Max number of birds within 500 m of the TiL

This section performs the same analysis as the previous section, except the response variable is the maximum number of birds detected within 500 m of the TiL during a continuous illuminated/dark period.

0.5º elevation angle

```
m1 = gam(logst(val)~light*year,data=light.df.g %>% filter(elev==1 & the.type=="max.nbirds"))
m2 = gam(logst(val)~light+year,data=light.df.g %>% filter(elev==1 & the.type=="max.nbirds"))
m3 = gam(logst(val)~light,data=light.df.g %>% filter(elev==1 & the.type=="max.nbirds"))
AIC(m1,m2,m3)
```

```
##    df      AIC
## m1 11 83.99201
## m2  7 78.16597
## m3  3 94.05718
```

```
bm = m2
```

The best model is model 2, which includes the *light* and *year* but not their interaction.

```
summary(bm)
```

```
##
## Family: gaussian
## Link function: identity
##
## Formula:
## logst(val) ~ light + year
##
## Parametric coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  2.08254    0.15619  13.333  < 2e-16 ***
## light        0.52534    0.13506   3.890 0.000321 ***
## year2012    -0.21004    0.23543  -0.892 0.376952
## year2013    -0.01684    0.20056  -0.084 0.933460
## year2015     0.70110    0.17818   3.935 0.000279 ***
## year2016     0.07999    0.22361   0.358 0.722184
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## R-sq.(adj) =  0.406   Deviance explained = 46.4%
## GCV = 0.25699  Scale est. = 0.22734   n = 52
```

Here there is one main effect of *light*, and the model indicates that maximum number of birds within 500 m of the TiL was $10^{0.53} = 3.4$ times higher during illuminated periods, on average.

Results for the main text:

```
res = summary(bm)$p.table
res = cbind(res,Factor=10^(res[,"Estimate"]))
# Effect of light after exponentiating the coefficient to get multiplicative factor
print.model.summary(res[2,5],res[2,3],res[2,4],units="x",effect.word="factor")
```

```
## [1] "factor = 3.4x, t = 3.89, P = 0.0003"
```