Bruno Franco
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Homework 8

I conducted a study to examine the possible relationship between egg follicle mass (FM), egg follicle length (FL), egg follicle width (FW), and egg follicle depth (FD) in female brown snakes (*Storeria dekayi*) in Missouri. Females were randomly-selected and measurements were taken in millimeters for lengths and grams for mass. I did 6 different correlations. The null hypotheses were no correlation (R = 0) between FM and FL, no correlation between FM and FW, no correlation between FM and FD, no correlation between FL and FW, no correlation between FL and FD, and no correlation between FW and FD. I tested for the presence of any relationships using Pearson's correlation coefficient in RStudio (version 1.1.456).

Figure 1 shows the correlation and scatterplot matrix among the tested variables based on measurements taken on 13 snakes. The strongest positive correlation was between FL and FD followed by FM and FD. FL and FW had a moderate positive correlation while FM and FD and FM and FL had the weakest positive correlation. The Bonferroni correction shows that only two correlations were significant: FM and FW (R=0.72, P=0.006) and FL and FD (R=0.88, P<0.001). Based on a small sample size of 13, this experiment could be repeated again with a larger sample size.

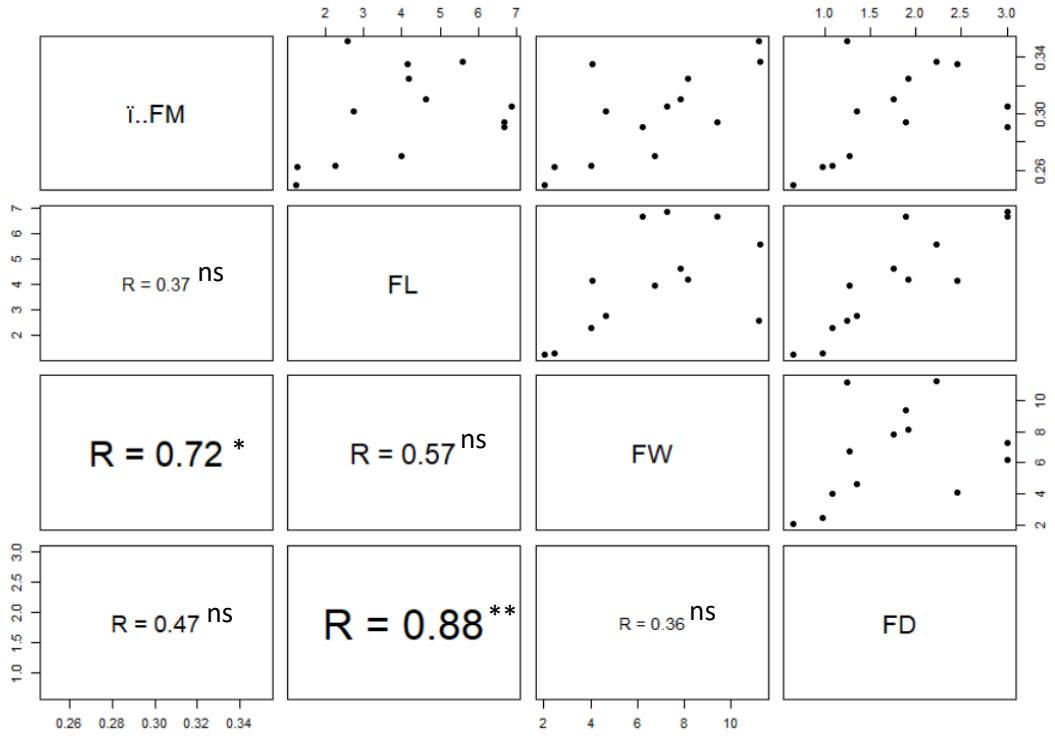

Figure 1. Pearson's correlation matrix showing the relationship between egg follicle mass (FM), egg follicle length (FL), egg follicle width (FW), and follicle depth (FD) in female *Storeria dekayi*. All P-values used a Bonferroni correction for multiple comparisons. *=P<0.008, **=P<0.001, ns=not significant

a)

	ï..FM	FL	FW	FD
ï..FM	1.00	0.37	0.72	0.47
FL	0.37	1.00	0.57	0.88
FW	0.72	0.57	1.00	0.36
FD	0.47	0.88	0.36	1.00

n= 13

b) P

	ï..FM	FL	FW	FD
ï..FM		0.2128	0.0060	0.1013
FL	0.2128		0.0434	0.0000
FW	0.0060	0.0434		0.2276
FD	0.1013	0.0000	0.2276	

Table 1. This is showing the (a) R values and (b) P values for each correlation without Bonferroni correction.