Moscas Manova

Matheus Gomes
Daniela Moraes
Marcos Ferreira

Moscas

Pacotes

```
##   ggplot2  magrittr gridExtra    xtable     dplyr     purrr     tidyr
##      TRUE      TRUE      TRUE      TRUE      TRUE      TRUE      TRUE
##       car     broom      grid   stringr
##      TRUE      TRUE      TRUE      TRUE
```

Lendo Os Dados

Analise Descritiva

Preparação

Medidas Descritivas

Espécie	Média	DP	Var.	Mínimo	CV(%)	Mediana	Máximo
torrens	9,57	0,92	0,84	8,00	9,58	9,00	13,00
carteri	9,66	1,26	1,58	6,00	13,04	10,00	12,00

Table 1: Comprimento do 12º segmento da antena

Espécie	Média	DP	Var.	Mínimo	CV(%)	Mediana	Máximo
torrens	9,71	0,89	0,80	8,00	9,20	10,00	13,00
carteri	9,37	1,09	1,18	7,00	11,60	9,00	11,00

Table 2: Comprimento do 13º segmento da antena

Espécie	Média	DP	Var.	Mínimo	CV(%)	Mediana	Máximo
torrens	35,37	2,20	4,83	31,00	6,21	36,00	39,00
carteri	39,31	2,84	8,04	33,00	7,21	39,00	44,00

Table 3: Comprimento do terceiro palpo

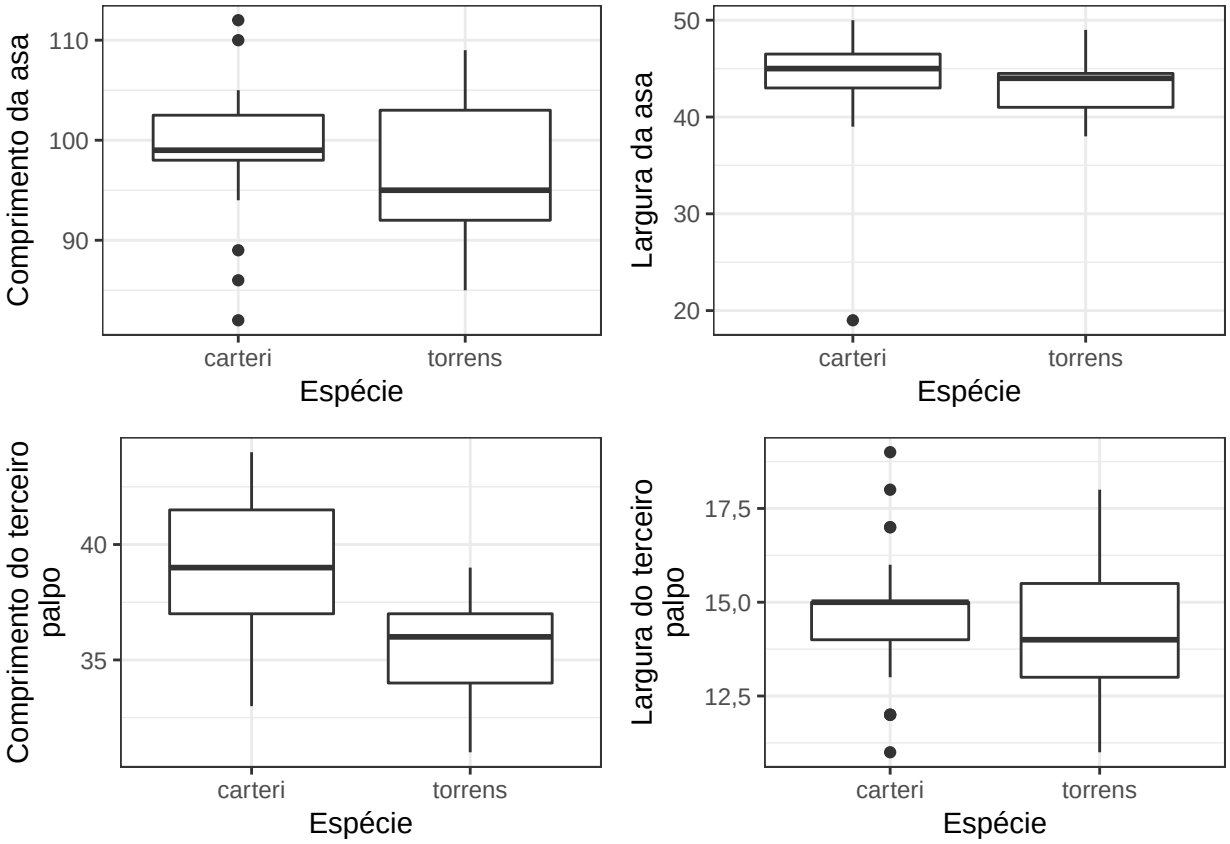
Espécie	Média	DP	Var.	Mínimo	CV(%)	Mediana	Máximo
torrens	25,63	2,50	6,24	21,00	9,75	26,00	31,00
carteri	30,00	4,62	21,29	20,00	15,38	31,00	38,00

Table 4: Comprimento do quarto palpo

Espécie	Média	DP	Var.	Mínimo	CV(%)	Mediana	Máximo
torrens	96,46	6,38	40,73	85,00	6,62	95,00	109,00
carteri	99,34	5,59	31,29	82,00	5,63	99,00	112,00

Table 5: Comprimento da asa

Boxplots

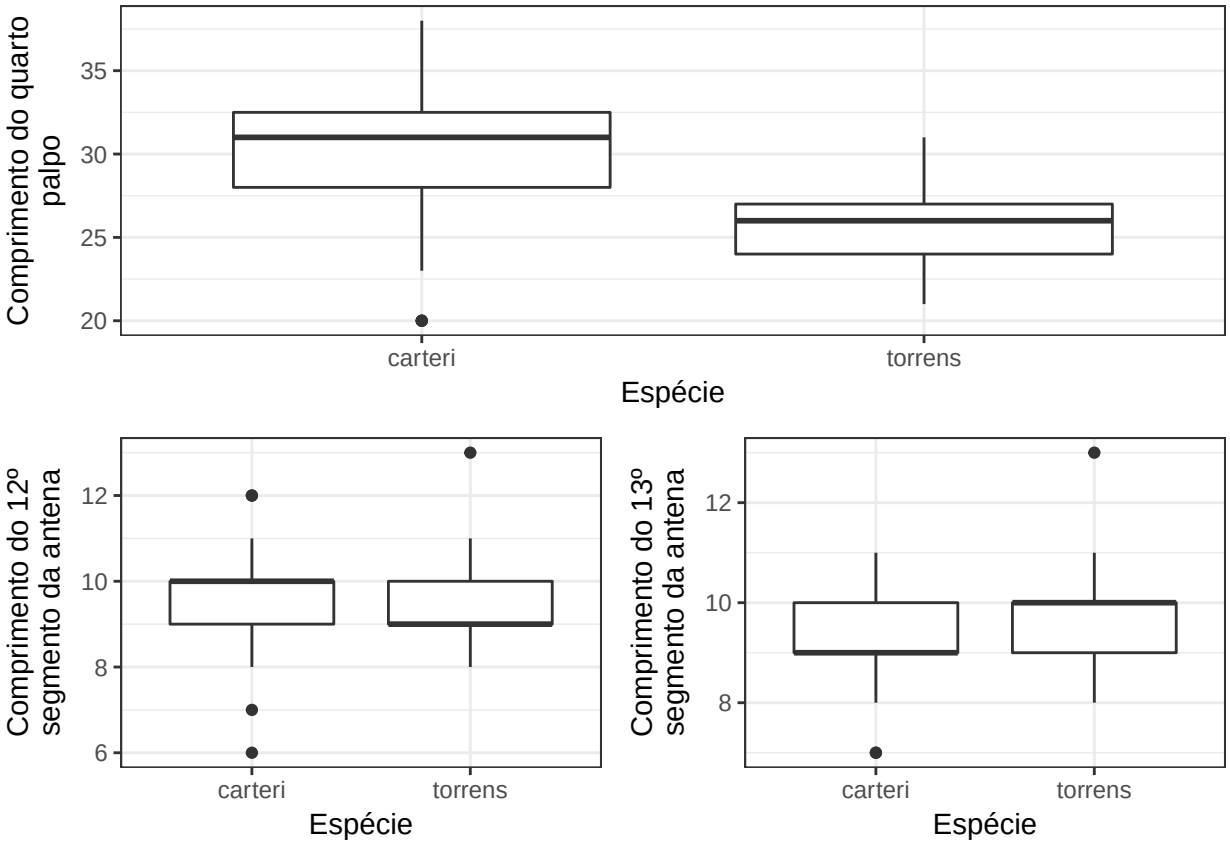


Espécie	Média	DP	Var.	Mínimo	CV(%)	Mediana	Máximo
torrens	14,51	1,84	3,38	11,00	12,66	14,00	18,00
carteri	14,66	1,64	2,70	11,00	11,22	15,00	19,00

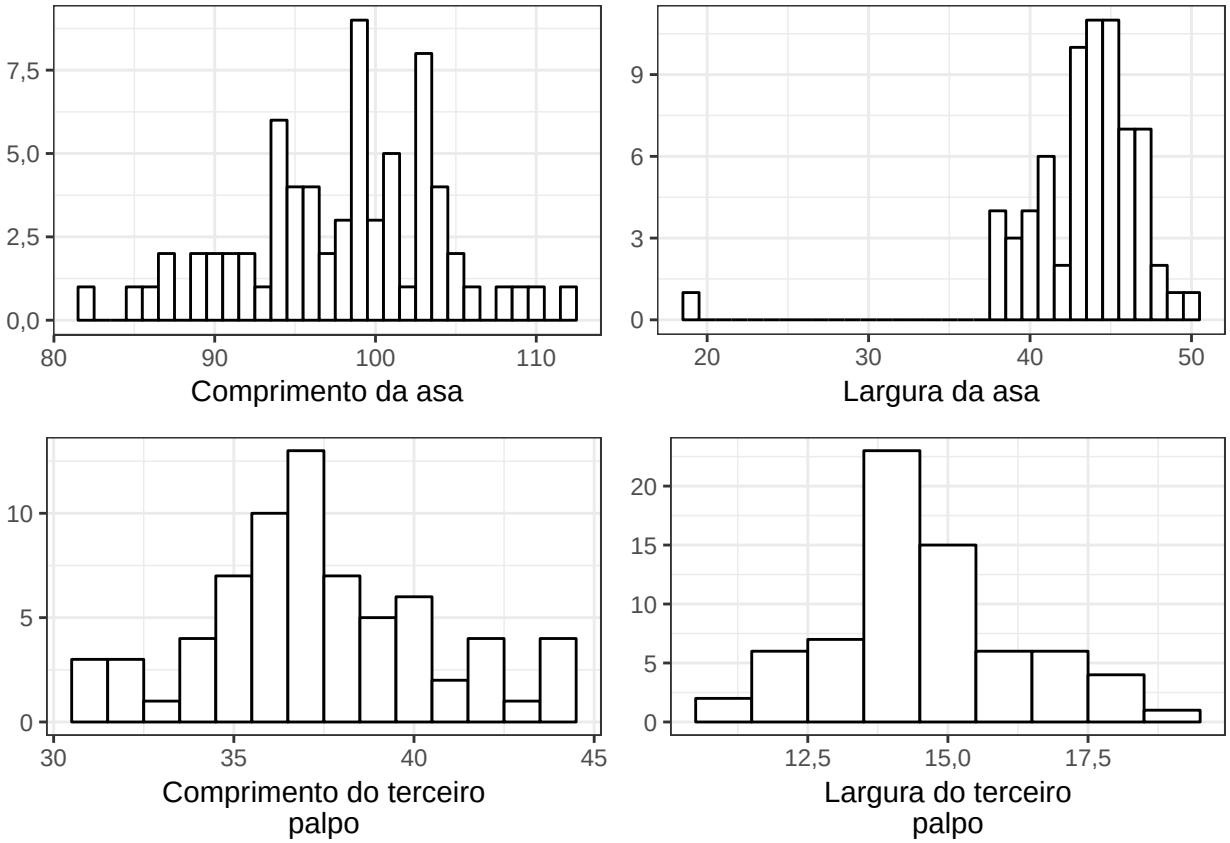
Table 6: Largura do terceiro palpo

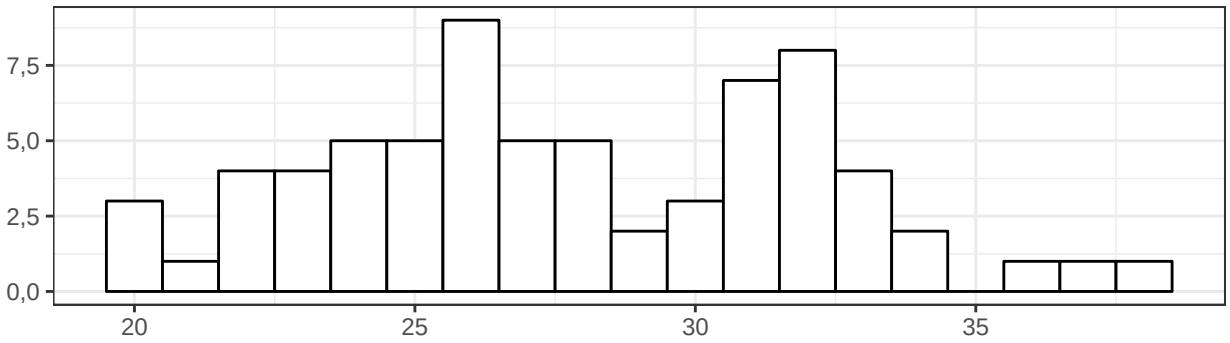
Espécie	Média	DP	Var.	Mínimo	CV(%)	Mediana	Máximo
torrens	42,91	2,74	7,49	38,00	6,38	44,00	49,00
carteri	43,74	5,08	25,79	19,00	11,61	45,00	50,00

Table 7: Largura da asa

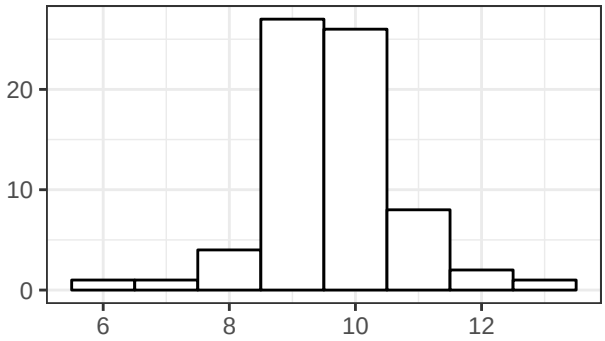


Histograma

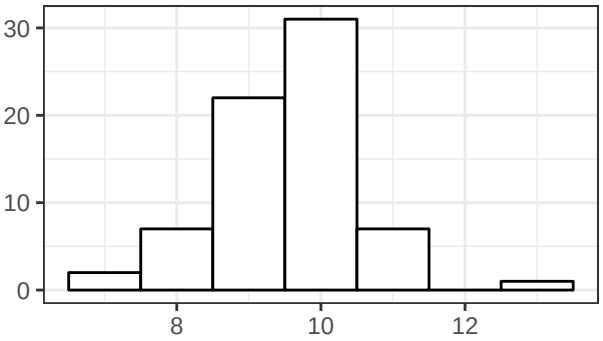

7,5
5,0
2,5
0,0
80
90
100
110
Comprimento da asa
9
6
3
0
20
30
40
50
Largura da asa
10
5
0
30
35
40
45
Comprimento do terceiro palpo
20
15
10
5
0
12,5
15,0
17,5
Largura do terceiro palpo



Comprimento do quarto palpo

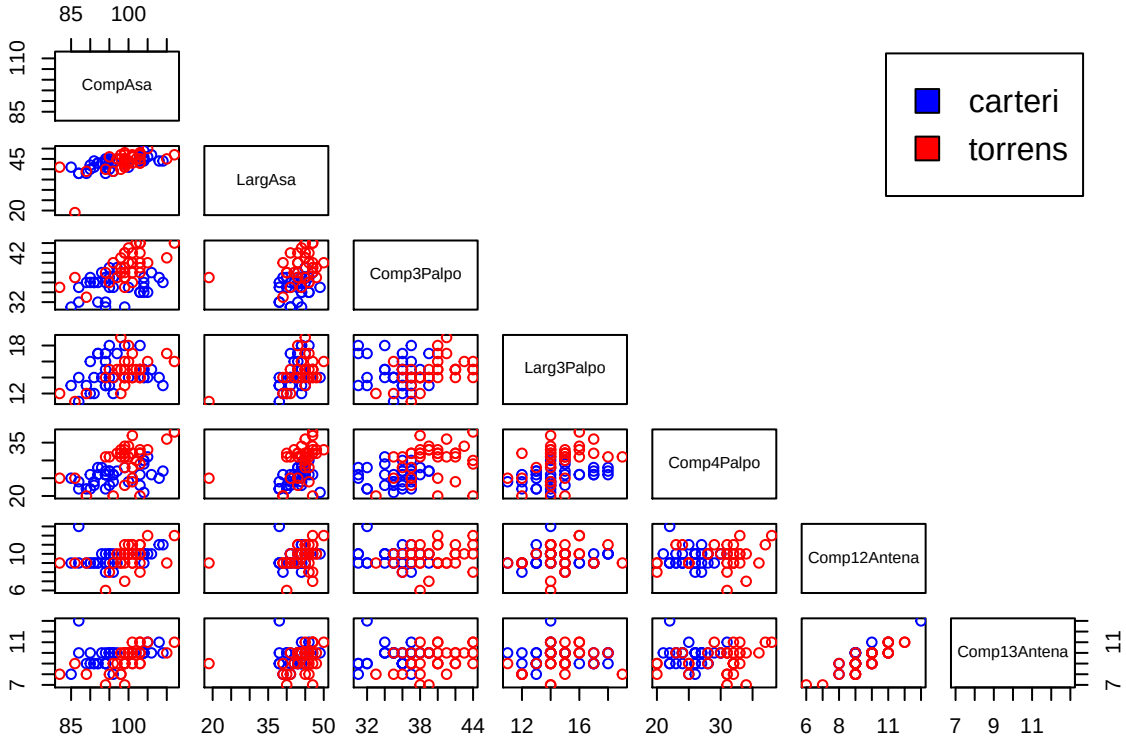


Comprimento do 12º segmento da antena

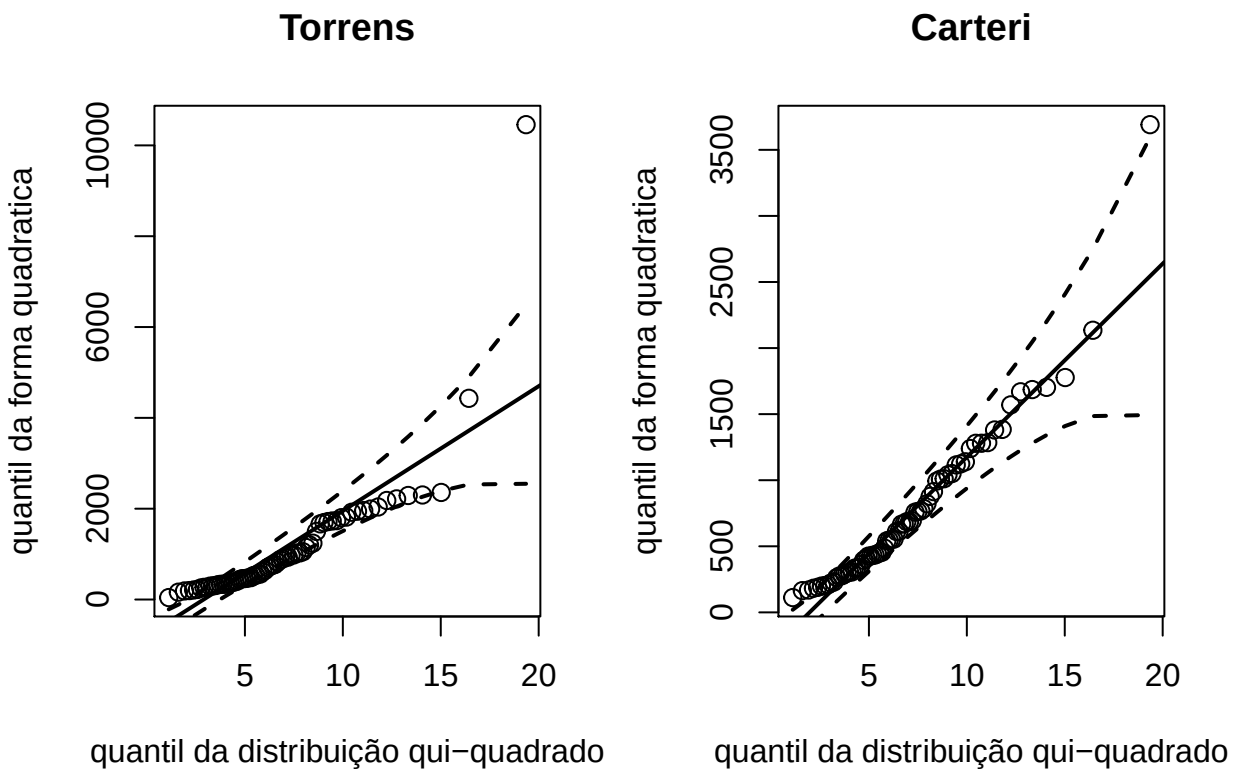


Comprimento do 13º segmento da antena

Diagrama Dispersao



Distancia de Mahalanobis



Analise Inferencial

$$Y_{ijk} = \mu_k + \alpha_{ik} + \xi_{ijk}, \quad \alpha_{1k} = 0, \forall k, \quad \xi_{ij} \sim N_7(0, \Sigma)$$

i = 1,2 (grupo, 1-Carteri, 2-Torrens)

j = 1, 2,. . . , 35 (indivíduo)

k = 1, 2,. . . , 7 (variaveis)

Estatística	Valor	Aproximação pela distribuição F	p-valor
Wilks	0,39	13,82	<0,01
Pillai	0,61	13,82	<0,01
Hotelling-Lawley	1,56	13,82	<0,01
Roy	1,56	13,82	<0,01

Table 8: Resultados da MANOVA

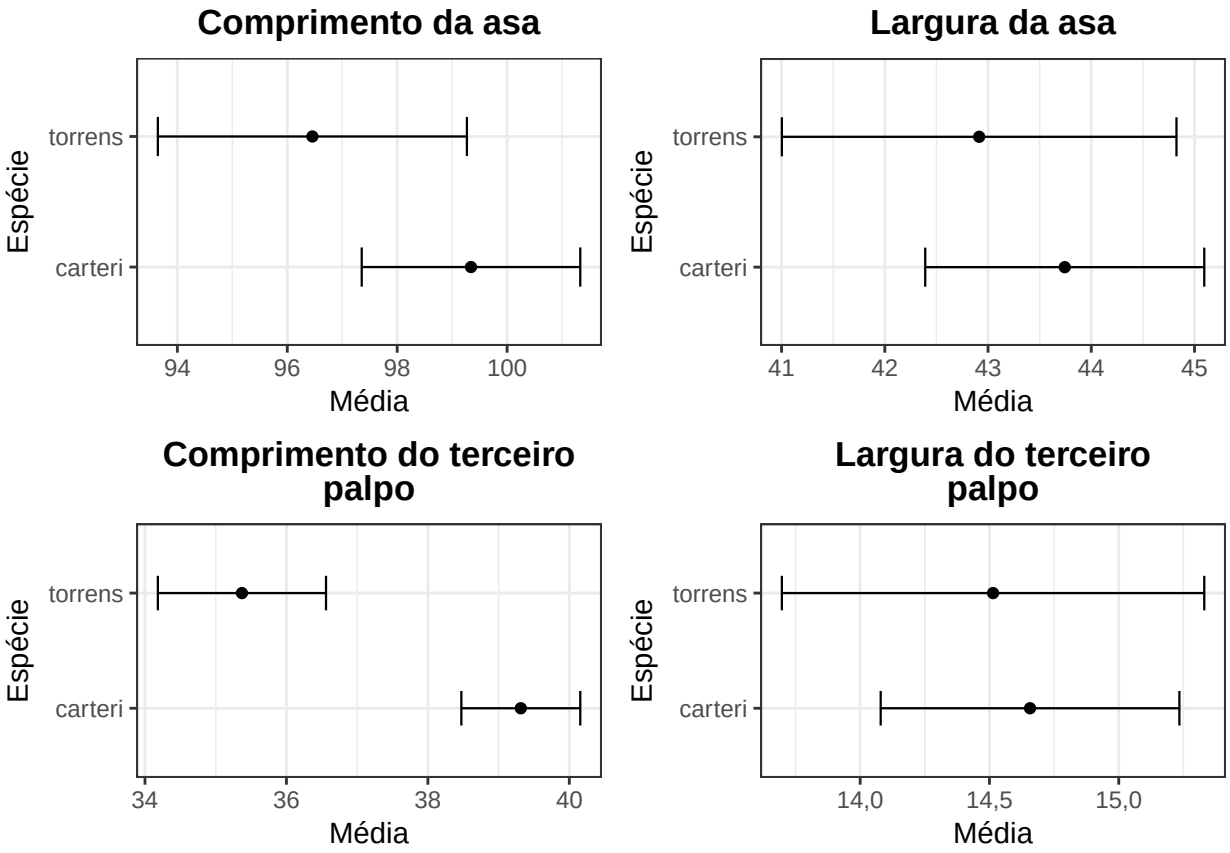
Estimativas

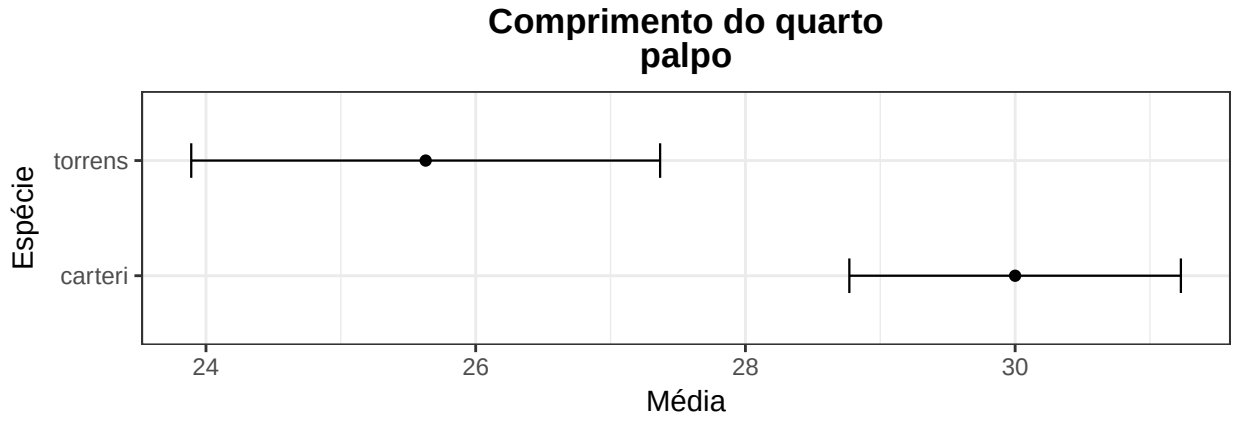
Variável	Parâmetro	Estimativa	Erro Padrão	Estatística t	p-valor
CompAsa	μ_1	99,34	1,01	97,94	<0.01
	α_{21}	-2,89	1,43	-2,01	0,05
LargAsa	μ_2	43,74	0,69	63,44	<0.01
	α_{22}	-0,83	0,98	-0,85	0,4
Comp3Palpo	μ_3	39,31	0,43	91,67	<0.01
	α_{23}	-3,94	0,61	-6,50	<0.01
Larg3Palpo	μ_4	14,66	0,29	49,74	<0.01
	α_{24}	-0,14	0,42	-0,34	0,73
Comp4Palpo	μ_5	30,00	0,63	47,83	<0.01
	α_{25}	-4,37	0,89	-4,93	<0.01
Comp12Antena	μ_6	9,66	0,19	51,88	<0.01
	α_{26}	-0,09	0,26	-0,33	0,75
Comp13Antena	μ_7	9,37	0,17	55,72	<0.01
	α_{27}	0,34	0,24	1,44	0,15

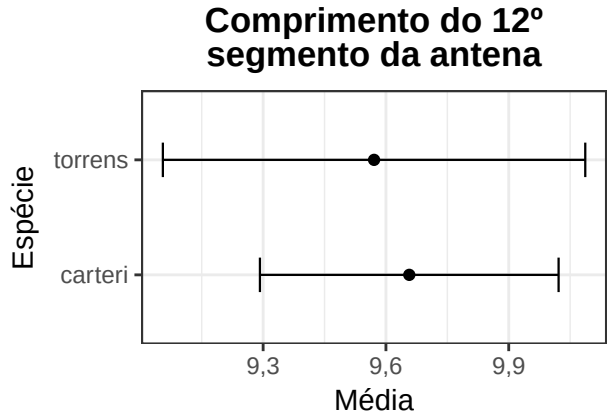
CBU = M

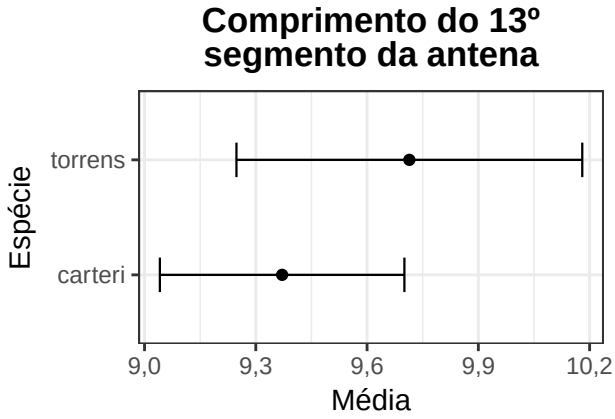
Variável	Estatística	p-valor
CompAsa	4,05	0,04
LargAsa	0,72	0,4
Comp3Palpo	42,26	<0,01
Larg3Palpo	0,12	0,73
Comp4Palpo	24,29	<0,01
Comp12Antena	0,11	0,74
Comp13Antena	2,08	0,15

Medias preditas + intervalo de confiança



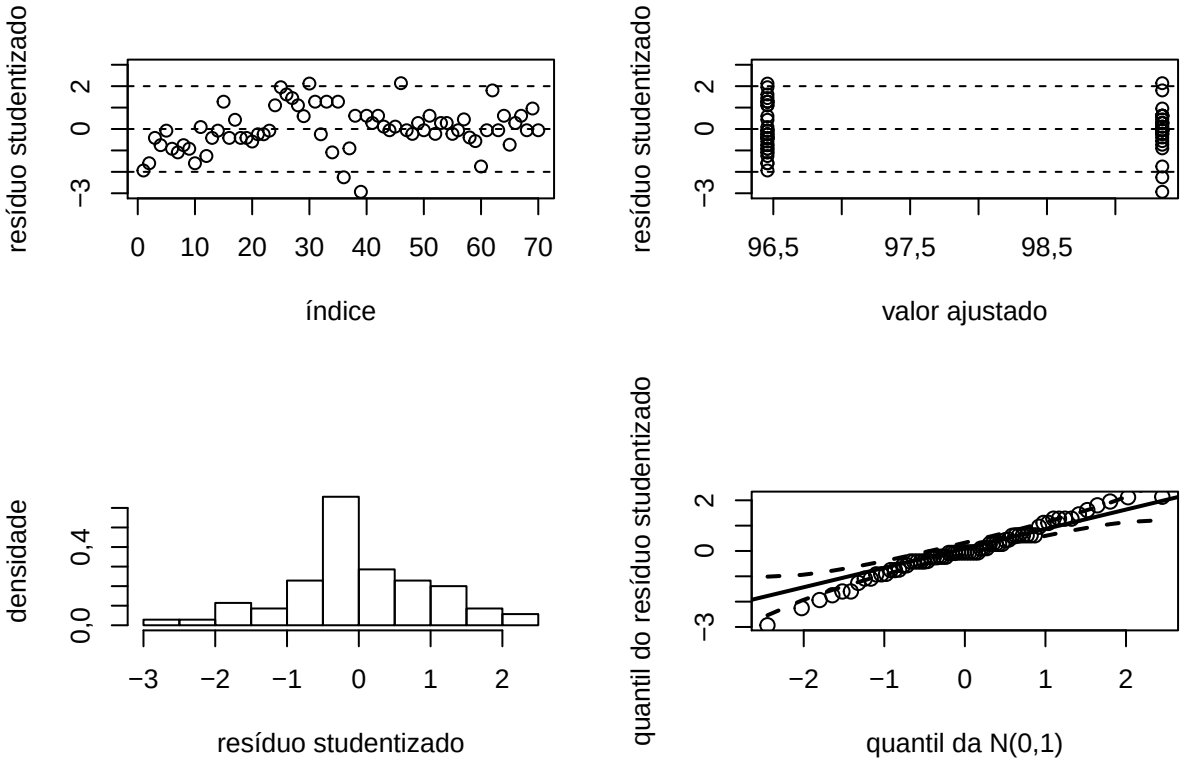

Comprimento do quarto palpo
Espécie
torrens
carteri
24
26
28
30
Média


Comprimento do 12º segmento da antena
Espécie
torrens
carteri
9,3
9,6
9,9
Média


Comprimento do 13º segmento da antena
Espécie
torrens
carteri
9,0
9,3
9,6
9,9
10,2
Média

Residuos

```
##              CompAsa
## "Comprimento da asa"
```




```
##          LargAsa
## "Largura da asa"
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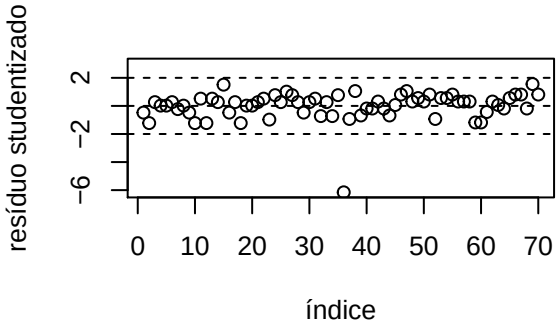
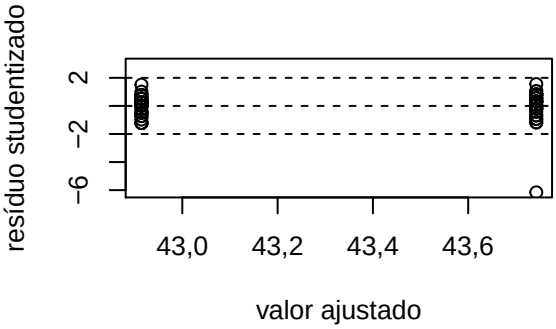
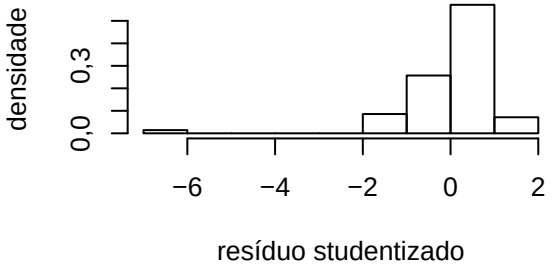
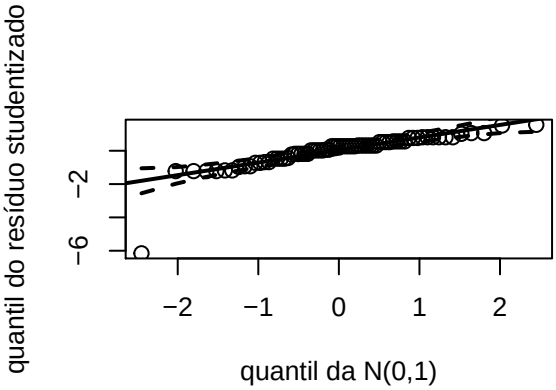
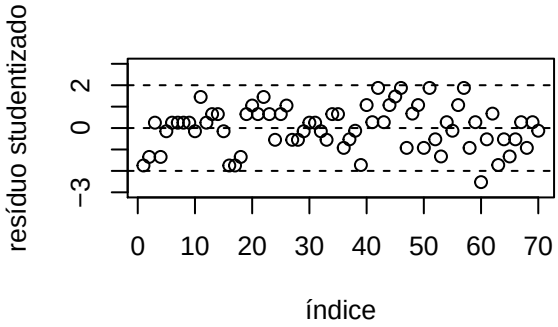


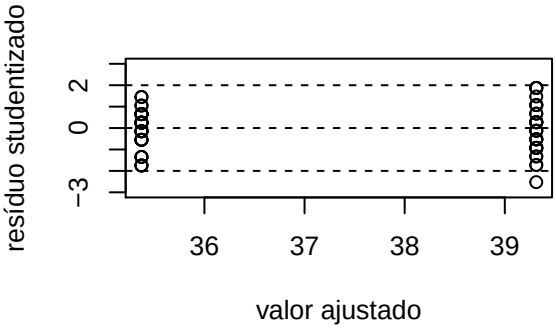


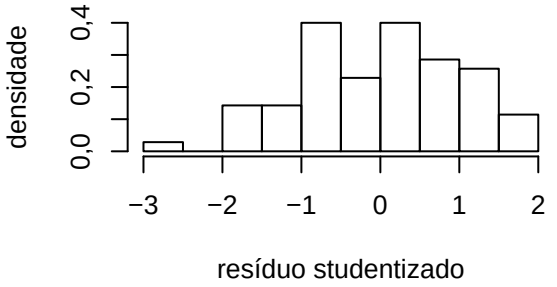


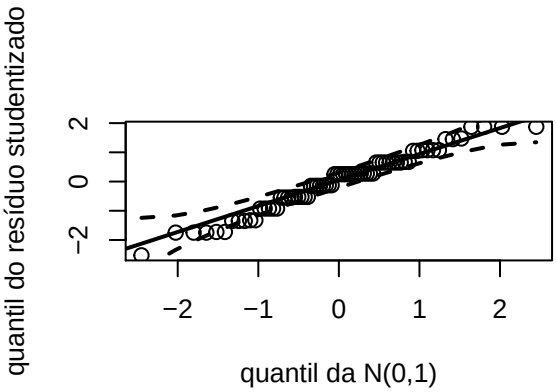



```
##                         Comp3Palpo
## "Comprimento do terceiro\npalpo"
```

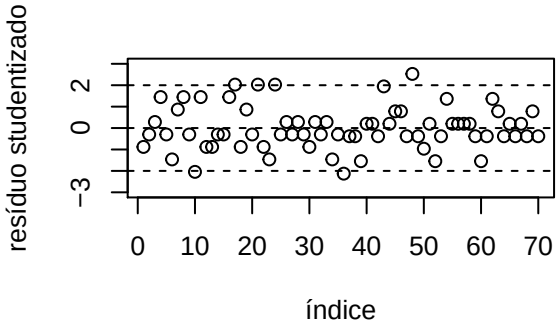


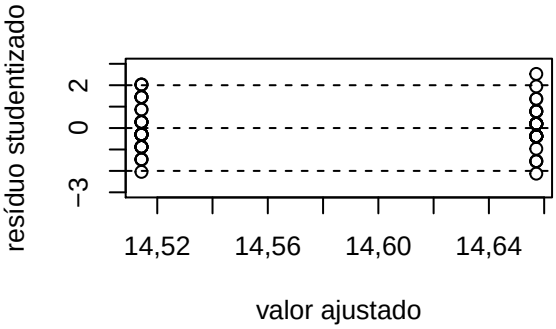


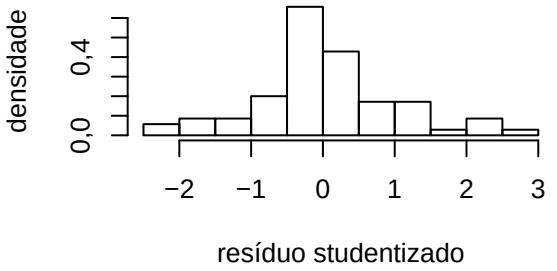


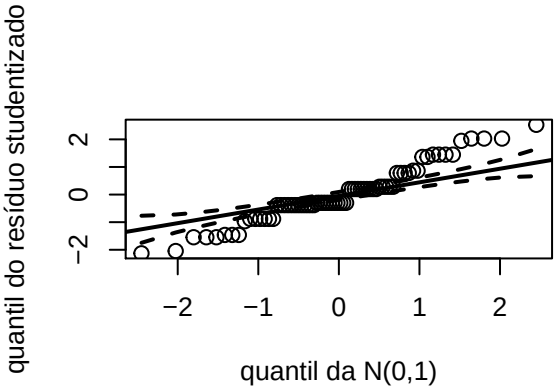



```
##                    Larg3Palpo
## "Largura do terceiro\npalpo"
```

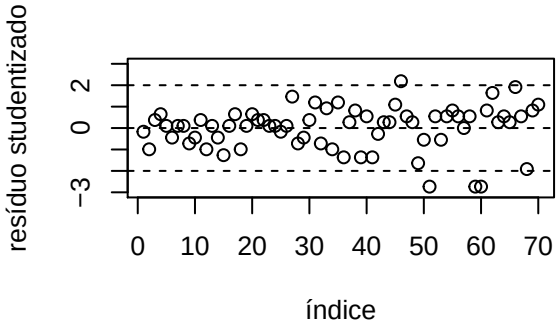


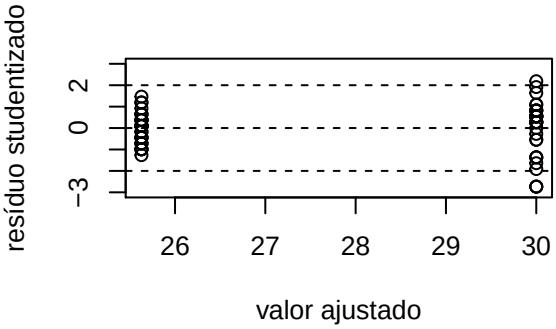


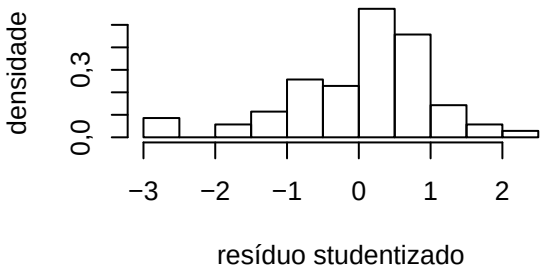


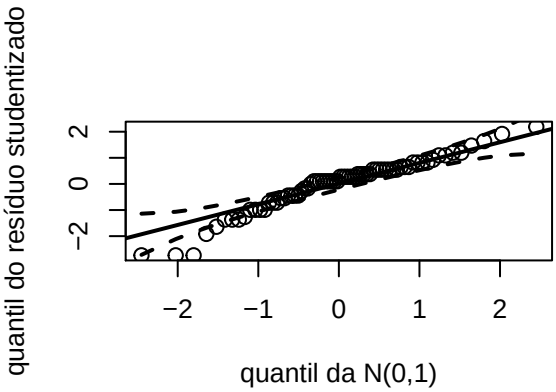



```
##                       Comp4Palpo
## "Comprimento do quarto\npalpo"
```







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##                                Comp12Antena
## "Comprimento do 12º\nsegmento da antena"
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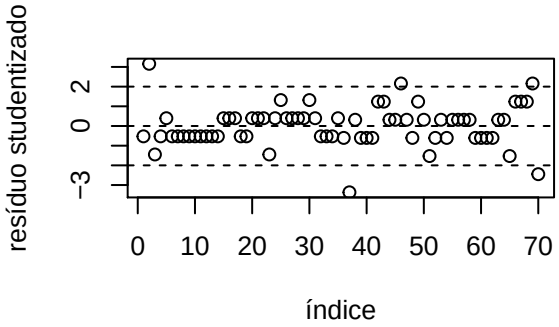

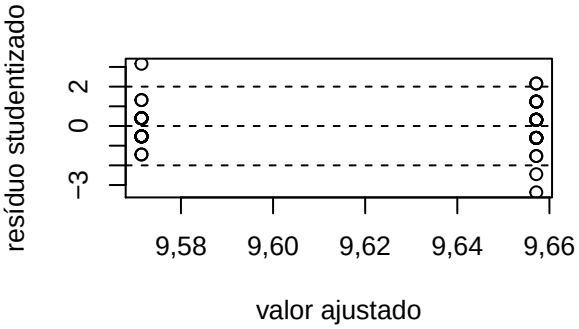

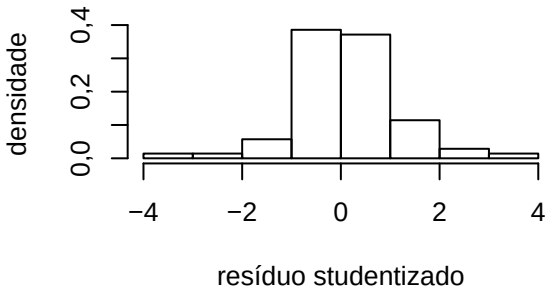

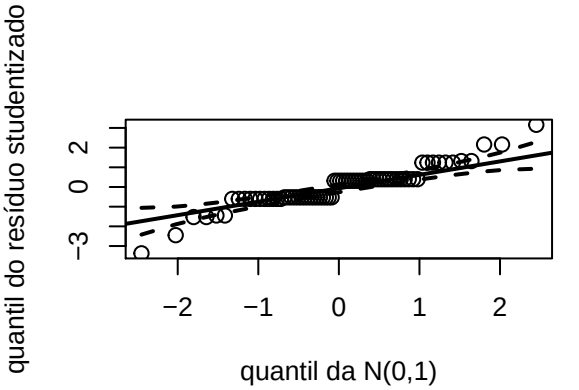


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##                                Comp13Antena
## "Comprimento do 13º\nsegmento da antena"
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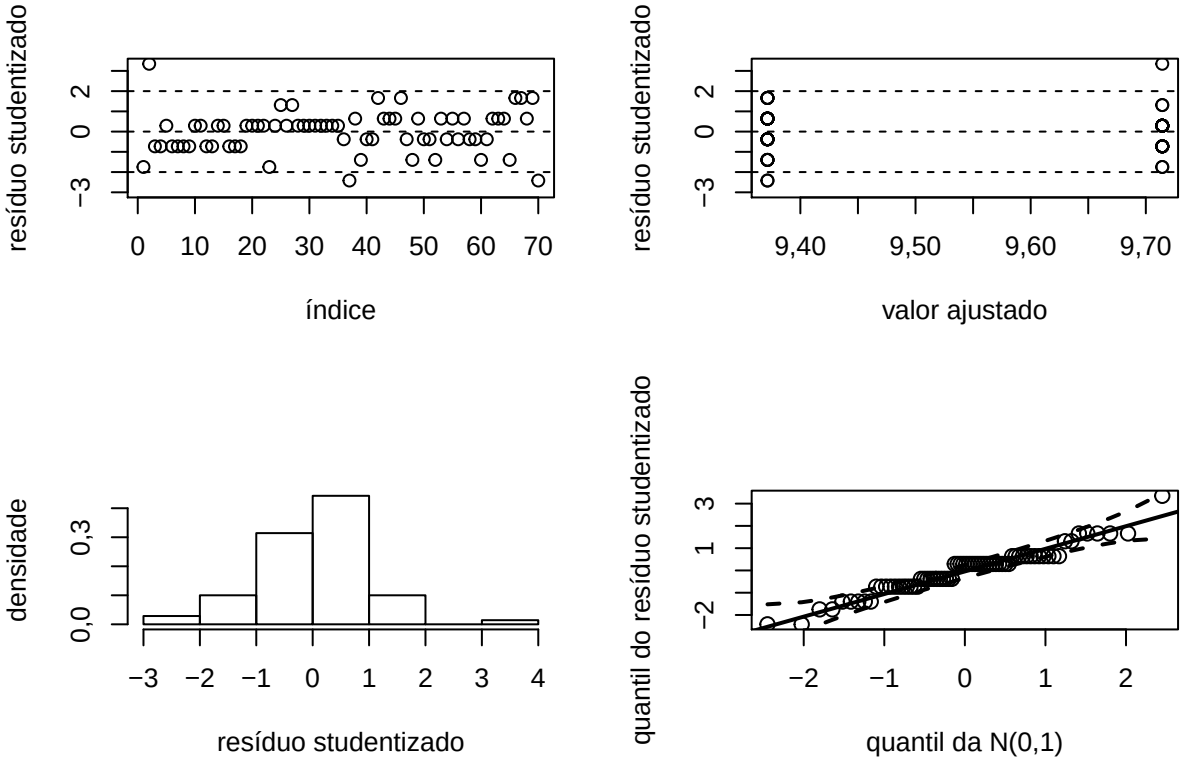
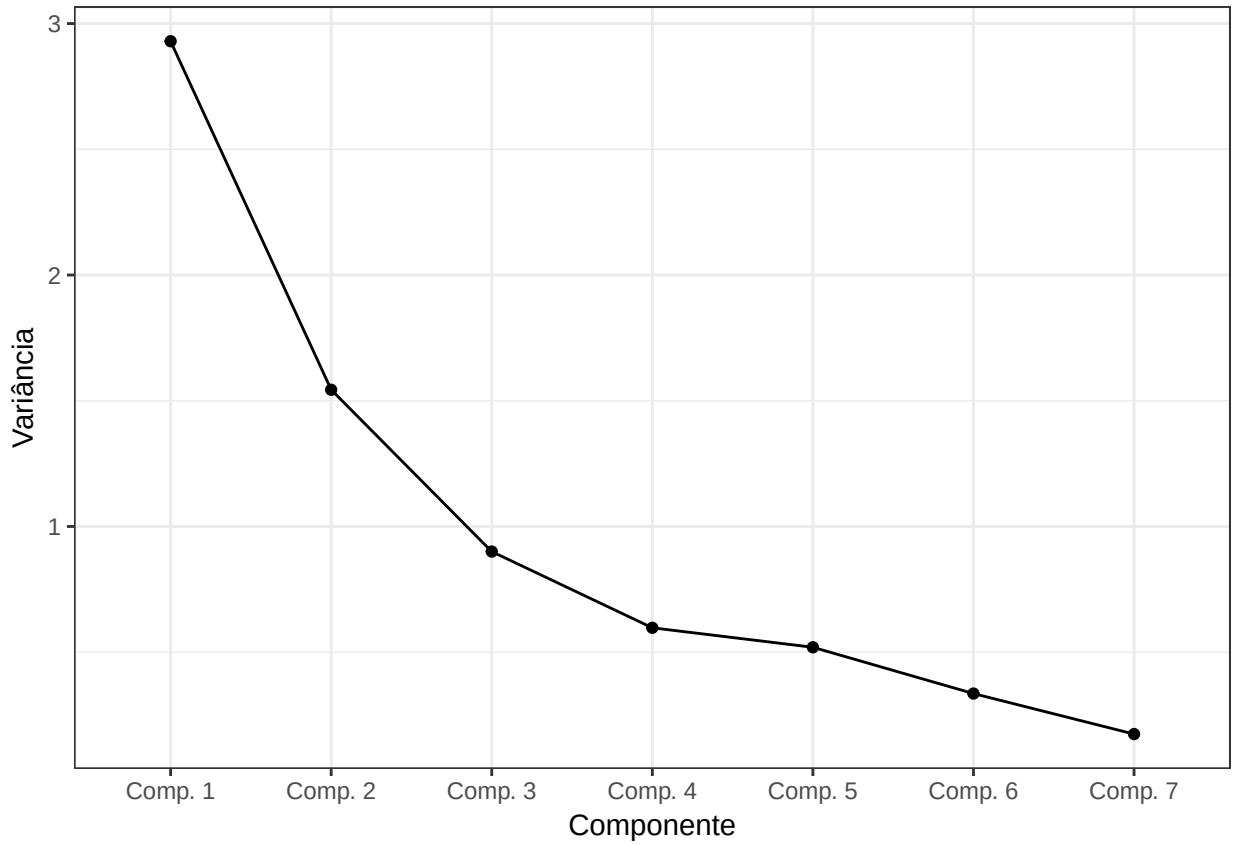


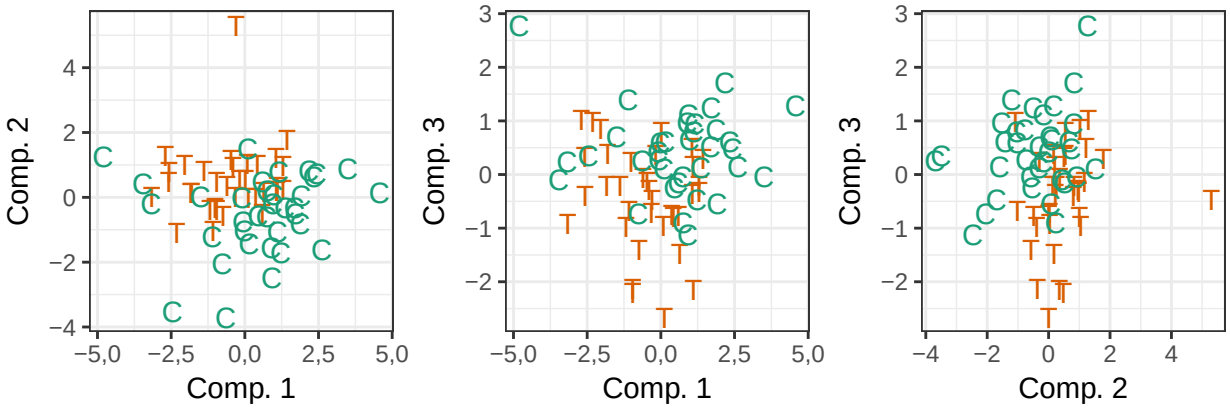
Análise de componentes principais

	Comp. 1	Comp. 2	Comp. 3	Comp. 4	Comp. 5	Comp. 6	Comp. 7
Dp	1,71	1,24	0,95	0,77	0,72	0,58	0,42
PVE	0,42	0,22	0,13	0,09	0,07	0,05	0,02
PVEA	0,42	0,64	0,77	0,85	0,93	0,98	1,00

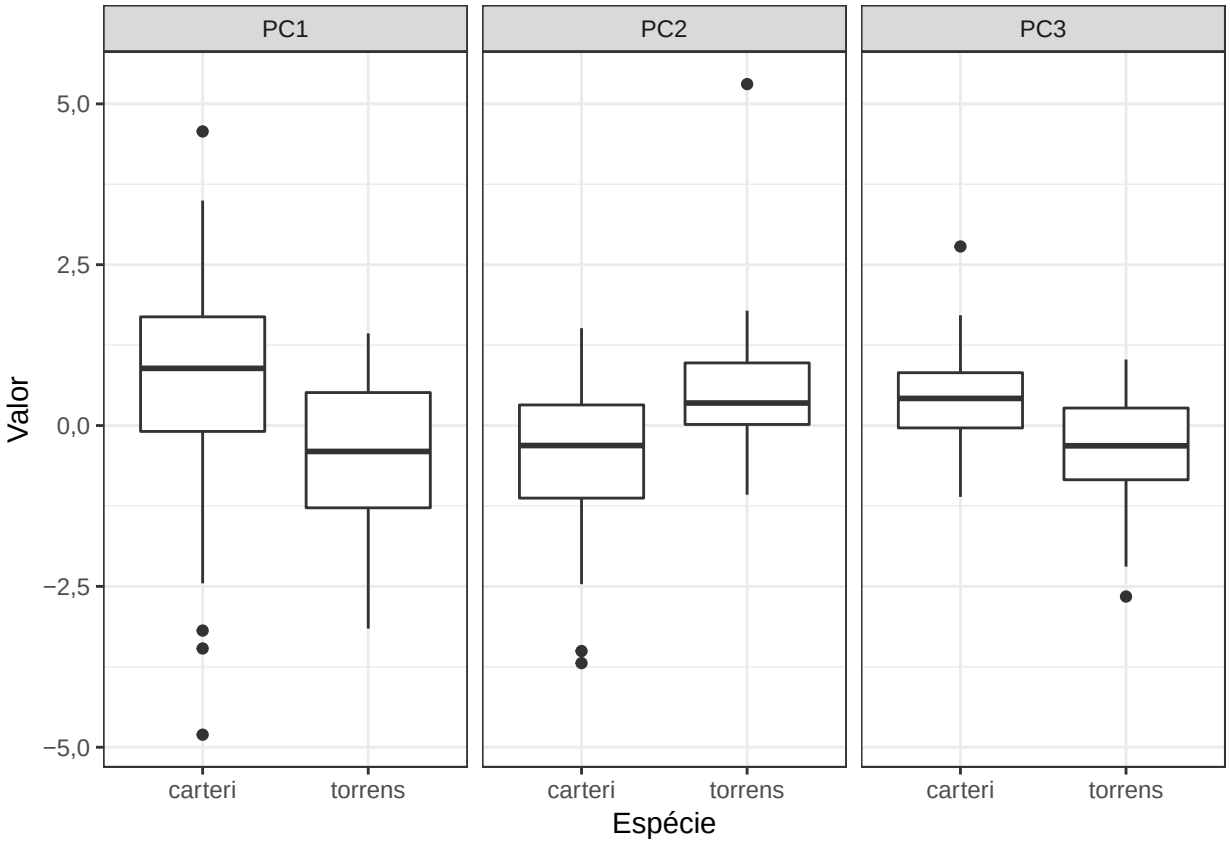


Variável	Componente 1	Componente 2	Componente 3
CompAsa	0,49(0,84)	-0,08(-0,1)	0,09(0,08)
LargAsa	0,42(0,72)	-0,18(-0,22)	-0,3(-0,28)
Comp3Palpo	0,32(0,54)	-0,3(-0,37)	0,65(0,62)
Larg3Palpo	0,32(0,55)	-0,21(-0,26)	-0,67(-0,64)
Comp4Palpo	0,37(0,64)	-0,36(-0,45)	0,15(0,15)
Comp12Antena	0,35(0,6)	0,58(0,72)	0,04(0,04)
Comp13Antena	0,34(0,58)	0,6(0,75)	0,07(0,07)

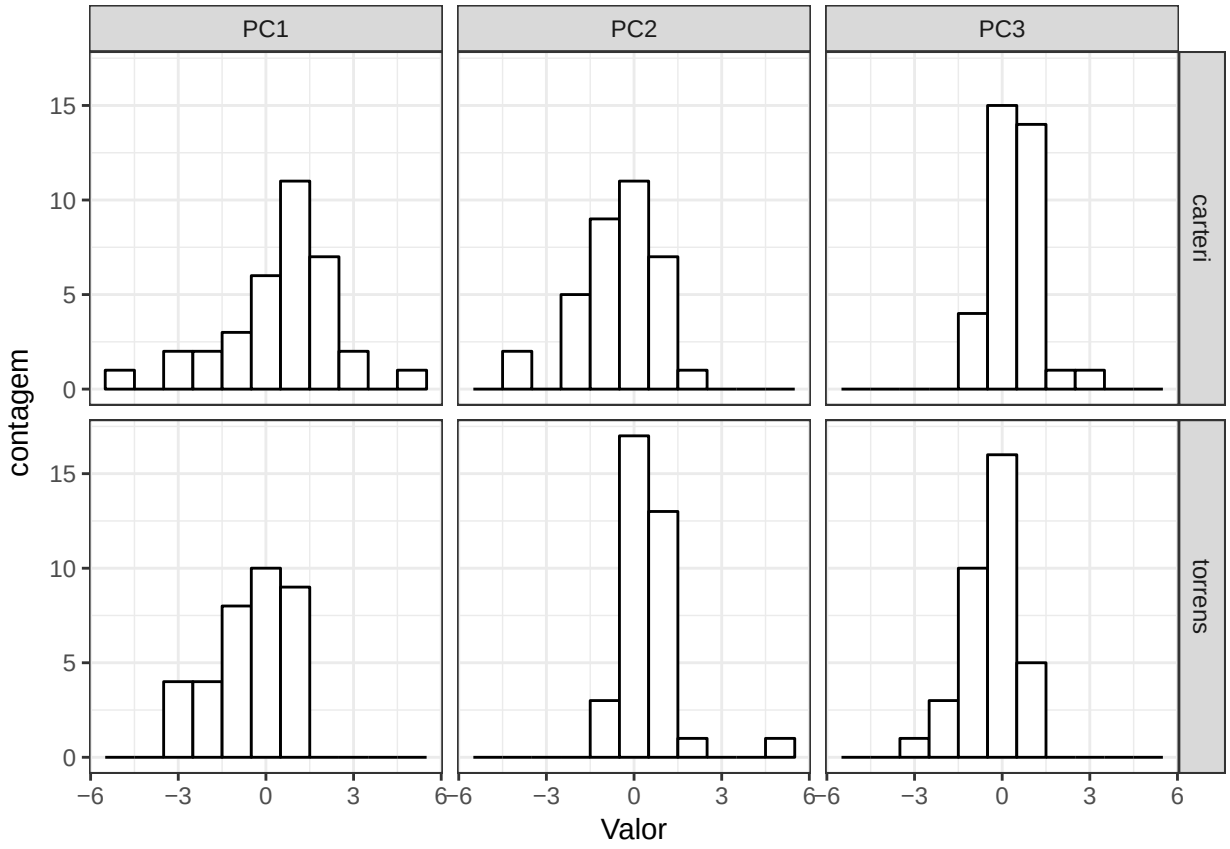
Grafico de dispersao



Boxplots

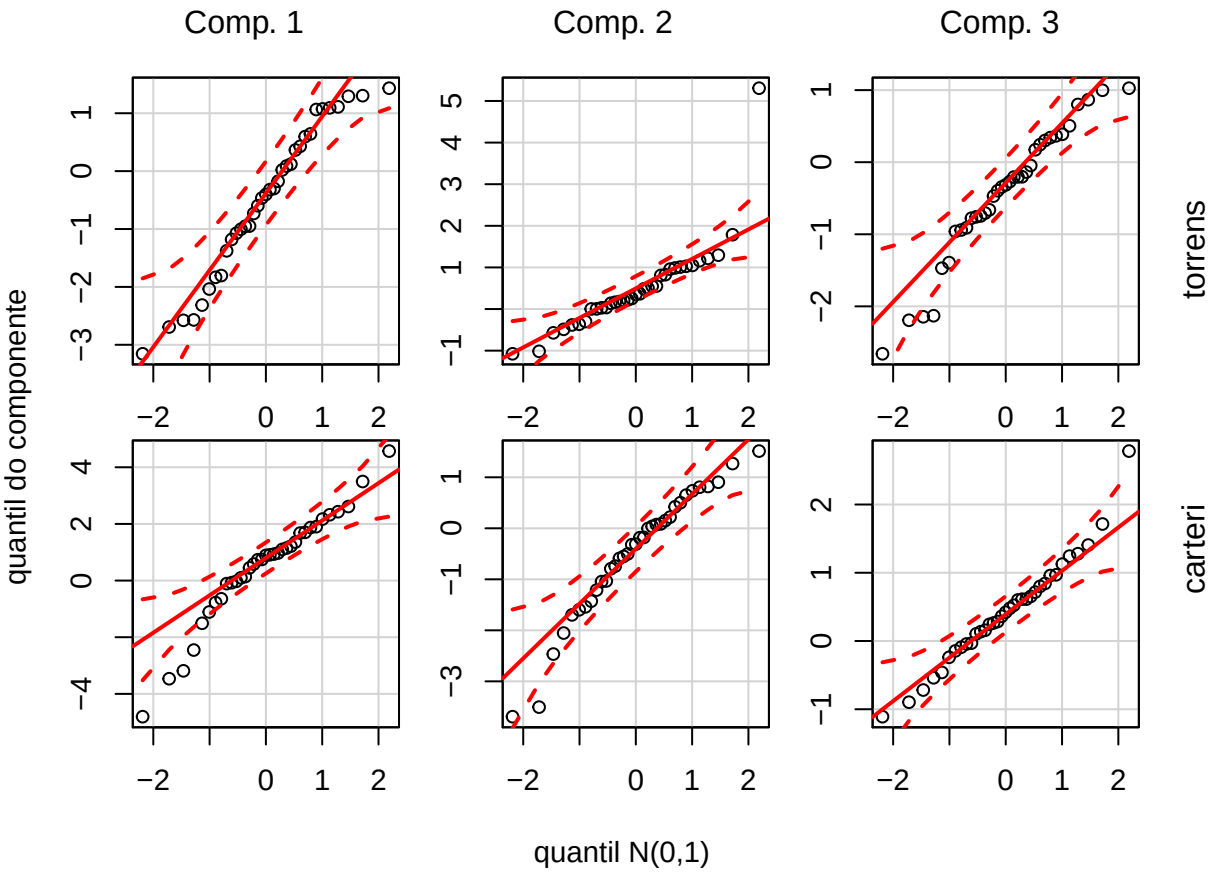

PC1
PC2
PC3
5,0
2,5
0,0
−2,5
−5,0
Valor
carteri
torrens
carteri
torrens
carteri
torrens
Espécie

Histrograma

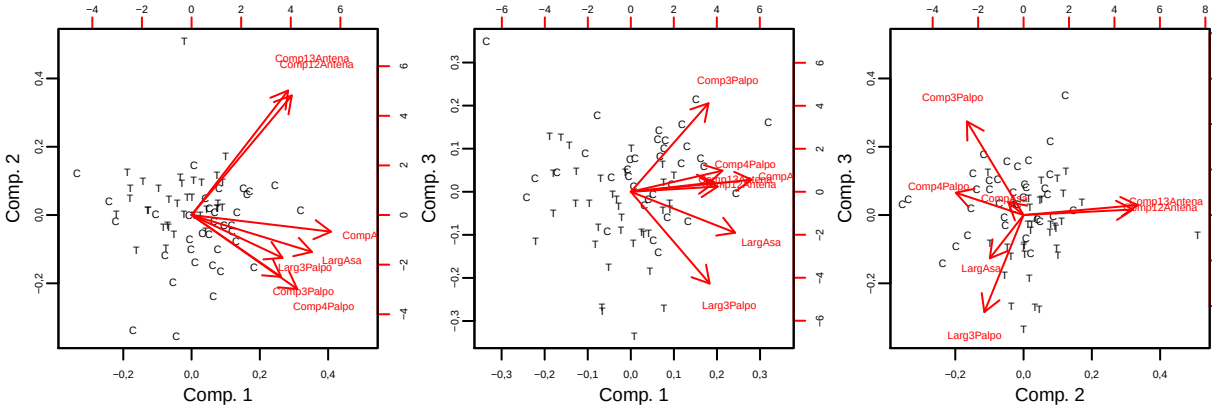


QQplot

```
## NULL
## NULL
```


Comp. 1
Comp. 2
Comp. 3
torrens
carteri
quantil do componente
quantil N(0,1)

Biplot

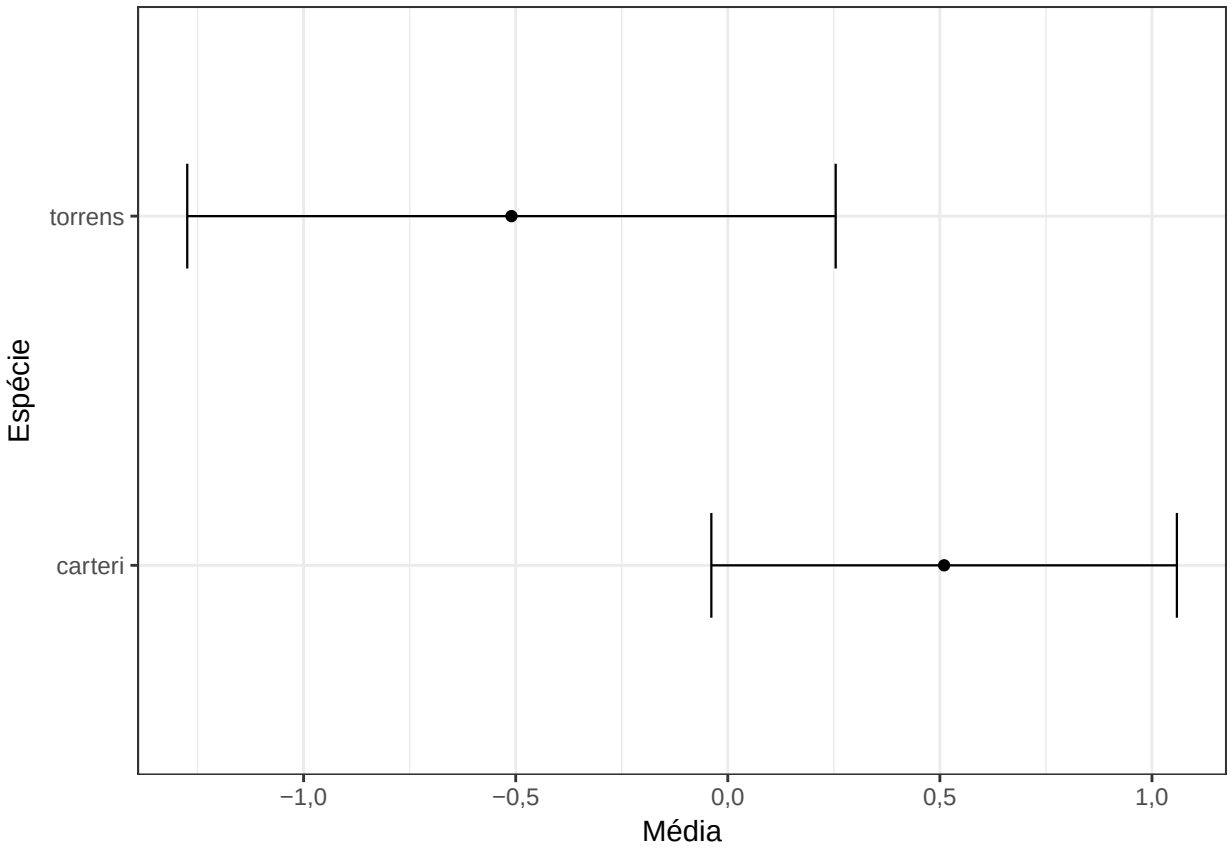


Regressao Linear

$$Y_{ij} = \mu + \alpha_i + \epsilon_{ij} \qquad \epsilon_{ij} \sim N(0, \sigma^2) \qquad \alpha_1 = 0 \quad e \quad \alpha_2 \neq 0$$

i = 1,2 (1=Carteri,2 = Torrens) j = 1,. . . ,35 (individuos)

Parâmetro	Estimativa	EP	Estatística t	p-valor
μ	0,51	0,28	1,84	0,07
α_2	-1,02	0,39	-2,60	0,01


torrens
carteri
Espécie
−1,0
−0,5
0,0
0,5
1,0
Média

Analize residuos PCA1