Burrowing Wolf Spiders

Simple logistic regression is analogous to linear regression, except that the dependent variable is nominal, not a measurement. One goal is to see whether the probability of getting a particular value of the nominal variable is associated with the measurement variable; the other goal is to predict the probability of getting a particular value of the nominal variable, given the measurement variable.

As an example of simple logistic regression, Suzuki et al. (2006) measured sand grain size on 28 beaches in Japan and observed the presence or absence of the burrowing wolf spider Lycosa ishikariana on each beach. Sand grain size is a measurement variable, and spider presence or absence is a nominal variable. Spider presence or absence is the dependent variable; if there is a relationship between the two variables, it would be sand grain size affecting spiders, not the presence of spiders affecting the sand.

One goal of this study would be to determine whether there was a relationship between sand grain size and the presence or absence of the species, in hopes of understanding more about the biology of the spiders. Because this species is endangered, another goal would be to find an equation that would predict the probability of a wolf spider population surviving on a beach with a particular sand grain size, to help determine which beaches to reintroduce the spider to.