

2018-09-12

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Metric.Name	Description
SAMPLEID	required field for calculation
INDEX_NAME	required field for calculation
SITETYPE	required field for calculation
ni_total	number of individuals - total
ni_Americo	number of individuals - Americorophium
ni_Gnorimo	number of individuals - Gnorimosphaeroma
ni_brackish	number of individuals - Americorophium or Gnorimosphaeroma
ni_Ramello	number of individuals - Ramellogammarus
pi_Amph	percent individuals - Order Amphipoda
pi_Bival	percent individuals - Class Bivalvia
pi_Caen	percent individuals - Family Caenidae
pi_Coleo	percent individuals - Order Coleoptera
pi_Corb	percent individuals - Genus Corbicula
pi_Deca	percent individuals - Order Decapoda
pi_Dipt	percent individuals - Order Diptera
pi_Ephem	percent individuals - Order Ephemeroptera
pi_EPT	percent individuals - Orders Ephemeroptera, Plecoptera & Trichoptera (EPT)
pi_Gast	percent individuals - Class Gastropoda
pi_Iso	percent individuals - Class Isopoda
pi_NonIns	percent individuals - Class not Insecta
pi_Odon	percent individuals - Order Odonata
pi_Oligo	percent individuals - Class Oligochaeta
pi_Pleco	percent individuals - Order Plecoptera
pi_Trich	percent individuals - Order Trichoptera
nt_total	number of taxa - total
nt_Amph	number of taxa - Order Amphipoda
nt_Bival	number of taxa - Class Bivalvia
nt_Coleo	number of taxa - Order Coleoptera
nt_CruMol	number of taxa - Phylum Mollusca and SubPhylum Crustacea

## MetricMetadata

Metric.Name	Description
nt_Deca	number of taxa - Order Decapoda
nt_Dipt	number of taxa - Order Diptera
nt_Ephem	number of taxa - Order Ephemeroptera
nt_EPT	number of taxa - Orders Ephemeroptera, Plecoptera & Trichoptera (EPT)
nt_Gast	number of taxa - Class Gastropoda
nt_Insect	number of taxa - Class Insecta
nt_Isop	number of taxa - Class Isopoda
nt_Oligo	number of taxa - Class Oligochaeta
nt_Pleco	number of taxa - Order Plecoptera
nt_Ptero	number of taxa - Genus Pteronarcys
nt_Trich	number of taxa - Order Trichoptera
ni_Chiro	number of individuals - Family Chironomidae
nt_Chiro	number of taxa - Family Chironomidae
pi_Chiro	percent individuals - Family Chironomidae
pi_Tanyt	percent individuals - Tribe Tanytarsini
nt_NonInsArachDeca_BCG_att456	number of taxa - BCG Attribute IV + V + VI, excluding Class Insecta, Class Arachnida & Order Decapoda
pi_NonInsArachDeca_BCG_att456	percent individuals - BCG Attribute IV + V + VI, excluding Class Insecta, Class Arachnida & Order Decapoda
pt_NonInsArachDeca_BCG_att456	percent taxa - BCG Attribute IV + V + VI, excluding Class Insecta, Class Arachnida & Order Decapoda
nt_NonInsArachDecaJugaRiss_BCG_att456	number of taxa - BCG Attribute IV + V + VI, excluding Class Insecta, Class Arachnida, Order Decapoda & Juga and Rissoidea ('clumpy' taxa)
pi_NonInsArachDecaJugaRiss_BCG_att456	percent individuals - BCG Attribute IV + V + VI, excluding Class Insecta, Class Arachnida, Order Decapoda & Juga and Rissoidea ('clumpy' taxa)
pt_NonInsArachDecaJugaRiss_BCG_att456	percent taxa - BCG Attribute IV + V + VI, excluding Class Insecta, Class Arachnida, Order Decapoda & Juga and Rissoidea ('clumpy' taxa)
pi_dom02_BCG_att456_NoJugaRiss	percent individuals - most dominant two taxa, excluding Juga and Rissoidea ('clumpy' taxa)
nt_NonIns_BCG_att456	number of taxa - BCG Attribute IV + V + VI, excluding Class Insecta
pi_NonIns_BCG_att456	percent individuals - BCG Attribute IV + V + VI, excluding Class Insecta
pt_NonIns_BCG_att456	percent taxa - BCG Attribute IV + V + VI, excluding Class Insecta

## MetricMetadata

Metric.Name	Description
nt_NonInsJugaRiss_BCG_att456	number of taxa - BCG Attribute IV + V + VI, excluding Class Insecta and Juga and Rissoidea ('clumpy' taxa)
pi_NonInsJugaRiss_BCG_att456	percent individuals - BCG Attribute IV + V + VI, excluding Class Insecta and Juga and Rissoidea ('clumpy' taxa)
pt_NonInsJugaRiss_BCG_att456	percent taxa - BCG Attribute IV + V + VI, excluding Class Insecta and Juga and Rissoidea ('clumpy' taxa)
pi_SimBtri	percent individuals - Family Simuliidae and Genus Baetis tricaudatus complex
nt_ti_c	number of taxa - thermal indicator - cold
nt_ti_cc	number of taxa - thermal indicator - cold/cool
nt_ti_cw	number of taxa - thermal indicator - cool/warm
nt_ti_w	number of taxa - thermal indicator - warm
pi_ti_c	percent individuals - thermal indicator - cold
pi_ti_cc	percent individuals - thermal indicator - cold/cool
pi_ti_cw	percent individuals - thermal indicator - cool/warm
pi_ti_w	percent individuals - thermal indicator - warm
pt_ti_c	percent taxa - thermal indicator - cold
pt_ti_cc	percent taxa - thermal indicator - cold/cool
pt_ti_cw	percent taxa - thermal indicator - cool/warm
pt_ti_w	percent taxa - thermal indicator - warm
pt_Amph	percent taxa - Order Amphipoda
pt_Bival	percent taxa - Class Bivalvia
pt_Deca	percent taxa - Order Decapoda
pt_Dipt	percent taxa - Order Diptera
pt_EPT	percent taxa - Orders Ephemeroptera, Plecoptera & Trichoptera (EPT)
pt_Gast	percent taxa - Class Gastropoda
pt_Isop	percent taxa - Class Isopoda
nt_tv_intol	number of taxa - tolerance value - intolerant $\leq 3$
nt_tv_toler	number of taxa - tolerance value -tolerant $\geq 7$
nt_ffg_col	number of taxa - Functional Feeding Group (FFG) - collector-gatherer (CG)
nt_ffg_filt	number of taxa - Functional Feeding Group (FFG) - collector-filterer (CF)
nt_ffg_pred	number of taxa - Functional Feeding Group (FFG) - predator (PR)
nt_ffg_scrap	number of taxa - Functional Feeding Group (FFG) - scraper (SC)
nt_ffg_shred	number of taxa - Functional Feeding Group (FFG) - shredder (SH)

## MetricMetadata

Metric.Name	Description
pi_ffg_col	percent individuals - Functional Feeding Group (FFG) - collector-gatherer (CG)
pi_ffg_filt	percent individuals - Functional Feeding Group (FFG) - collector-filterer (CF)
pi_ffg_pred	percent individuals - Functional Feeding Group (FFG) - predator (PR)
pi_ffg_scrap	percent individuals - Functional Feeding Group (FFG) - scraper (SC)
pi_ffg_shred	percent individuals - Functional Feeding Group (FFG) - shredder (SH)
pt_ffg_col	percent taxa - Functional Feeding Group (FFG) - collector-gatherer (CG)
pt_ffg_filt	percent taxa - Functional Feeding Group (FFG) - collector-filterer (CF)
pt_ffg_pred	percent taxa - Functional Feeding Group (FFG) - predator (PR)
pt_ffg_scrap	percent taxa - Functional Feeding Group (FFG) - scraper (SC)
pt_ffg_shred	percent taxa - Functional Feeding Group (FFG) - shredder (SH)
nt_habit_burrow	number of taxa - Habit - burrowers (BU)
nt_habit_clmbrs	number of taxa - Habit - climbers (CB)
nt_habit_clngrs	number of taxa - Habit - clingers (CN)
nt_habit_sprawl	number of taxa - Habit - sprawlers (SP)
nt_habit_swmmrs	number of taxa - Habit - swimmers (SW)
pi_habit_burrow	percent individuals - Habit - burrowers (BU)
pi_habit_clmbrs	percent individuals - Habit - climbers (CB)
pi_habit_clngrs	percent individuals - Habit - clingers (CN)
pi_habit_sprawl	percent individuals - Habit - sprawlers (SP)
pi_habit_swmmrs	percent individuals - Habit - swimmers (SW)
pt_habit_burrow	percent taxa - Habit - burrowers (BU)
pt_habit_clmbrs	percent taxa - Habit - climbers (CB)
pt_habit_clngrs	percent taxa - Habit - clingers (CN)
pt_habit_sprawl	percent taxa - Habit - sprawlers (SP)
pt_habit_swmmrs	percent taxa - Habit - swimmers (SW)
nt_volt_multi	number of taxa - multivoltine (MULTI)
nt_volt_semi	number of taxa - semivoltine (SEMI)
nt_volt_uni	number of taxa - univoltine (UNI)
pi_volt_multi	percent individuals - multivoltine (MULTI)
pi_volt_semi	percent individuals - semivoltine (SEMI)
pi_volt_uni	percent individuals - univoltine (UNI)
pt_volt_multi	percent taxa - multivoltine (MULTI)
pt_volt_semi	percent taxa - semivoltine (SEMI)

## MetricMetadata

Metric.Name	Description
pt_volt_uni	percent taxa - univoltine (UNI)
pi_dom01	percent individuals - most dominant taxon [max(N_TAXA)]
pi_dom02	percent individuals - two most dominant taxa
pi_dom03	percent individuals - three most dominant taxa
pi_dom04	percent individuals - four most dominant taxa
pi_dom05	percent individuals - five most dominant taxa
pi_dom06	percent individuals - six most dominant taxa
pi_dom07	percent individuals - seven most dominant taxa
pi_dom08	percent individuals - eight most dominant taxa
pi_dom09	percent individuals - nine most dominant taxa
pi_dom10	percent individuals - ten most dominant taxa
x_Becks	Becks Biotic Index
x_HBI	Hilsenhoff Biotic Index (references the TolVal field)
x_Shan_Num	Shannon Wiener Diversity Index (partial calculation) [sum(N_TAXA/log(ni_total))]
x_Shan_e	Shannon Wiener Diversity Index (natural log) - x_Shan_Num/log(exp(1))
x_Shan_2	Shannon Wiener Diversity Index (log base 2) - x_Shan_Num/log(2)
x_Shan_10	Shannon Wiener Diversity Index (log base 10) - x_Shan_Num/log(10)
x_D	Simpson's Index
x_Evenness	Evenness=x_Shan_e/log(nt_total)
nt_BCG_att1i	number of taxa - intolerant BCG Attribute I (Ii)
nt_BCG_att1m	number of taxa - moderately tolerant BCG Attribute I (Ii)
nt_BCG_att12	number of taxa - BCG Attribute I + II
nt_BCG_att1i2	number of taxa - BCG Attribute Ii + II
nt_BCG_att123	number of taxa - BCG Attribute I + II + III
nt_BCG_att1i23	number of taxa - BCG Attribute Ii + II + III
nt_BCG_att2	number of taxa - BCG Attribute II
nt_BCG_att23	number of taxa - BCG Attribute II + III
nt_BCG_att234	number of taxa - BCG Attribute II + III + IV
nt_BCG_att3	number of taxa - BCG Attribute III
nt_BCG_att4	number of taxa - BCG Attribute IV
nt_BCG_att45	number of taxa - BCG Attribute IV + V
nt_BCG_att5	number of taxa - BCG Attribute V
nt_BCG_att56	number of taxa - BCG Attribute V + VI

## MetricMetadata

Metric.Name	Description
nt_BCG_att6	number of taxa - BCG Attribute VI
nt_EPT_BCG_att123	number of taxa - EPT BCG Attribute I + II + III
nt_EPT_BCG_att1i23	number of taxa - EPT BCG Attribute li + II + III
pi_BCG_att1i	percent individuals - intolerant BCG Attribute I (li)
pi_BCG_att1m	percent individuals - moderately tolerant BCG Attribute I (li)
pi_BCG_att12	percent individuals - BCG Attribute I + II
pi_BCG_att1i2	percent individuals - BCG Attribute li + II
pi_BCG_att123	percent individuals - BCG Attribute I + II + III
pi_BCG_att1i23	percent individuals - BCG Attribute li + II + III
pi_BCG_att2	percent individuals - BCG Attribute II
pi_BCG_att23	percent individuals - BCG Attribute II + III
pi_BCG_att234	percent individuals - BCG Attribute II + III + IV
pi_BCG_att3	percent individuals - BCG Attribute III
pi_BCG_att4	percent individuals - BCG Attribute IV
pi_BCG_att45	percent individuals - BCG Attribute IV + V
pi_BCG_att5	percent individuals - BCG Attribute V
pi_BCG_att56	percent individuals - BCG Attribute V + VI
pi_BCG_att6	percent individuals - BCG Attribute VI
pi_EPT_BCG_att123	percent individuals - EPT BCG Attribute I + II + III
pt_BCG_att1i	percent taxa - intolerant BCG Attribute I (li)
pt_BCG_att1m	percent taxa - moderately tolerant BCG Attribute I (li)
pt_BCG_att12	percent taxa - BCG Attribute I + II
pt_BCG_att1i2	percent taxa - BCG Attribute li + II
pt_BCG_att123	percent taxa - BCG Attribute I + II + III
pt_BCG_att1i23	percent taxa - BCG Attribute li + II + III
pt_BCG_att2	percent taxa - BCG Attribute II
pt_BCG_att23	percent taxa - BCG Attribute II + III
pt_BCG_att234	percent taxa - BCG Attribute II + III + IV
pt_BCG_att3	percent taxa - BCG Attribute III
pt_BCG_att4	percent taxa - BCG Attribute IV
pt_BCG_att45	percent taxa - BCG Attribute IV + V
pt_BCG_att5	percent taxa - BCG Attribute V
pt_BCG_att56	percent taxa - BCG Attribute V + VI

## MetricMetadata

Metric.Name	Description
pt_BCG_att6	percent taxa - BCG Attribute VI
pt_EPT_BCG_att123	percent taxa - EPT BCG Attribute I + II + III

## BCGcalc metric.values() output

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Metric.Name	R code reference	BCG model	Thermal indicator	Notes
SAMPLEID				
INDEX_NAME				
SITETYPE				
ni_total		yes		
ni_Americo	Genus			
ni_Gnorimo	Genus			
ni_brackish	Genus			used to flag for brackish water
ni_Ramello	Genus			
pi_Amph	Order			
pi_Bival	Class			
pi_Caen	Family			
pi_Coleo	Order			
pi_Corb	Genus			
pi_Deca	Order			
pi_Dipt	Order			
pi_Ephem	Order			
pi_EPT	Order			
pi_Gast	Class			
pi_Iso	Class			
pi_NonIns	Class			
pi_Odon	Order			
pi_Oligo	Class			
pi_Pleco	Order			
pi_Trich	Order			
nt_total	TaxaID	yes		
nt_Amph	Order			
nt_Bival	Class			
nt_Coleo	Order			
nt_CruMol	Order			



## MetricMetadata

Metric.Name	R code reference	BCG model	Thermal indicator	Notes
nt_Deca	Order			
nt_Dipt	Order			
nt_Ephem	Order			
nt_EPT	Order	yes		
nt_Gast	Class			
nt_Insect	Class			
nt_Isop	Class			
nt_Oligo	Class			
nt_Pleco	Order			
nt_Ptero	Genus			
nt_Trich	Order			
ni_Chiro	Family			
nt_Chiro	Family			
pi_Chiro	Family			
pi_Tanyt	Tribe			
nt_NonInsArachDeca_BCG_att456	BCG_Attr, Class, Order			
pi_NonInsArachDeca_BCG_att456	BCG_Attr, Class, Order			
pt_NonInsArachDeca_BCG_att456	BCG_Attr, Class, Order			
nt_NonInsArachDecaJugaRiss_BCG_att456	BCG_Attr, Class, Order, Genus			
pi_NonInsArachDecaJugaRiss_BCG_att456	BCG_Attr, Class, Order, Genus			
pt_NonInsArachDecaJugaRiss_BCG_att456	BCG_Attr, Class, Order, Genus			
pi_dom02_BCG_att456_NoJugaRiss	BCG_Attr, Order, Genus			
nt_NonIns_BCG_att456	BCG_Attr, Class, Order			
pi_NonIns_BCG_att456	BCG_Attr, Class, Order	yes		
pt_NonIns_BCG_att456	BCG_Attr, Class, Order	yes		

## MetricMetadata

Metric.Name	R code reference	BCG model	Thermal indicator	Notes
nt_NonInsJugaRiss_BCG_att456	BCG_Attr, Class, Order, Genus			
pi_NonInsJugaRiss_BCG_att456	BCG_Attr, Class, Order, Genus	yes		
pt_NonInsJugaRiss_BCG_att456	BCG_Attr, Class, Order, Genus			
pi_SimBtri	Family, TaxaID			
nt_ti_c	Thermal_Indicator		yes	
nt_ti_cc	Thermal_Indicator		yes	
nt_ti_cw	Thermal_Indicator		yes	
nt_ti_w	Thermal_Indicator		yes	
pi_ti_c	Thermal_Indicator		yes	
pi_ti_cc	Thermal_Indicator		yes	
pi_ti_cw	Thermal_Indicator		yes	
pi_ti_w	Thermal_Indicator		yes	
pt_ti_c	Thermal_Indicator		yes	
pt_ti_cc	Thermal_Indicator		yes	
pt_ti_cw	Thermal_Indicator		yes	
pt_ti_w	Thermal_Indicator		yes	
pt_Amph	Order			
pt_Bival	Class			
pt_Deca	Order			
pt_Dipt	Order			
pt_EPT	Order			
pt_Gast	Class			
pt_Isop	Class			
nt_tv_intol	TolVal			
nt_tv_toler	TolVal			
nt_ffg_col	FFG			
nt_ffg_filt	FFG			
nt_ffg_pred	FFG			
nt_ffg_scrap	FFG			
nt_ffg_shred	FFG			

## MetricMetadata

Metric.Name	R code reference	BCG model	Thermal indicator	Notes
pi_ffg_col	FFG			
pi_ffg_filt	FFG			
pi_ffg_pred	FFG			
pi_ffg_scrap	FFG			
pi_ffg_shred	FFG			
pt_ffg_col	FFG			
pt_ffg_filt	FFG			
pt_ffg_pred	FFG			
pt_ffg_scrap	FFG			
pt_ffg_shred	FFG			
nt_habit_burrow	Habit			
nt_habit_clmbrs	Habit			
nt_habit_clngrs	Habit			
nt_habit_sprawl	Habit			
nt_habit_swmmrs	Habit			
pi_habit_burrow	Habit			
pi_habit_clmbrs	Habit			
pi_habit_clngrs	Habit			
pi_habit_sprawl	Habit			
pi_habit_swmmrs	Habit			
pt_habit_burrow	Habit			
pt_habit_clmbrs	Habit			
pt_habit_clngrs	Habit			
pt_habit_sprawl	Habit			
pt_habit_swmmrs	Habit			
nt_volt_multi	Life_Cycle			
nt_volt_semi	Life_Cycle			
nt_volt_uni	Life_Cycle			
pi_volt_multi	Life_Cycle			
pi_volt_semi	Life_Cycle			
pi_volt_uni	Life_Cycle			
pt_volt_multi	Life_Cycle			
pt_volt_semi	Life_Cycle			

## MetricMetadata

Metric.Name	R code reference	BCG model	Thermal indicator	Notes
pt_volt_uni	Life_Cycle			
pi_dom01	N_TAXA			
pi_dom02	N_TAXA, TaxaID			
pi_dom03	N_TAXA, TaxaID			
pi_dom04	N_TAXA, TaxaID			
pi_dom05	N_TAXA, TaxaID			
pi_dom06	N_TAXA, TaxaID			
pi_dom07	N_TAXA, TaxaID			
pi_dom08	N_TAXA, TaxaID			
pi_dom09	N_TAXA, TaxaID			
pi_dom10	N_TAXA, TaxaID			
x_Becks	N_TAXA, TolVal			
x_HBI	TolVal			
x_Shan_Num	N_TAXA, TolVal			
x_Shan_e	N_TAXA, TolVal			
x_Shan_2	N_TAXA, TolVal			
x_Shan_10	N_TAXA, TolVal			
x_D	N_TAXA			
x_Evenness	N_TAXA, TolVal			
nt_BCG_att1i	BCG_Attr			
nt_BCG_att1m	BCG_Attr			
nt_BCG_att12	BCG_Attr			
nt_BCG_att1i2	BCG_Attr	yes		
nt_BCG_att123	BCG_Attr			
nt_BCG_att1i23	BCG_Attr	yes		
nt_BCG_att2	BCG_Attr			
nt_BCG_att23	BCG_Attr			
nt_BCG_att234	BCG_Attr			
nt_BCG_att3	BCG_Attr			
nt_BCG_att4	BCG_Attr			
nt_BCG_att45	BCG_Attr			
nt_BCG_att5	BCG_Attr			
nt_BCG_att56	BCG_Attr			

## MetricMetadata

Metric.Name	R code reference	BCG model	Thermal indicator	Notes
nt_BCG_att6	BCG_Attr			
nt_EPT_BCG_att123	BCG_Attr, Order			
nt_EPT_BCG_att1i23	BCG_Attr, Order	yes		
pi_BCG_att1i	BCG_Attr			
pi_BCG_att1m	BCG_Attr			
pi_BCG_att12	BCG_Attr			
pi_BCG_att1i2	BCG_Attr			
pi_BCG_att123	BCG_Attr			
pi_BCG_att1i23	BCG_Attr	yes		
pi_BCG_att2	BCG_Attr			
pi_BCG_att23	BCG_Attr			
pi_BCG_att234	BCG_Attr			
pi_BCG_att3	BCG_Attr			
pi_BCG_att4	BCG_Attr			
pi_BCG_att45	BCG_Attr			
pi_BCG_att5	BCG_Attr			
pi_BCG_att56	BCG_Attr	yes		
pi_BCG_att6	BCG_Attr			
pi_EPT_BCG_att123	BCG_Attr, Order			
pt_BCG_att1i	BCG_Attr			
pt_BCG_att1m	BCG_Attr			
pt_BCG_att12	BCG_Attr			
pt_BCG_att1i2	BCG_Attr			
pt_BCG_att123	BCG_Attr			
pt_BCG_att1i23	BCG_Attr			
pt_BCG_att2	BCG_Attr			
pt_BCG_att23	BCG_Attr			
pt_BCG_att234	BCG_Attr			
pt_BCG_att3	BCG_Attr			
pt_BCG_att4	BCG_Attr			
pt_BCG_att45	BCG_Attr			
pt_BCG_att5	BCG_Attr			
pt_BCG_att56	BCG_Attr	yes		

## MetricMetadata

Metric.Name	R code reference	BCG model	Thermal indicator	Notes
pt_BCG_att6	BCG_Attr			
pt_EPT_BCG_att123	BCG_Attr, Order			