OA Treatment Summary

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2022-08-16

library(knitr)

RMR=read.csv(file="RMR\_Results.csv")

dates=strptime(gsub(".\*([78]-\\d+-21).\*","\\1",RMR$filename),format="%m-%d-%y")

OA=read.csv("OA\_Data\_Sheet.csv")  
OA$Date=strptime(OA$Date,format="%Y/%m/%d")  
OA$Date=as.Date(OA$Date)

octos=unique(RMR$octo)

OA\_Summary=data.frame(octo=as.character(rep(NA,17)),  
 start.date=rep(as.Date(OA$Date[1]),17),  
 end.date=rep(as.Date(OA$Date[1]),17),  
 tank=as.numeric(rep(NA,17)),  
 treat=as.numeric(rep(NA,17)),  
 pco2=as.numeric(rep(NA,17)),  
# pco2.sd=as.numeric(rep(NA,17)),  
 ph=as.numeric(rep(NA,17)),  
# ph.sd=as.numeric(rep(NA,17)),  
 alk=as.numeric(rep(NA,17)),  
# alk.sd=as.numeric(rep(NA,17)),  
 salinity=as.numeric(rep(NA,17))  
# ,salinity.sd=as.numeric(rep(NA,17))  
 )

for (i in 1:length(octos)){  
 OA\_Summary$octo[i]=octos[i]  
 OA\_Summary$start.date[i]=  
 as.Date(min(dates[RMR$octo==octos[i]]))  
 OA\_Summary$end.date[i]=  
 as.Date(max(dates[RMR$octo==octos[i]]))  
 if(OA\_Summary$end.date[i]==OA\_Summary$start.date[i]){  
 OA\_Summary$start.date[i]=OA\_Summary$end.date[i]-6  
 }  
 OA\_Summary$treat[i]=  
 RMR$pco2[RMR$octo==octos[i]][1]  
 group=  
 as.numeric(gsub("(\\d+)\\-\\d+","\\1",octos[i]))  
 if (OA\_Summary$treat[i]==1000){  
 OA\_Summary$tank[i]=group  
 }  
 if (OA\_Summary$treat[i]==1800){  
 OA\_Summary$tank[i]=group+4   
 }  
 if (grepl("5",octos[i])){  
 OA\_Summary$tank[i]=  
 as.numeric(gsub("5-(\\d)","\\1",octos[i]))  
 }  
 if (octos[i]=="5-5"){  
 OA\_Summary$tank[i]=5  
 }  
 OA\_Summary$pco2[i]=  
 round(mean(OA[,OA\_Summary$tank[i]+2][OA$Variable=="pCO2"&  
 OA$Date>=OA\_Summary$start.date[i]&  
 OA$Date<=OA\_Summary$end.date[i]],  
 na.rm=T))  
# OA\_Summary$pco2.sd[i]=  
# round(sd(OA[,OA\_Summary$tank[i]+2][OA$Variable=="pCO2"&  
# OA$Date>=OA\_Summary$start.date[i]&  
# OA$Date<=OA\_Summary$end.date[i]],  
# na.rm=T))  
 OA\_Summary$ph[i]=  
 round(mean(OA[,OA\_Summary$tank[i]+2][OA$Variable=="pH"&  
 OA$Date>=OA\_Summary$start.date[i]&  
 OA$Date<=OA\_Summary$end.date[i]],  
 na.rm=T),3)  
# OA\_Summary$ph.sd[i]=  
# round(sd(OA[,OA\_Summary$tank[i]+2][OA$Variable=="pH"&  
# OA$Date>=OA\_Summary$start.date[i]&  
# OA$Date<=OA\_Summary$end.date[i]],  
# na.rm=T),3)  
 OA\_Summary$alk[i]=  
 round(mean(OA[,OA\_Summary$tank[i]+2][OA$Variable=="Alkalinity"&  
 OA$Date>=OA\_Summary$start.date[i]&  
 OA$Date<=OA\_Summary$end.date[i]],  
 na.rm=T)\*1000000)  
# OA\_Summary$alk.sd[i]=  
# round(sd(OA[,OA\_Summary$tank[i]+2][OA$Variable=="Alkalinity"&  
# OA$Date>=OA\_Summary$start.date[i]&  
# OA$Date<=OA\_Summary$end.date[i]],  
# na.rm=T)\*1000000)  
 OA\_Summary$salinity[i]=  
 round(mean(OA[,OA\_Summary$tank[i]+2][OA$Variable=="Salinity"&  
 OA$Date>=OA\_Summary$start.date[i]&  
 OA$Date<=OA\_Summary$end.date[i]],  
 na.rm=T),1)  
# OA\_Summary$salinity.sd[i]=  
# round(sd(OA[,OA\_Summary$tank[i]+2][OA$Variable=="Salinity"&  
# OA$Date>=OA\_Summary$start.date[i]&  
# OA$Date<=OA\_Summary$end.date[i]],  
# na.rm=T),1)  
  
 }

kable(OA\_Summary,align="c")

| octo | start.date | end.date | tank | treat | pco2 | ph | alk | salinity |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1-3 | 2021-07-26 | 2021-08-02 | 5 | 1800 | 1692 | 7.430 | 2049 | 30.6 |
| 1-2 | 2021-07-20 | 2021-07-26 | 1 | 1000 | 1135 | 7.600 | 2063 | 30.5 |
| 1-1 | 2021-07-12 | 2021-07-19 | 5 | 1800 | 1716 | 7.430 | 2070 | 29.7 |
| 2-2 | 2021-07-20 | 2021-07-26 | 2 | 1000 | 1117 | 7.618 | 2062 | 29.6 |
| 2-1 | 2021-07-13 | 2021-07-19 | 6 | 1800 | 1942 | 7.387 | 2065 | 30.1 |
| 2-3 | 2021-07-27 | 2021-08-02 | 6 | 1800 | 1738 | 7.431 | 2093 | 30.6 |
| 3-2 | 2021-07-20 | 2021-07-26 | 3 | 1000 | 1048 | 7.626 | 2092 | 30.2 |
| 3-3 | 2021-07-27 | 2021-08-02 | 7 | 1800 | 1976 | 7.375 | 2074 | 30.2 |
| 3-1 | 2021-07-12 | 2021-07-19 | 7 | 1800 | 1580 | 7.474 | 2040 | 29.3 |
| 4-2 | 2021-07-21 | 2021-07-26 | 4 | 1000 | 1011 | 7.638 | 2016 | 30.0 |
| 4-3 | 2021-07-26 | 2021-08-02 | 8 | 1800 | 1816 | 7.406 | 2080 | 30.7 |
| 4-1 | 2021-07-12 | 2021-07-19 | 8 | 1800 | 1678 | 7.445 | 2056 | 30.0 |
| 5-1 | 2021-08-10 | 2021-08-18 | 1 | 1000 | 1168 | 7.592 | 2081 | 29.8 |
| 5-2 | 2021-08-10 | 2021-08-18 | 2 | 1000 | 984 | 7.667 | 2095 | 30.0 |
| 5-3 | 2021-08-10 | 2021-08-18 | 3 | 1000 | 1128 | 7.607 | 2066 | 29.6 |
| 5-4 | 2021-08-10 | 2021-08-18 | 4 | 1000 | 1075 | 7.623 | 2070 | 30.1 |
| 5-5 | 2021-08-12 | 2021-08-19 | 5 | 1800 | NaN | NaN | NaN | NaN |

treatment.sum=data.frame(  
 Treatment=c("Control","Elevated CO~2~"),  
 pCO2=paste0(round(aggregate(pco2~treat,data=OA\_Summary,FUN="mean")$pco2),"±",  
 round(aggregate(pco2~treat,data=OA\_Summary,FUN="sd")$pco2)),  
 pH=paste0(round(aggregate(ph~treat,data=OA\_Summary,FUN="mean")$ph,3),"±",  
 round(aggregate(ph~treat,data=OA\_Summary,FUN="sd")$ph,3)),  
 Alkalinity=paste0(round(aggregate(alk~treat,data=OA\_Summary,FUN="mean")$alk),"±",  
 round(aggregate(alk~treat,data=OA\_Summary,FUN="sd")$alk)),  
 Salinity=paste0(round(aggregate(salinity~treat,data=OA\_Summary,FUN="mean")$salinity,1),"±",  
 round(aggregate(salinity~treat,data=OA\_Summary,FUN="sd")$salinity,1))  
)  
  
colnames(treatment.sum)[2]="pCO~2~ ($\\mu$atm)"  
colnames(treatment.sum)[4]="Alkalinity ($\\mu$mol kg^-1^)"  
colnames(treatment.sum)[5]="Salinity (PSU)"

kable(treatment.sum,align="c")

| Treatment | pCO2 (atm) | pH | Alkalinity (mol kg-1) | Salinity (PSU) |
| --- | --- | --- | --- | --- |
| Control | 1083±65 | 7.621±0.024 | 2068±25 | 30±0.3 |
| Elevated CO2 | 1767±136 | 7.422±0.032 | 2066±17 | 30.1±0.5 |