# Objectives

Primary Objectives:

1. Generate length and age maturity schedules for black rockfish in the Central Southeast Outside (CSEO) groundfish management area by estimating the length at maturity (*L*50) and age at maturity (*A*50) of females such that our estimates are within 10% of the true value with probability 0.90.
2. Generate length and age maturity schedules for black rockfish in the South Southeast Outside (SSEO) groundfish management area by estimating the length at maturity (*L*50) and age at maturity (*A*50) of females such that our estimates are within 10% of the true value with probability 0.90.
3. Generate length and age maturity schedules for black rockfish in the South Southeast Inside (SSEI) groundfish management area by estimating the length at maturity (*L*50) and age at maturity (*A*50) of females such that our estimates are within 10% of the true value with probability 0.90.

OR

1. Generate length and age maturity schedules for black rockfish in the Central Southeast Outside (CSEO), South Southeast Outside (SSEO), and South Southeast Inside (SSEI) groundfish management areas by estimating the length at maturity (*L*50) and age at maturity (*A*50) of females such that our estimates are within 10% of the true value with probability 0.90.

# Sample Size – Length and Age at Maturity (Objectives 1, 2 and 3)

To assess the precision of our estimates for length and age at maturity and determine appropriate sample sizes, we conducted a series of simulations using the results obtained by Hannah et al. (2009). The simulation consists of the following steps:

1. For a given sample size, simulate lengths (ages) from a uniform distribution.
2. Using parameter estimates from the logistic regression performed in Hannah et al., simulate maturity status.
3. Employing the same techniques described in the data analysis section, create a credible interval for L50 (A50).
4. Record the width of the interval in terms of percent of estimate.

The above procedure was performed 1000 times, and the maximum percent width recorded serves as a reasonable upper bound on the possible width of credible intervals obtained using a given sample size.

After performing the above procedure for both lengths and ages, we conclude that a sample size of 80 female rockfish per strata will be required. We will be stratifying the sampling region into three areas—CSEO, SSEO, and SSEI, which will require a total of 240 female rockfish be harvested.