# Ciliates Cone and Round Group Collapse

Small = 5.5-11.29 µm ESD

Medium = 14.00-24.00 µm ESD

Large = 26.42-120.00 µmESD

## References for deciding on groupings:

Add Menden-Deuer & Lessard

Olenina et al. 2003: Re: a centric diatom: T. baltica varies considerably in diameter (20-100 μm). Factors for three size groups (small, medium, and large) were calculated according to the common distribution of cell size

## Note

This grouping includes only cone ciliates and round ciliates

## Code

taxaCnRn <- subset(volbio\_all, select = c(samp\_ev, exp, rep, mag, Group, type, grp\_sz, esd, counts\_per\_ml, bio\_per\_vol\_pgc\_ml))

taxaCnRn$szesd <- paste(taxaCnRn$grp\_sz, taxaCnRn$esd)

taxaCnRn <- filter(taxaCnRn, type=='cone'| type =='round', Group=='ciliate')

taxaCnRn <- subset(taxaCnRn,counts\_per\_ml !=0)

taxaCnRn <- subset(taxaCnRn, = c(samp\_ev, exp, rep, mag, Group, type, esd, szesd counts\_per\_ml, bio\_per\_vol\_pgc\_ml))

taxaCnRn$counts\_per\_ml<- formattable(taxaCnRn$counts\_per\_ml, format="f",digits=2)

taxaCnRn$bio\_per\_vol\_pgc\_ml<- formattable(taxaCnRn$bio\_per\_vol\_pgc\_ml, format="f",digits=2)

write\_xlsx(taxaCnRn, "data/TopTen/Ciliates/taxaCnRn.xlsx")

### Add up the counts per ml for each distinct cilate size/esd name but keep the esd and biomass columns

taxaCnRnlumpC <- aggregate(counts\_per\_ml ~ szesd +esd,

data = taxaCnRn, FUN = sum, na.rm =TRUE)

taxaCnRnlumpB <- aggregate(bio\_per\_vol\_pgc\_ml ~ szesd + esd,

data = taxaCnRn, FUN = sum, na.rm =TRUE)

taxaCnRnlump <- merge(taxaCnRnlumpC, taxaCnRnlumpB, by="szesd")

taxaCnRnlump<- subset(taxaCnRnlump,

select = c(szesd, esd.x, counts\_per\_ml, bio\_per\_vol\_pgc\_ml))

colnames(taxaCnRnlump)[1] = "Group"

colnames(taxaCnRnlump)[2] = "esd"

colnames(taxaCnRnlump)[3] = "totalCPM"

colnames(taxaCnRnlump)[4] = "totalBPM"

write\_xlsx(taxaCnRnlump, "data/TopTen/Ciliates/taxaCnRnlump.xlsx")

save(taxaCnRnlump, file = "data/TopTen/Ciliates/taxaCnRnlump.Rdata")

### Make a dot plot of esd and counts

CnRnPlot <- subset(taxaCnRn,

select = c(esd, totalCPM))

p <- ggplot(CnRnPlot, aes(x=esd, totalCPM)) +

geom\_point(size=1, color="blue") +

scale\_x\_log10 (n.breaks=10) +

wimGraph()+

theme(axis.text.x = element\_text(angle=90, hjust = 0.5,

vjust = 0.2, size = 8))

p + ggtitle("Cone and Round Ciliates by ESD")+

theme(plot.title = element\_text(size = 15))



|  |  |  |  |
| --- | --- | --- | --- |
| Ciliate Cone and Round | | | |
| total mean  CPM | <15, 15-25, >25 µm esd size groups | < 12, 12-24, >24 µm esd original size groups | <12, 12-24, >24 µm esd size groups |
| small | 154.23 | 85.62 | 85.62 |
| medium | 208.76 | 277.37 | 277.37 |
| large | 10.53 | 10.53 | 10.53 |

List of ESD measurements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Group** | **esd** | **totalCPM** | **totalBPM** |
|  | ciliate round 5.5 5.5 5.50 | 5.50 | 19.40 | 346.07 |
|  | ciliate round 9.5 9.5 9.50 | 9.50 | 64.80 | 5744.02 |
|  | ciliate cone 12 20 11.29 | 11.29 | 1.42 | 213.22 |
|  | ciliate round 14 14 14.00 | 14.00 | 60.44 | 16919.01 |
|  | ciliate cone 16 24 14.54 | 14.54 | 8.17 | 2567.24 |
|  | ciliate cone 24 24 19.05 | 19.05 | 138.84 | 94203.45 |
|  | ciliate cone 24 40 22.58 | 22.58 | 6.15 | 6916.55 |
|  | ciliate round 24 24 24.00 | 24.00 | 63.77 | 86432.48 |
|  | ciliate cone 32 36 26.42 | 26.42 | 1.16 | 2176.05 |
|  | ciliate cone 32 56 30.61 | 30.61 | 0.21 | 623.83 |
|  | ciliate cone 40 48 33.74 | 33.74 | 0.83 | 3256.63 |
|  | ciliate round 36 36 36.00 | 36.00 | 0.36 | 1706.95 |
|  | ciliate round 40 40 40.00 | 40.00 | 5.92 | 37320.71 |
|  | ciliate round 48 48 48.00 | 48.00 | 0.70 | 7811.72 |
|  | ciliate round 56 56 56.00 | 56.00 | 0.30 | 5143.43 |
|  | ciliate round 120 120 120.00 | 120.00 | 1.05 | 171819.46 |

List of ESD measurements

|  |  |  |  |
| --- | --- | --- | --- |
| **Group** | **esd** | **totalCPM** | **totalBiomass** |
| flagellate in a cone 4 4 4.00 | 4.00 | 6.94 | 34.13 |
| flagellate other 3.67 5.5 4.20 | 4.20 | 507.24 | 283.71 |
| flagellate in a cone 6 6 6.00 | 6.00 | 2.20 | 30.08 |
| flagellate other 6.33 9.5 7.25 | 7.25 | 120.06 | 1436.42 |
| flagellate other 8 16 10.08 | 10.08 | 1.84 | 133.58 |
| flagellate other 9 14 10.43 | 10.43 | 32.72 | 2264.12 |
| flagellate euglenid 8 20 10.86 | 10.86 | 0.21 | 91.02 |
| flagellate euglenid 8 32 12.70 | 12.70 | 0.09 | 145.06 |
| flagellate euglenid 8 40 13.68 | 13.68 | 0.92 | 156.99 |
| flagellate other 12 20 14.23 | 14.23 | 0.19 | 194.92 |
| dinoflagellate peridinium 16 16 16.00 | 16.00 | 1.00 | 1098.56 |
| flagellate colonial 16 16 16.00 | 16.00 | 0.09 | 580.25 |
| dinoflagellate prorocentrum 17.6 17.6 17.60 | 17.60 | 0.85 | 324.52 |
| dinoflagellate peridinium 20 20 20.00 | 20.00 | 1.27 | 1428.90 |
| flagellate other 16 32 20.16 | 20.16 | 0.60 | 2134.71 |
| flagellate euglenid 8 136 20.57 | 20.57 | 0.14 | 1177.63 |
| dinoflagellate peridinium 20 24 21.25 | 21.25 | 0.78 | 1130.77 |
| flagellate euglenid 12 80 22.58 | 22.58 | 0.65 | 2156.86 |
| flagellate euglenid 16 48 23.08 | 23.08 | 0.87 | 3188.45 |
| dinoflagellate peridinium 24 24 24.00 | 24.00 | 3.32 | 8241.13 |
| flagellate other 24 32 26.42 | 26.42 | 1.87 | 3213.28 |
| flagellate euglenid 16 144 33.28 | 33.28 | 0.13 | 2283.61 |
| flagellate euglenid 40 40 40.00 | 40.00 | 0.74 | 6989.27 |