Supplementary material 2. R scripts and the results of binomial generalized linear models used to test the effect of explanatory variables on the presence of *Sporobolus cryptandrus* **A)** at the landscape scale, and **B)** within a highly infested grassland site in the local survey

A) Landscape-scale study

Effect of habitat types

```
> fittedModel <- glm(sporob01 ~ og01F+cg01F+confor01F+brfor01F+cropl01F,
+                    family = binomial, data = dt)
> Anova(fittedModel, type=2)

Analysis of Deviance Table (Type II tests)

Response: sporob01
          LR Chisq Df Pr(>Chisq)
og01F      19.2497  1  1.147e-05 ***
cg01F       0.2072  1     0.6489
confor01F  23.9885  1  9.691e-07 ***
brfor01F    0.0044  1     0.9474
cropl01F   17.0927  1  3.560e-05 ***
```

Effect of soil sand content (%)

```
> fittedModel <- glm(sporob01 ~ sand,
+                    family = binomial, data = dt)
> Anova(fittedModel, type=2)

Analysis of Deviance Table (Type II tests)

Response: sporob01
     LR Chisq Df Pr(>Chisq)
sand   11.126  1  0.0008512 ***
```

Effect of soil organic matter (SOM) content (%)

```
> fittedModel <- glm(sporob01 ~ som,
+                    family = binomial, data = dt)
> Anova(fittedModel, type=2)

Analysis of Deviance Table (Type II tests)

Response: sporob01
    LR Chisq Df Pr(>Chisq)
som   43.713  1  3.803e-11 ***
```

B) Local study

Effect of distance from the nearest dirt road

```
> fittedModel <- glm(sporob01 ~ logdist, family = binomial ("logit"), data
= dt)
> plot(allEffects(fittedModel))
> Anova(fittedModel, type=2)
```

```
Analysis of Deviance Table (Type II tests)

Response: sporob01
        LR Chisq Df Pr(>Chisq)
logdist   1.0793  1     0.2989

> summary(fittedModel)

Call:
glm(formula = sporob01 ~ logdist, family = binomial("logit"),
    data = dt)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.2093  -0.9892  -0.9101   1.3054   1.5046

Coefficients:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)   0.4122     0.8506   0.485    0.628
logdist      -0.1816     0.1753  -1.036    0.300

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 133.75  on 99  degrees of freedom
Residual deviance: 132.67  on 98  degrees of freedom
AIC: 136.67

> moran.test(residuals(fittedModel), FS_w01)

        Moran I test under randomisation

data:  residuals(fittedModel)
weights: FS_w01

alternative hypothesis: greater
sample estimates:
Moran I statistic       Expectation          Variance
     0.0080862896     -0.0101010101      0.0003412722
```

Effect of the total cover of resident grassland

```
> fittedModel <- glm(sporob01 ~ ob, family = binomial, data = dt)
> plot(allEffects(fittedModel))
> Anova(fittedModel, type=2)

Analysis of Deviance Table (Type II tests)

Response: sporob01
   LR Chisq Df Pr(>Chisq)
ob   27.154  1  1.878e-07 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> summary(fittedModel)

Call:
glm(formula = sporob01 ~ ob, family = binomial, data = dt)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.3739  -0.7741  -0.3870   0.6197   2.2931
```

```
Coefficients:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)    3.957      1.196   3.308  0.00094 ***
ob           -12.521      3.187  -3.929 8.54e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 101.178  on 84  degrees of freedom
Residual deviance:  74.023  on 83  degrees of freedom
AIC: 78.023

Number of Fisher Scoring iterations: 5

>   moran.test(residuals(fit), FS_w01)

        Moran I test under randomisation

data:  residuals(fit)
weights: FS_w01

Moran I statistic standard deviate = 0.60472, p-value = 0.2727
alternative hypothesis: greater
sample estimates:
Moran I statistic       Expectation          Variance
     0.0023463834     -0.0119047619      0.0005553722

>   testDispersion(res)

        DHARMa nonparametric dispersion test via sd of residuals fitted
        vs. simulated

data:  simulationOutput
dispersion = 1.0089, p-value = 0.936
alternative hypothesis: two.sided
```