

```
## Family: gaussian
## Link function: identity
##
## Formula:
## eval(parse(text = response.name)) ~ eval(LIGHT) + year + s(as.numeric(eval(TIME)),
## by = year) + s(eval(BIRD_DENSITY), by = year)
##
## Parametric coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -8583.0276  2640.8272  -3.250 0.001367 **
## eval(LIGHT)1    0.2875    0.0823   3.493 0.000595 ***
## year2012      5897.7775  2897.5004   2.035 0.043207 *
## year2013      8598.2387  2802.0783   3.069 0.002469 **
## year2015      6196.6699  2802.1699   2.211 0.028215 *
## year2016      8943.6367  3350.9547   2.669 0.008273 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Approximate significance of smooth terms:
##               edf Ref.df      F p-value
## s(as.numeric(eval(TIME))):year2010 0.9999  1.000 10.563 0.001362 **
## s(as.numeric(eval(TIME))):year2012 1.0000  1.000  5.035 0.025978 *
## s(as.numeric(eval(TIME))):year2013 1.0000  1.000  0.000 0.999937
## s(as.numeric(eval(TIME))):year2015 1.0000  1.000  6.445 0.011917 *
## s(as.numeric(eval(TIME))):year2016 1.0000  1.000  0.031 0.860547
## s(eval(BIRD_DENSITY)):year2010     7.4971  8.390  2.987 0.003818 **
## s(eval(BIRD_DENSITY)):year2012     1.0000  1.000  0.257 0.612484
## s(eval(BIRD_DENSITY)):year2013     1.3293  1.550  1.468 0.168807
## s(eval(BIRD_DENSITY)):year2015     3.1880  3.898  6.019 0.000165 ***
## s(eval(BIRD_DENSITY)):year2016     1.0000  1.000  0.163 0.686857
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## R-sq.(adj) =  0.728   Deviance explained = 75.8%
## GCV = 0.21414   Scale est. = 0.18899   n = 213
```

Results for the main text:

```
res = summary(bm)$p.table
res = cbind(res,Factor=10^(res[, "Estimate"]))
# 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 = 1.9x, t = 3.49, P = 0.0006"
```

Some deviation from the normal line, but all points within the bounds of the simulated datasets, or very close.

```
qq.gam(bm,rep=1000,pch=1,level=1)
```