	<i>Hessionura elongata</i>	23-Aug-99	23-Aug-99
<i>Hirudinea</i> spp.	<i>Hirudinea</i> sp.	25-Sep-87	04-Aug-04
<i>Hutchinsoniella macracantha</i>	<i>Cephalocarid</i> spp.	18-Dec-87	22-Sep-97
<i>Hutchinsoniella macracantha</i>	<i>Hutchinsoniella macracantha</i>	13-Sep-04	01-Aug-05
<i>Hydrobiidae</i> spp.	<i>Hydrobia</i> spp.	10-Mar-94	25-Jun-97
<i>Hydrobiidae</i> spp.	<i>Hydrobiidae</i> spp.	24-Jul-96	04-Aug-04
<i>Hydropsyche</i> spp.	<i>Hydrpsyche</i> spp.	21-Sep-94	21-Sep-94
<i>Incisocalliope aestuarius</i>	<i>Parapleustes aestuarius</i>	29-Jun-85	11-Mar-94
<i>Kurtziella atrostyla</i>	<i>Kurtziella atrostyla</i>	07-Dec-94	17-Jul-00
<i>Leptognathia caeca</i>	<i>Leptognatha caeca</i>	09-Aug-02	09-Aug-02
<i>Leptosynapta tenuis</i>	<i>Leptosynapta tenuis</i>	15-Dec-85	13-Sep-06
<i>Leucothoidae</i> spp.	<i>Leucothoidea</i> spp.	20-Aug-01	06-Sep-01
<i>Limnodrilus</i> spp. juv.	<i>Limnodrilus</i> sp. (juv.)	13-Mar-85	27-Sep-01
<i>Limnodrilus</i> spp. juv.	<i>Limnodrilus</i> sp. juv.	26-Jul-96	02-Oct-03
<i>Limnodrilus</i> spp. juv.	<i>Limnodrilus</i> spp. (juveniles)	13-Mar-85	19-Mar-87
<i>Listriella bowenae</i>	<i>Idunella bowenae</i>	24-Jun-97	15-Jun-00
<i>Listriella smithi</i>	<i>Idunella smithi</i>	16-Dec-87	03-Jun-98
<i>Listriella</i> spp.	<i>Idunella</i> sp.	15-Dec-85	18-Jun-91
<i>Magelona</i> spp.	<i>Magelona</i> sp.	26-Jun-85	13-Sep-04
<i>Malmgreniella taylori</i>	<i>Malmgrenia lunulata</i>	07-Dec-94	27-Sep-01
<i>Manayunkia aestuarina</i>	<i>Manayunkia speciosa</i>	14-Dec-94	07-Jun-99
<i>Marenzelleria viridis</i>	<i>Scolecopides viridis</i>	13-Mar-85	25-Jun-97
<i>Marphysa sanguinea</i>	<i>Marphysa sanguinea</i>	30-Jul-99	16-Jul-03
<i>Microphiopholis atra</i>	<i>Amphiodia atra</i>	19-Sep-85	27-Sep-01
<i>Microphthalmus</i> spp.	<i>Microphthalmus</i> sp.	09-Aug-99	14-Aug-03
<i>Monocorophium acherusicum</i>	<i>Corophium acherusicum</i>	14-Mar-85	13-Sep-01
<i>Monocorophium insidiosum</i>	<i>Corophium insosidium</i>	08-Jun-89	05-Sep-01
<i>Monocorophium insidiosum</i>	<i>Monocorophium insosidi</i>	05-Aug-02	05-Aug-02
<i>Monocorophium tuberculatum</i>	<i>Corophium tuberculatum</i>	26-Jun-85	27-Sep-01
<i>Monticellina dorsobranchialis</i>	<i>Monticellina dorsobranchialis</i>	10-Jun-02	07-Aug-06
<i>Monticellina dorsobranchialis</i>	<i>Tharyx annulosus</i>	14-Mar-85	19-Sep-01
<i>Mucrogammarus mucronatus</i>	<i>Gammarus mucronatus</i>	26-Sep-86	14-Aug-00
<i>Mytilopsis leucophaea</i>	<i>Mytilopsis leucophaeta</i>	24-Jul-96	15-Sep-04

Appendix N - Section II. Continued.

Current Taxon Name	Previous Taxon Name	First Date	Last Date
<i>Nassarius trivittatus</i>	<i>Nassarius trivittatu</i>	14-Aug-03	08-Sep-03
<i>Nassarius vibex</i>	<i>Nassarius vibex</i>	18-Dec-86	13-Sep-06
<i>Neanthes arenaceodentata</i>	<i>Nereis acuminata</i>	13-Aug-96	27-Sep-01
<i>Neanthes succinea</i>	<i>Nereis succinea</i>	12-Mar-85	27-Sep-01
<i>Nephtys</i> spp.	<i>Nephtys</i> sp.	26-Jun-85	02-Jun-98
Nereididae sp. A	Nereidae sp. A	15-Dec-86	01-Aug-05
Nereididae spp.	Nereidae spp.	17-Jun-92	17-Jun-92
No Organisms Present		07-Jun-01	20-Sep-01
No Organisms Present	No Organisms Found	11-Jun-02	15-Sep-04
<i>Notomastus</i> sp. A Ewing	<i>Notomastus</i> sp.	12-Mar-85	19-Sep-01
<i>Odostomia</i> spp.	<i>Odostomia</i> sp. a	15-Dec-86	15-Dec-86
<i>Oligochaeta</i> spp.	<i>Oligochaeta</i> sp A(serrate chaetae)	20-Jun-90	20-Jun-90
<i>Oligochaeta</i> spp.	<i>Oligochaeta</i> sp. M	26-Sep-96	28-Sep-01
<i>Oligochaeta</i> spp.	<i>Oligochaeta</i> sp. X (no setae)	20-Sep-85	20-Sep-85
<i>Onchidoris aspersa</i>	<i>Onchidoris aspera</i>	16-Jun-97	16-Jun-97
Orbiniidae spp.	Orbiniid spp. (juveniles)	13-Mar-85	14-Mar-95
<i>Palaemonetes pugio</i>	<i>Palaemonetes pugio</i>	04-Sep-02	07-Sep-06
<i>Parahaustorius longimerus</i>	<i>Parahaustorius longimerus</i>	04-Aug-97	04-Aug-97
<i>Paranais frici</i>	<i>Wapsa mobilis</i>	02-Mar-89	02-Mar-89
<i>Paranais littoralis</i>	<i>Paranais littoralis</i>	16-Jul-03	04-Sep-03
<i>Paratendipes</i> spp.	<i>Paratendipes</i> sp.	18-Mar-87	18-Mar-87
<i>Parougia caeca</i>	<i>Schistomeringos caeca</i>	27-Sep-86	20-Dec-89
<i>Pentamera pulcherrima</i>	<i>Pentamera pulcherima</i>	20-Dec-89	13-Sep-94
<i>Phoronis</i> spp.	<i>Phoronis psammophila</i>	12-Mar-85	28-Sep-01
<i>Photis pollex</i>	<i>Photis macrocoxa</i>	16-Mar-87	08-Aug-02
<i>Photis pugnator</i>	<i>Photis reinhardi</i>	16-Mar-87	05-Aug-98
<i>Photis</i> spp.	<i>Photis</i> sp.	15-Dec-86	04-Aug-97
<i>Phyllodoce</i> spp.	<i>Phyllodoce</i> sp. (juveniles)	27-Jun-85	08-Jun-89
<i>Pisidium</i> spp.	<i>Pisidium</i> sp.	28-Jun-85	04-Aug-04
<i>Platynereis dumerilii</i>	<i>Platynereis dumerili</i>	05-Aug-03	05-Aug-03
Pleustidae spp.	Pleustidae sp.	09-Mar-90	09-Mar-90
<i>Podarkeopsis levifuscina</i>	<i>Gyptis brevipalpa</i>	12-Mar-85	28-Sep-01
<i>Polinices duplicata</i>	<i>Polinices duplicatus</i>	18-Mar-87	18-Sep-01
Polychaeta spp.	Polychaete Fragments	12-Mar-85	17-Sep-85
<i>Polydora cornuta</i>	<i>Polydora ligni</i>	24-Jul-96	13-Sep-06
Polynoidae spp.	Polynoidae sp.	29-Jun-85	19-Mar-87
<i>Proceraea</i> spp.	<i>Proceraea</i> sp.	06-Jun-89	12-Jun-95
<i>Pseudeurythoe paucibranchiata</i>	<i>Pseudeurythoe ambigua</i>	12-Mar-85	20-Sep-01
<i>Pseudochironomus fulviventr</i>	<i>Psuedochironomus fulviventr</i>	21-Jun-90	26-Jul-00
<i>Pseudochironomus fulviventr</i>	<i>Psuedochironomous fulviventr</i>	02-Mar-89	02-Mar-89
<i>Pseudopotamilla reniformis</i>	<i>Potamilla reniformis</i>	08-Dec-94	25-Aug-97
<i>Sabaco elongatus</i>	<i>Asychis elongata</i>	13-Mar-85	20-Sep-01
<i>Sabellides octocirrata</i>	<i>Sabellides octocirra</i>	08-Jun-89	08-Jun-89
<i>Scolelepis</i> spp.	<i>Scolelepis</i> sp.	21-Jun-90	10-Aug-99
<i>Scoletoma fragilis</i>	<i>Lumbrineris fragilis</i>	24-Sep-86	24-Sep-86
<i>Scoletoma tenuis</i>	<i>Lumbrineris tenuis</i>	08-Jun-94	17-Aug-00
<i>Spiochaetopterus costarum</i>	<i>Spiochaetopterus oculatus</i>	26-Jun-85	27-Sep-01
<i>Stenothoe</i> spp.	<i>Stenothoe</i> sp.	15-Dec-85	08-Aug-02

Appendix N - Section II. Continued.

Current Taxon Name	Previous Taxon Name	First Date	Last Date
<i>Tagelus plebeius</i>	<i>Tagelus plebeius</i>	07-Jan-89	03-Oct-89
Tanytarsini spp.	Tanytarsini sp.	18-Sep-85	11-Sep-03
<i>Thalassema hartmani</i>	<i>Thalassema</i> sp.	15-Dec-86	20-Sep-01
Trichoptera spp.	Trichoptera sp.	13-Mar-85	18-Sep-01
<i>Tubificoides</i> spp.	<i>Tubificoides</i> sp. A	27-Jun-85	27-Jun-85
<i>Tubificoides</i> spp.	<i>Tubificoides</i> sp. B	27-Jun-85	27-Jun-85
<i>Tubificoides</i> spp.	<i>Tubificoides</i> spp	12-Mar-85	14-Aug-00
Turbellaria spp.	Turbellaria sp. 1 (Pigmented Form)	18-Mar-88	18-Mar-88
Turbellaria spp.	Turbellaria sp. 1 (Round Pigmented Form)	12-Mar-85	16-Mar-85
<i>Websterinereis tridentata</i>	<i>Websterinereis tridentata</i>	21-Jun-86	21-Jun-86
<i>Xenochironomus festivus</i>	<i>Xenochironomus festivus</i>	15-Jan-90	15-Jan-90
<i>Xenochironomus</i> spp.	<i>Xenochironomus</i> spp.	07-Jan-89	03-Oct-89
<i>Yoldia limatula</i>	<i>Yoldia limatula</i>	12-Mar-85	02-Aug-06
<i>Yoldia</i> spp.	<i>Yoldia</i> sp.	05-Jan-89	05-Jan-89