The New Hampshire Nature Conservancy wishes to acquire a reserve in the bogs of northern New Hampshire. Their primary intent is to preserve an endemic population of rare fuchsia orchids. They wish to know how large a reserve is needed to guarantee the survival of the population for perpetuity. Of course, $ is limited so that even though they are genuinely very fond of this orchid, they cannot afford to purchase a reserve larger than necessary.

The following information is available:

- The fuchsia orchid occurs at very low densities. Abundance estimates over the last ten years indicate 0.15 to 2.10 flowering individuals per hectare.
- The fuchsia orchid is an obligate outcrosser.
- Across ten years, the percentage of flowering individuals that produced seeds was highly variable and appeared to be positively correlated with the density of flowering individuals.
- Some individual plants have been known to live for at least 4 years.
- Development pressures in the area are considerable, so it is unlikely that any suitable habitat will remain outside of the reserve.

The Nature Conservancy representative has dropped by your office looking for guidance. She might have some grant money for you to help her out, but wonders aloud if that would be better than her making a wild guess. Distant political machinations (over which she has no control and that have nothing to do with orchids) will dictate whether she needs to make the acquisition this winter or in the next fiscal year, so she is interested in two different proposal scenarios:

1. An approach for developing a recommendation **within the next month** for the appropriate reserve size.
2. An approach for developing a recommendation **within the next two years** for the appropriate reserve size.

She would like a two page (total; text plus any figures) research prospectus from you that summarizes your one-month and two-year research scenarios.

You are encouraged to discuss the problem with your colleagues, but each of you should write your own prospectus. If you collaborate closely with one or more colleagues, include their names on your proposal as “collaborators”. There is no need to do any literature reviews or extra reading; this is a thinking exercise not a library research project.