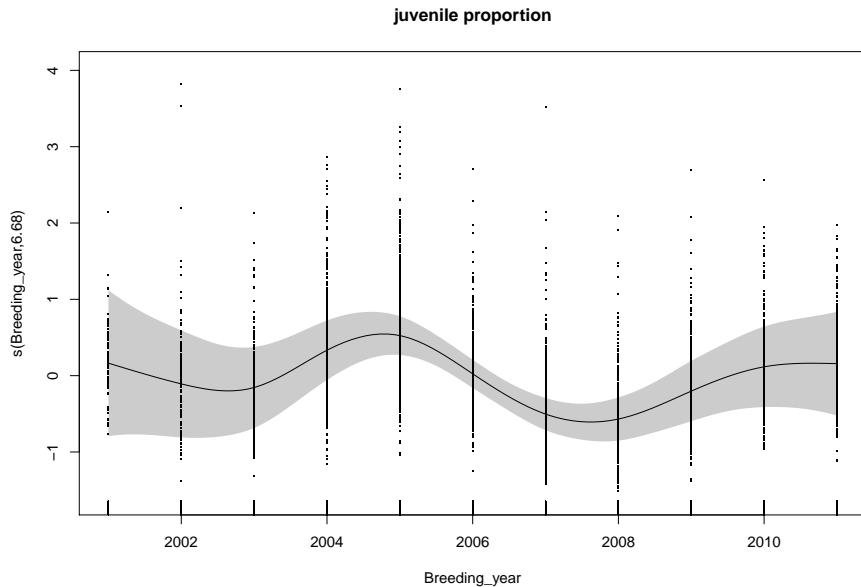# Juvenile proportions GAM by zone

GAM with ordered levels and reference smooth

```
## 
## Family: binomial
## Link function: logit
## 
## Formula:
## propjuv ~ s(Breeding_year) + s(Breeding_year, by = zone1) + s(days) +
##     s(days, by = zone1)
## 
## Parametric coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -1.48469    0.03967  -37.43   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## Approximate significance of smooth terms:
##                                edf Ref.df Chi.sq p-value
## s(Breeding_year)             6.676  7.788 82.054 2.2e-14 ***
## s(Breeding_year):zone1IJsselmeer 1.000  1.000  0.056   0.814
## s(Breeding_year):zone1Rhinelands 1.001  1.001  0.002   0.962
## s(Breeding_year):zone1Southwest 1.000  1.000  0.507   0.477
## s(days)                      1.000  1.000  0.013   0.911
## s(days):zone1IJsselmeer      1.000  1.000  0.002   0.965
## s(days):zone1Rhinelands      1.001  1.001  0.049   0.825
## s(days):zone1Southwest       1.000  1.000  0.029   0.865
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```
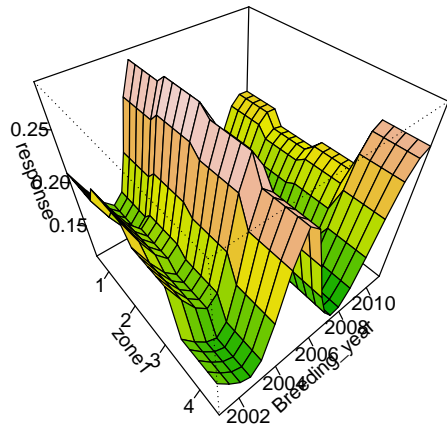
GAM: Zones and model w/o ref smooth

- No differences between zones when a reference smooth is added.
- AIC (GAM with ref. smooths): 2092.9807208
- AIC (GAM without ref. smooths): 2092.9807208
- GAM with reference smooths has a lower AIC despite more terms.

juvenile proportion

Effect of year and days by zone

juvenile proportion

juvenile proportion