ZZ=one of the habitat files

NMDS

ZZ\_NMDS<-metaMDS(ZZ\_samp,distance="bray",k=2,trymax=500,parallel=3)

NMDS.fit<-envfit(ZZ\_NMDS~Trmt.f,data=Envr,perm=199)

NMDS.fit

plot(ZZ\_NMDS,display="sites",type="p", cex=0.6)

ordiellipse(ZZ\_NMDS,Envr$Trmt.f,col=1:2, kind="sd")

with(ZZ\_NMDS, legend("topright", legend=levels(Envr$Trmt.f),

bty="n",col=1:2, cex=0.5, pch=19))

plot(NMDS.fit)

stressplot(ZZ\_NMDS)

goodness(ZZ\_NMDS)

Autocorr

#First model uses time as a category, Time.f

ZZ\_time1<-read.csv(file.choose())

ZZ\_time1$Time.f <- as.factor(ZZ\_time1$Time)

ZZ\_time1$Trmt.f <- as.factor(ZZ\_time1$Trmt)

ZZ\_time1$Line.f <- as.factor(ZZ\_time1$Line)

ZZ\_time1$Trap.f <- as.factor(ZZ\_time1$Trap)

ZZ\_time1$Period.f <- as.factor(ZZ\_time1$Period)

ZZ\_time1$Year.f <- as.factor(ZZ\_time1$Year)

ZZ\_time1$Countlog <- (log(ZZ\_time1$Count+1))

str(ZZ\_time1)

#Change Time from factor back to numeric.

ZZ\_time1$Time <- as.numeric(ZZ\_time1$Time.f)

ZZ\_autoco\_t<-lme(Countlog~Trmt\*Time.f,

random=~1|Line.f/ID,

data=pp\_time1, method="ML")

#str(ZZ\_time1)

#Second model

ZZ\_autoco\_t\_ar1 <-lme(Countlog~Trmt.f\*Time.f,

random=~1|Line.f/ID,

correlation=corAR1(form=~Time),

data=ZZ\_time1, method="ML")

#compare models

AICc(ZZ\_autoco\_t, ZZ\_autoco\_t\_ar1)

anova(ZZ\_autoco\_t,type="marginal")

Indicator species analysis

library(indicspecies)

pc=read.csv ("C:ZZ, header=TRUE)

str(pc)

abund=pc[, 4:ncol(pc)]

time=pc$Year

#or time=pc$Trmt

inv=multipatt(abund, time, func="r.g", control=how(nperm=999))

summary(inv)

Supplemental Material Figure S3. R code for non-metric multidimensional scaling (NMDS), autocorrelation, and indicator species analyses.