

BIOMETRY, CLASS EXERCISE 12

- (1) Two independent sampling stations are chosen for a study, one located downstream from an acid mine discharge point and the other located upstream. For 12 samples collected at the upstream station the species diversity index has mean value $\bar{x}_1 = 3.11$ and st. dev. $s_1 = 0.771$, while 10 samples collected at the downstream station had $\bar{x}_2 = 2.04$ and $s_2 = 0.448$. Determine A 90% confidence interval for the difference of poulation means assuming that the populations are normally distributed. Does the mine acid discharge affect the bio-diversity?
- (2) In a study conducted at Virginia Tech, J.A. Wesson examined the influence of the drug succinylcholine on the circulation levels of androgens in the blood. Blood samples were taken from wild, free-ranging deer immediately after they have received an intramuscular injection of succinylcholine administered using darts and a capture gun. A second blood sample was obtained from each deer 30 minutes after the first sample after which the deer was released. The levels of androgens at time of capture and 30 minutes later, measured in nanograms per milliliter, for 8 deer are given in the table below.

Construct a 90% confidence interval for the difference of androgen concentrations at time of capture and 30 minutes later. Draw a conclusion.

Deer	1	2	3	4	5	6	7	8
At capture	2.76	5.18	2.68	3.05	4.10	7.05	6.60	4.79
30 min later	7.02	3.10	5.44	3.99	5.21	10.26	13.91	18.53