

```
> m1<-gamm(sumAbund~s(Month,k=3)+s(Year)+Covid,random=list(SiteCode=~1),data=RLS1.sum,family=quasipoisson)
```

```
Maximum number of PQL iterations: 20
```

```
iteration 1
```

```
iteration 2
```

```
iteration 3
```

```
iteration 4
```

```
> summary(m1$gam)
```

```
Family: quasipoisson
```

```
Link function: log
```

```
Formula:
```

```
sumAbund ~ s(Month, k = 3) + s(Year) + Covid
```

```
Parametric coefficients:
```

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	5.70150	0.08739	65.244	<2e-16 ***
Covidyes	-0.51835	0.44882	-1.155	0.248

```
---
```

```
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Approximate significance of smooth terms:
```

	edf	Ref.df	F	p-value
s(Month)	1.000	1.000	0.001	0.98108
s(Year)	6.013	6.013	2.916	0.00928 **

```
---
```

```
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
R-sq.(adj) = 0.0209
```

```
Scale est. = 620.47 n = 1169
```

```
> ((exp(5.70150-0.51835)-exp(5.70150))/exp(5.70150))*100
```

```
[1] -40.44977
```

**Rottnest,
Australia**

Reef Fish Biomass

```
> mean(RLS1$SiteLat)
```

```
[1] -32.00834
```

```
> mean(RLS1$SiteLong)
```

```
[1] 115.5226
```

Method 1

Sum Biomass/Block/Transect