ShallowTables

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library(here)

## Warning: package 'here' was built under R version 4.0.5

## here() starts at C:/Users/nushi/OneDrive - Cornell University/Shallow\_Torpor/Code/TorporShallowDeep

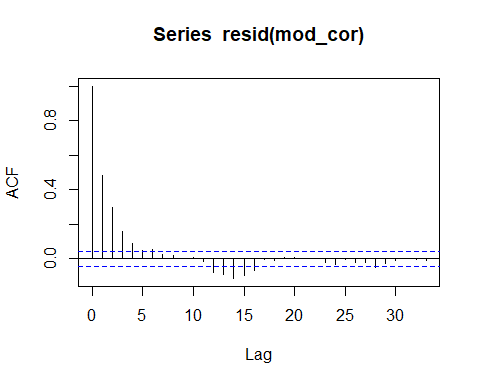
library(nlme) ## for gls model to compare them with lmer, account for autocorrelation

## Warning: package 'nlme' was built under R version 4.0.5

library(emmeans)

## Warning: package 'emmeans' was built under R version 4.0.5

#getwd()  
here <- here::here  
therm\_all <- read.csv(here("..", "..", "Data", "All\_data.csv"))  
#head(therm\_all)  
  
therm\_all$Category <- factor(therm\_all$Category, levels=c("Normothermic", "Shallow Torpor", "Transition", "Deep Torpor"))  
therm\_all$Species <- as.factor(therm\_all$Species)  
  
mod\_cor <- nlme::lme(data=therm\_all, fixed=Surf\_Temp ~   
 Amb\_Temp +   
 Category +   
 Amb\_Temp:Category +   
 Species +   
 Cap\_mass +  
 Year +  
 Species:Category, ## Different from the previous because this is a two-var term  
 random= ~1|Indiv\_numeric/Category,   
 correlation=corAR1(form=~1|Indiv\_numeric/Category))  
em <- emmeans(mod\_cor, ~Species:Category)  
#summary(mod\_BVD\_sp\_cor2)  
#confint(mod\_BVD\_sp\_cor2)  
acf(resid(mod\_cor))



knitr::kable(em, digits=2)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Species | Category | emmean | SE | df | lower.CL | upper.CL |
| BCHU | Normothermic | 33.03 | 1.83 | 28 | 29.29 | 36.77 |
| BLUH | Normothermic | 31.81 | 0.68 | 28 | 30.42 | 33.19 |
| RIHU | Normothermic | 30.93 | 0.52 | 28 | 29.85 | 32.00 |
| BCHU | Shallow Torpor | 30.40 | 1.91 | 28 | 26.48 | 34.32 |
| BLUH | Shallow Torpor | 29.03 | 0.78 | 28 | 27.44 | 30.62 |
| RIHU | Shallow Torpor | 27.48 | 0.51 | 28 | 26.44 | 28.53 |
| BCHU | Transition | 21.56 | 1.85 | 28 | 17.77 | 25.36 |
| BLUH | Transition | 22.07 | 1.00 | 28 | 20.02 | 24.13 |
| RIHU | Transition | 22.71 | 0.66 | 28 | 21.37 | 24.06 |
| BCHU | Deep Torpor | 15.10 | 1.82 | 28 | 11.37 | 18.84 |
| BLUH | Deep Torpor | 15.46 | 1.02 | 28 | 13.38 | 17.54 |
| RIHU | Deep Torpor | 15.67 | 0.59 | 28 | 14.46 | 16.89 |

knitr::kable(intervals(mod\_cor)$fixed, digits=2)

|  |  |  |  |
| --- | --- | --- | --- |
|  | lower | est. | upper |
| (Intercept) | 34.39 | 46.51 | 58.62 |
| Amb\_Temp | 0.02 | 0.05 | 0.08 |
| CategoryShallow Torpor | -4.90 | -3.19 | -1.48 |
| CategoryTransition | -18.67 | -16.91 | -15.15 |
| CategoryDeep Torpor | -28.14 | -26.60 | -25.05 |
| SpeciesBLUH | -6.21 | -1.23 | 3.76 |
| SpeciesRIHU | -6.65 | -2.10 | 2.45 |
| Cap\_mass | -0.61 | 0.29 | 1.19 |
| Year | -1.65 | -0.92 | -0.19 |
| Amb\_Temp:CategoryShallow Torpor | -0.01 | 0.05 | 0.10 |
| Amb\_Temp:CategoryTransition | 0.36 | 0.46 | 0.55 |
| Amb\_Temp:CategoryDeep Torpor | 0.61 | 0.73 | 0.84 |
| CategoryShallow Torpor:SpeciesBLUH | -1.90 | -0.15 | 1.61 |
| CategoryTransition:SpeciesBLUH | -0.23 | 1.74 | 3.70 |
| CategoryDeep Torpor:SpeciesBLUH | -0.23 | 1.58 | 3.39 |
| CategoryShallow Torpor:SpeciesRIHU | -2.60 | -0.81 | 0.98 |
| CategoryTransition:SpeciesRIHU | 1.53 | 3.25 | 4.98 |
| CategoryDeep Torpor:SpeciesRIHU | 1.18 | 2.67 | 4.17 |

knitr::kable(summary(mod\_cor)$tTable, digits=2)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Value | Std.Error | DF | t-value | p-value |
| (Intercept) | 46.51 | 6.18 | 2012 | 7.53 | 0.00 |
| Amb\_Temp | 0.05 | 0.01 | 2012 | 3.58 | 0.00 |
| CategoryShallow Torpor | -3.19 | 0.85 | 53 | -3.74 | 0.00 |
| CategoryTransition | -16.91 | 0.88 | 53 | -19.31 | 0.00 |
| CategoryDeep Torpor | -26.60 | 0.77 | 53 | -34.53 | 0.00 |
| SpeciesBLUH | -1.23 | 2.44 | 28 | -0.50 | 0.62 |
| SpeciesRIHU | -2.10 | 2.22 | 28 | -0.95 | 0.35 |
| Cap\_mass | 0.29 | 0.44 | 28 | 0.67 | 0.51 |
| Year | -0.92 | 0.36 | 28 | -2.59 | 0.01 |
| Amb\_Temp:CategoryShallow Torpor | 0.05 | 0.03 | 2012 | 1.67 | 0.09 |
| Amb\_Temp:CategoryTransition | 0.46 | 0.05 | 2012 | 9.13 | 0.00 |
| Amb\_Temp:CategoryDeep Torpor | 0.73 | 0.06 | 2012 | 12.69 | 0.00 |
| CategoryShallow Torpor:SpeciesBLUH | -0.15 | 0.87 | 53 | -0.17 | 0.87 |
| CategoryTransition:SpeciesBLUH | 1.74 | 0.98 | 53 | 1.78 | 0.08 |
| CategoryDeep Torpor:SpeciesBLUH | 1.58 | 0.90 | 53 | 1.75 | 0.09 |
| CategoryShallow Torpor:SpeciesRIHU | -0.81 | 0.89 | 53 | -0.91 | 0.37 |
| CategoryTransition:SpeciesRIHU | 3.25 | 0.86 | 53 | 3.78 | 0.00 |
| CategoryDeep Torpor:SpeciesRIHU | 2.67 | 0.74 | 53 | 3.59 | 0.00 |