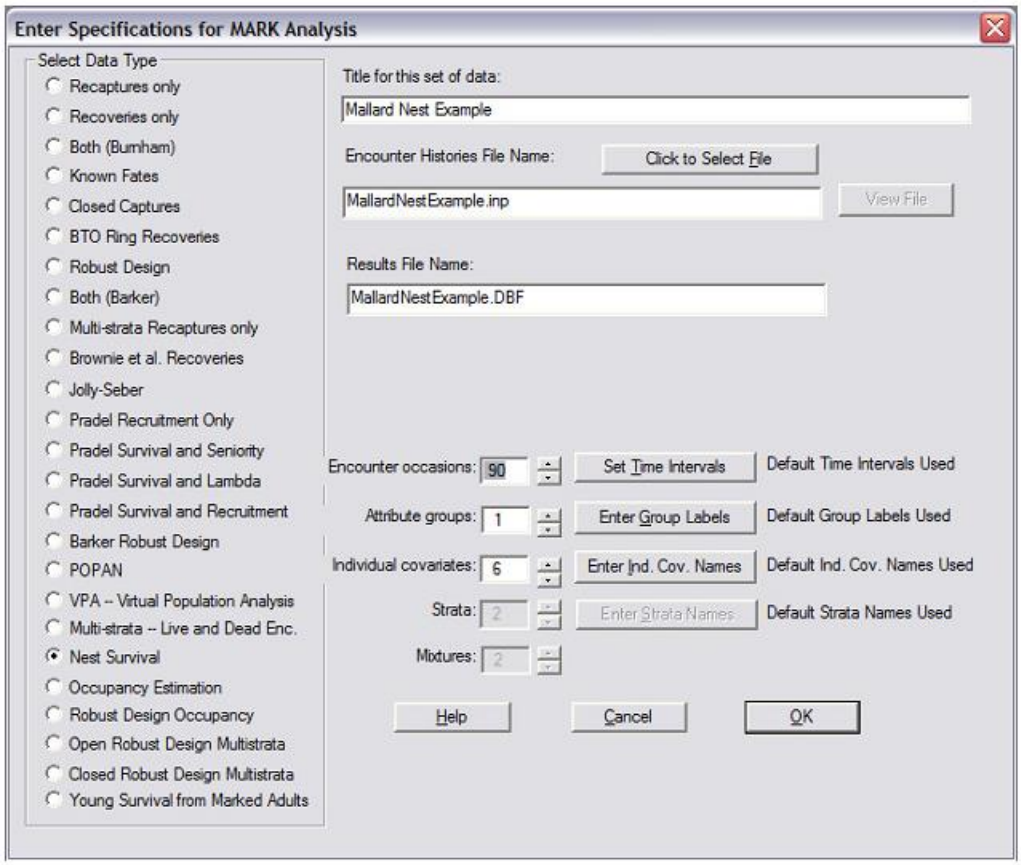
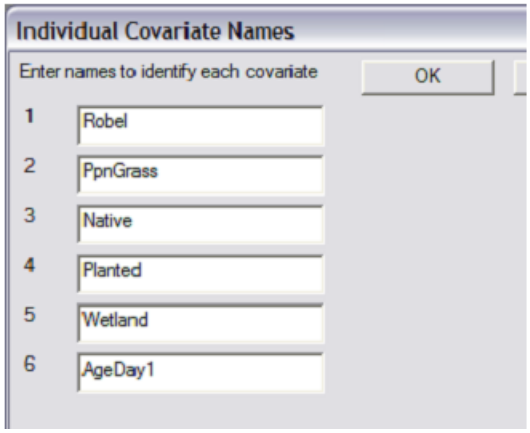
Nest Survival Models

Create Mark database file using 'mallard_nest.inp' Choose the 'Nest Survival' data type and -ll in the required information. For our mallard example, we have a 90-occasion study (data were collected across 90 days), 1 attribute group, and 6 individual covariates.



Enter names for the individual covariates. As we have 6 that we'll use in the model-building exercises below, it's probably best to name them. So, choose to 'Enter Individual Covariate Names' and enter the following: Robel, PpnGrass, Native, Planted, Wetland, and AgeDay1.



Model 1: Constant Daily Survival Rate

Now that we have created a new database,we'll start our model building with the simplest model,the maximum likelihood version of the May-eld model. Remember, in this model, we assume that all nests in the sample under consideration have the same DSR on every day. So, we simply need to constrain DSR accordingly.

Model 2: DSR Varies by Habitat Type

Often there is interest in whether or not DSR varies among nests found in dierent habitat settings. Although there are certainly many metrics that can be used to describe the habitat conditions associated with a nest, researchers often categorize habitat conditions and use a metric such as habitat type. In the study of mallard nests, the researchers used 4 habitat types, which you'll remember were described using 3 dummy variables as individual covariates. To build a model that allows DSR to vary by habitat type, you'll need to use the design matrix and the individual covariates that tell **MARK** which habitat type each nest was in. The following design matrix can be used.

Model 3: DSR varies with vegetation thickness (continuous covariate)

The input -le contains an individual covariate labeled Robel (a continuous measure of how m the vegetation around the nest site visually obscured the nest). One way to evaluate whether DSR va with Robel is to use the following design matrix:
When this model is run (you might call it 'B0 + B1 x Robel'), you -nd that this model receives support than the simpler intercept-only model (our S(.) model).

Model 4: DSR varies with the amount of native vegetation in the surrounding area

The input -le contains an individual covariate labeled PpnGrass, which you may recall is a continuous measure of the proportion of grassland cover on the 10.4 km2 study site that contained the nest. Given interest in relationships between nest survival and spatial features of vegetation, models containing such covariates may be of interest in some studies. And, as you can probably now readily envision, such models are readily evaluated in **MARK**.
You can use the design matrix to build a model containing PpnGrass and if you do, you will -nd that this model receives more support than any of the models discussed so far. In fact, there is evidence that DSR is higher on sites that contain more grassland cover than on sites with less cover.