MAR580: Advanced Population Modeling

Laboratory 2

September 8, 2015

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1. Mark-Recapture Experiment

a. Using ADMB, fit the 'single p & single phi' model described in Lecture to the data in the reading.

b. (bonus) Fit a model with unique phi's and p's for each recapture.

c. (bonus) Fit a model with unique phi's and a single p.

d. (bonus) Compare the models in a - c using AIC. Which is the 'best' model? (lowest AIC) Is there sufficient evidence for one model over the others?

2. Re-estimate Weight-Length relationships using maximum likelihood

a. Re-fit the W-L relationship from Lab 1 using maximum likelihood, assuming normally distributed errors around the logged weights.
Hint Change the objective function to the negative log of the normal likelihood. Create an additional estimated parameter to represent the variance of the estimation error.

b. (bonus) Do this for the nonlinear case (raw weights and lengths) assuming lognormally distributed errors.