REPRODUCTIVE CONDITION AND FECUNDITY

ICHTHYOLOGY LABORATORY

Location: Pasteur Hall Room 225

Objective: Learn how to assess the reproductive condition and fecundity of local fishes.

Hypothesis: Local river and stream fishes will have similar reproductive conditions and fecundities just prior to their respective spawning seasons.

Agenda:

1) Collect a variety of fishes from local rivers and streams immediately prior to spawning, over-anesthetize them, and preserve them for use in the lab.

2) Weigh (g, wet weight) and measure (total length, mm) a fish of your choice. Dissect out the liver, place it on a tared plastic weighing dish, and determine its wet weight using the analytical balance. Calculate and record the hepatosomatic index (liver wet weight as a % of total wet fish weight). Dissect out both gonads (testes or ovaries), place them on a tared plastic weighing dish, and determine their combined wet weight using the analytical balance. Calculate and record the gonadosomatic index (gonad wet weight as a % of total wet fish weight). If your fish is a female, count the number of eggs in a single ovary.

3) Record all measurements on the data sheet provided.

4) Repeat steps 2-3 for as many additional fish as possible.

Analysis:

1) Using data from **ALL** fish examined by the class, create a summary graph (bar chart) of hepatosomatic indexes (HSI) of all species of fish (means ± SD). This graph (or figure) should present the different species on the X axis, HSI values on the Y axis, and have separate colored bars for males and females. Label this as **Figure 1**, and include a descriptive heading identifying the contents of the figure, the species of fishes (including scientific names), the total numbers of fish examined of each species (sample sizes), and location and date of fish collection.

2) Do the same as for #1 above, but for gonadosomatic indexes (GSI; **Figure 2**).

3) Create a summary graph (bar chart; **Figure 3**) of total egg counts per female (fecundity; means ± SD) for each of the species (species on the X axis, egg counts on the Y axis). Conduct a one-factor ANOVA on the egg count data to determine if fecundity varies among the species examined (record both the **F** value and the **P** value).

4) Write a narrative detailing your findings for this lab. Use the figures and the ANOVA test as points of reference, and call the reader's attention to the main findings of the lab exercise summarized in the figures and supported by the statistical test. Point out the patterns and trends in the data presented in the figures, and explain what the statistical test indicates about the fecundities of the species of fish being compared. For example, did HSIs or GSIs vary among species or between genders? If there were differences, point out what those were. Did all species have similar egg counts?

Equipment:
Metric rulers, metric balances, dissecting microscopes, light sources, dissecting tools, weighing dishes, data sheets