

Science Committee Key Elements

Algae Dynamics Study (aquatic ecologist)

1. Estimates of river algal populations.
2. Studies of algal productivity.
3. Species composition in the rivers studied.

Algae Dynamics Study (aquatic ecologist)

1. Study should include a field component, perhaps with study plots or enclosures or frequent detailed mapping, observations, and measurements. This could occur in the Upper Spring Run, Golf Course Slough, or other backwater/slackwater habitat in the Comal or San Marcos systems.
2. Continuous water quality monitoring for some period if not the entire length of the study. Continuous temperature monitoring.

Algae Dynamics Study (study design & stats)

1. A replicated, manipulative experiment to determine whether a linear or nonlinear relationship exists between water temperature & algal growth.
2. A replicated, manipulative experiment with different algal concentrations differentially influence bryophytes and macrophytes.

Algae Dynamics Study (botanist)

There are ample studies that show the effects of temperature and nutrients on the growth of algae in general and specifically *Spirogyra*, *Oscillatoria*, and *Pithophora*; therefore, I think this study should examine the effects of *Spirogyra*, *Oscillatoria* and *Pithophora* on the growth of at least two of the dominant macrophytes in the Comal and San Marcos Rivers, and *Riccia*.

1. How does the effect change as a function of temperature?
2. How does the effect change as a function of CO₂?
3. How does the effect change as a function of nitrogen and phosphate?

Algae Dynamics Study (aquatic ecologist, botanist)

1. Effects of algal growth during low-flow conditions on rooted aquatic macrophytes used as habitat by fountain darters in the Comal and San Marcos Rivers
2. Laboratory and pond study designs (with controls and adequate replication) including:
 - a. Methodology to measure and control water quality parameters (temperature, flow, CO₂) and to mimic low-flow conditions (lower flow, higher temperature, lower CO₂)
 - b. Selection of the top 3-4 rooted aquatic macrophyte species used as habitat by fountain darters in the Comal and San Marcos Rivers (these may be different between the two rivers)
 - c. Selection of the top 3-4 algal species that occur on the top 3-4 rooted aquatic macrophytes in the Comal and San Marcos River (these may be different between the two rivers)

3. Methodology to measure and assess the effects of water quality on algal growth (may be different for different species)
4. Methodology to measure and assess the effects of water quality on rooted aquatic macrophytes (may be different for different species)
5. Methodology to measure and assess the effects of algal growth on the rooted aquatic macrophytes (may be different for different species of both algae and rooted aquatic macrophytes)
6. This could be an extremely complex experiment, with various parameters of water quality and species of both algae and rooted aquatic macrophytes plus all the combinations low-flow conditions vs. algae species vs. macrophytes.