Tarea_5_MelvinDeLaRosa.R

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```
# Tarea 5 Correlación
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# ejercicio 1 ------------------------------------------------------------

#Abundancia de las efímeras de un arroyo
#y la velocidad de la corriente de un arroyo.

speed <- c(2,3,5,9,14,24,29,34)
abund <- c(6,3,5,23,16,12,48,43)

plot(speed, abund, pch = 20)
```

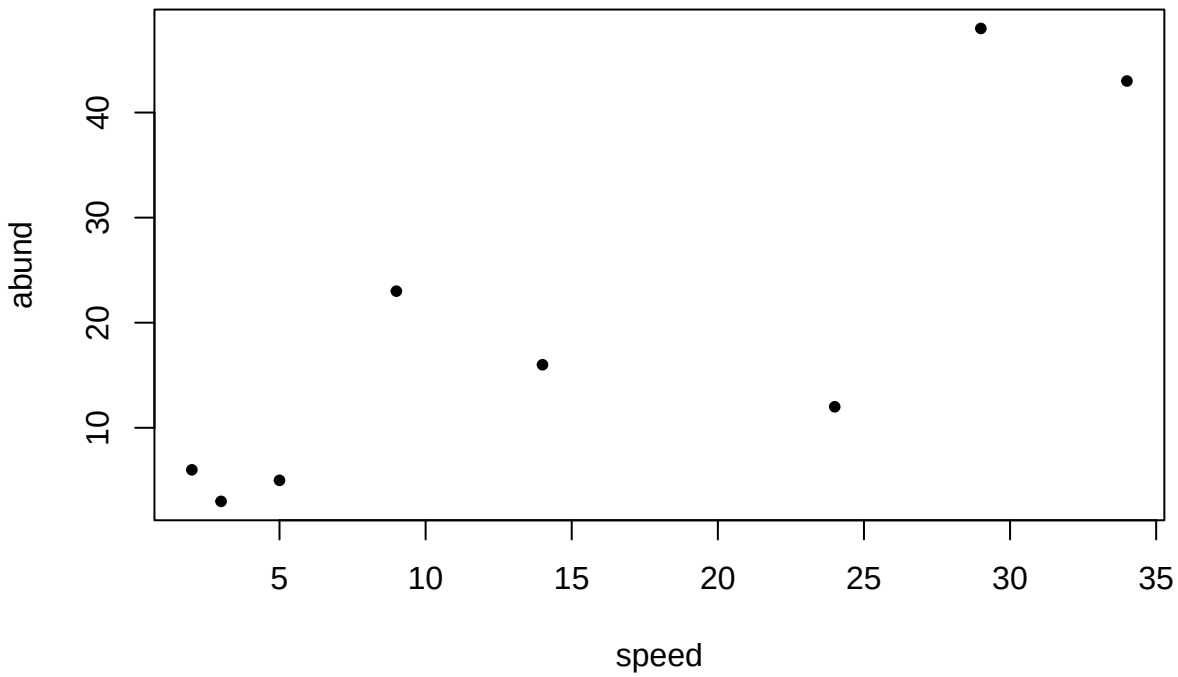

```r
cor.test(speed, abund)
```

```
##
##  Pearson's product-moment correlation
##
## data:  speed and abund
## t = 3.8568, df = 6, p-value = 0.008393
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.3442317 0.9711386
## sample estimates:
##       cor
## 0.8441408
```

```r
#alternative hypothesis
# p-value = 0.008393
# cor 0.8441408

efimeros <- data.frame(speed, abund)

ef.lm <- lm(efimeros$abund ~ efimeros$speed)
summary(ef.lm)
```

```
##
## Call:
## lm(formula = efimeros$abund ~ efimeros$speed)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -18.080  -2.481  -0.580   3.975  12.042
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)      1.8667     5.7912   0.322  0.75813
## efimeros$speed   1.1756     0.3048   3.857  0.00839 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 10.05 on 6 degrees of freedom
## Multiple R-squared:  0.7126, Adjusted R-squared:  0.6647
## F-statistic: 14.87 on 1 and 6 DF,  p-value: 0.008393
```

```r
# Es estadísticamentesignificativa la correlación?
# R: Si es significativa

# Por lo tanto, Existe una correlación positiva entre la velocidad
# de los arroyos y la abundancia de efímeras


# ejercicio 2 ------------------------------------------------------------

# introducir datos

pH <- c(5.40,5.65,5.14,5.14,5.14,5.10,4.70)
N <- c(0.188,0.165,0.260,0.169,0.164,0.094,0.100)
```

```r
Dens <- c(0.92,1.04,0.95,1.10,1.12,1.22,1.52)
P <- c(215,208,300,248,174,129,117)
Ca <- c(16.35,12.25,13.02,11.92,14.17,8.55,8.74)
Mg <- c(7.65,5.15,5.68,7.88,8.12,6.92,8.16)
K <- c(0.72,0.71,0.68,1.09,0.70,0.81,0.39)
Na <- c(1.14,0.94,0.60,1.01,2.17,2.67,3.32)
conduc <- c(1.09,1.35,1.41,1.64,1.85,3.18,4.16)

estructura <- data.frame(pH, N, Dens, P, Ca, Mg, K, Na, conduc)


# coeficiente de correlación ----------------------------------------------

cor.test(estructura$pH, estructura$N)
```

```
##
##  Pearson's product-moment correlation
##
## data:  estructura$pH and estructura$N
## t = 0.94167, df = 5, p-value = 0.3896
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.5156557  0.8830741
## sample estimates:
##       cor
## 0.3881145
```

```r
#p-value = 0.3896
#cor 0.3881145

cor.test(estructura$pH, estructura$Dens)
```

```
##
##  Pearson's product-moment correlation
##
## data:  estructura$pH and estructura$Dens
## t = -2.7306, df = 5, p-value = 0.04125
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.96468856 -0.04943664
## sample estimates:
##        cor
## -0.7736913
```

```r
#p-value = 0.04157
#cor -0.7729399

cor.test(estructura$pH, estructura$P)
```

```
##
##  Pearson's product-moment correlation
##
## data:  estructura$pH and estructura$P
## t = 1.0367, df = 5, p-value = 0.3474
## alternative hypothesis: true correlation is not equal to 0
```

```
## 95 percent confidence interval:
##  -0.4865625  0.8913418
## sample estimates:
##      cor
## 0.420612
```

```
#p-value = 0.3474
#cor 0.420612

cor.test(estructura$pH, estructura$Ca)
```

```
##
##  Pearson's product-moment correlation
##
## data:  estructura$pH and estructura$Ca
## t = 1.5451, df = 5, p-value = 0.183
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.3227349  0.9253846
## sample estimates:
##       cor
## 0.5684873
```

```
#p-value = 0.183
#cor 0.5684873

cor.test(estructura$pH, estructura$Mg)
```

```
##
##  Pearson's product-moment correlation
##
## data:  estructura$pH and estructura$Mg
## t = -1.7265, df = 5, p-value = 0.1448
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.9342417  0.2629006
## sample estimates:
##        cor
## -0.6111533
```

```
#p-value = 0.1448
#cor -0.6111533

cor.test(estructura$pH, estructura$K)
```

```
##
##  Pearson's product-moment correlation
##
## data:  estructura$pH and estructura$K
## t = 0.89317, df = 5, p-value = 0.4127
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.5302315  0.8785775
## sample estimates:
##       cor
## 0.3709419
```

```r
#p-value = 0.4127
#cor 0.3709419

cor.test(estructura$pH, estructura$Na)
```

```
##
##  Pearson's product-moment correlation
##
## data:  estructura$pH and estructura$Na
## t = -2.2637, df = 5, p-value = 0.07301
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.95360061  0.08965103
## sample estimates:
##       cor
## -0.711438
```

```r
#p-value = 0.07301
#cor -0.711438

cor.test(estructura$pH, estructura$conduc)
```

```
##
##  Pearson's product-moment correlation
##
## data:  estructura$pH and estructura$conduc
## t = -2.9959, df = 5, p-value = 0.03024
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.9694136 -0.1218946
## sample estimates:
##        cor
## -0.8013901
```

```r
#p-value = 0.03024
#cor -0.8013901

r <- c(0.3881145,-0.7729399,0.420612,0.5684873,-0.6111533,0.3709419,
       -0.711438)
vP <- c(0.3896,0.04157,0.3474,0.183,0.1448,0.4127,0.07301)

conjuntos = c("pH-N","pH-Dens","pH-P","pH-Ca","pH-Mg","pH-K","pH-Na")

Conjunto <- data.frame(conjuntos, r, vP)

Conjunto
```

```
##   conjuntos          r      vP
## 1      pH-N  0.3881145 0.38960
## 2   pH-Dens -0.7729399 0.04157
## 3      pH-P  0.4206120 0.34740
## 4     pH-Ca  0.5684873 0.18300
## 5     pH-Mg -0.6111533 0.14480
## 6      pH-K  0.3709419 0.41270
## 7     pH-Na -0.7114380 0.07301
```