Lab 1. Meristics and Morphometrics

Step 1. Key out the species

Each student will choose two to three jars and pull out a specimen from that jar, draw it, key them out using their book, and write down the formula (make sure to put the fish back in the right jar).

Step 2. Meristic and morphometric measurements

Using your own ID (i.e., the species you think it is based on the keying exercise), you will now do a series of meristic and morphometric measurements.

Morphometric (shape) measurements include:
- Standard length (which will be used to divide into the following series of shape measurements)
- Eye diameter (ED)
- Depth (D)
- Snout to dorsal fin (SDF)
- Caudal peduncle depth (CPD)
- Dorsal fin length (DFL)

ED, D, SDF, CPD, DFL all will be ratios (0 to 1) after you divide them by the standard length. A final column will be the total number (sum) of these 5 measurements to be used in the PCA.

Meristic (count) measurements include:
- Lateral line scales (number of scales along the lateral line)
- Dorsal fin rays
- Anal fin rays

The final column in the meristic counts will be a total number (sum) of these three measurements

Step 3. PCA analysis

Plot your three fish on the graph in the front of the class using the total for the shape and counts for each fish.

The PCA will be counts along the x-axis and shape y-axis.

For the lab books all students must have the drawings, formula, etc for the fish they directly analyze and then copy down the totals column for both measurements from the chart on the board (all students) and the PCA results and answer the following questions.
Questions:
Draw a circle around the species in the PCA, do they group together do they overlap?

Are there any outliers?

Why do you think there are or are not outliers?

How much variation is there within a species group?

Note: in the case of an outlier that groups with another species, check to make sure they were properly identified at the end of the class when the jars species are revealed.