How can thermal physiology and life history traits of ectotherms be used to predict their response to climate change? In three study systems (see below) describe the rationale and hypotheses, observational and/or experimental data, and statistical analyses you would use to test your hypotheses. Your approaches for each system should be described in sufficient detail such that someone could evaluate the proposed research. In addition, your answer should include figures of hypothetical data that would support or refute your hypotheses and that clearly match the type of data you plan to collect in each system.

1) One study system should be aquatic, such as a thermally stratified lake with a fish species that moves into the hypolimnion during summer or a stream network and salmonid fishes.

2) One study system should be a viviparous organism living at high elevation.

3) One study system should be in an arid desert.