



## The Extended Project

### Year

2002

### Description

This case discusses issues of responsibility and obligation of students in a project, specifically field studies which can be difficult and plagued with unexpected complications, the need to anticipate problems that might arise, both in experimental design, interpersonal relationships, and how they might be resolved.

### Body

Itty Bitty University's (IBU) revered ecology professor Dr. Gray Maple would like very much to complete his 40-year old pet research project, a case study that demonstrates the effect of different amounts of sunlight on the kind and number and of new plants that germinate and grow. The amount of sunlight is generally restricted (but not perfectly controlled) in forests, plantations, arboretums, etc., by the uniform spacing of shade-casting trees. In a well-stocked stand, little light reaches the ground. However, in a heavily cut stand, new germinants can be in direct sunlight for most of the day. In some cases, low-growing undesired plants are further controlled by the careful application of appropriate herbicides.

Over the years, Maple has had a number of graduate students characterize the site in terms of what grows well, where and when. Together, the theses chart successional development by describing changes in species composition and growth rates. The theses describe in detail the orientation of plots on the ground and the care taken to minimize edge effects. Treatment areas are large enough to allow

each measurement area (plot) to be centered within an individual "buffer" zone. Buffers are treated with the plots to ensure that that quantity and quality of shade cast on the edges of the measurement plot is similar to that in the center.

## The issue

Maple secures funds for incoming graduate student Jane and a crew of undergraduate assistants (Rudy and Anastasia) to complete the final set of field measurements. Maple offers to walk around the test site with Jane to flag the corners of the measurement area. He confides that this practice has helped his previous students get their bearings and saved them valuable time. Jane is worried that the now frail man will be injured walking across the difficult terrain to the study site, and she proposes a counter-offer: Let the crew use their novice orienteering skills for a day or two. Jane promises she will accept the original offer if they encounter difficulties or if they cannot complete the job in a reasonable amount of time.

After examining the area, Jane and Rudy recognize they are not up to the task of finding the points using a simple hand compass. Anastasia brilliantly suggests they scale from the map, accurately measure from the clearly visible property corners and grid markers, and check these figures against those described in the most recent thesis. As they find and flag the corner markers with brightly colored long-lasting industrial ribbon, they realize that what they see on the ground doesn't match what is depicted on the map. They cannot discern a pattern to the distances and directions between plot corners. It dawns on them that the same plot corners may not have been used each time. If the plots are inconsistent, then these results may have biased subsequent study designs and suggested commercial applications.

Jane and the crew seek the advice of Dr. Iris Ilex, one of Maple's former students. When they ask about the walk-around, they learn Ilex had flagged each corner as Maple pointed to it. She had trusted the published design description, and had no reason to suspect the distances and bearings might not be as described. Ilex also expressed surprise that the study is still active; she remembered Maple's "pilot study" as a short-term trial to see how these treatments could be applied on a larger scale.

# The resolution

Jane meets with Maple to discuss her reluctance to continue with the project. After much deliberation, they opt to ask a surveyor to measure and mark corners for smaller uniform plots that are unquestionably within the treatment and buffer area. Further, the surveyor should determine the largest and smallest possible plot areas on the basis of existing markers, so that Maple can evaluate the amount of error. Jane's evaluation of the site will be limited to conditions 40 years post-treatment; Maple's assessment will include Jane's results and discuss the statistical error over time (which, he is convinced, will be insignificant), and will stress the value of this site for teaching and demonstration.

## Discussion Questions

1. What are the interests and obligations of the collective undergraduate crew, Jane, Maple and Ilex?
2. What are their legitimate expectations and rights?
3. Who bears responsibility for maintaining the site?
4. Is there an obligation to alert anyone else?
5. What is Maple's obligation to the journals and conferences where he presented this work?
6. What are Ilex's obligations to the scientific community regarding the methods Maple employed? Should her response be influenced by the possibility that her own reputation may be sullied?
7. What responsibility do Jane and Ilex bear if the use of the surveyor does not help?
8. Science, including ecological studies, relies on building on previous work. If one scientist puts shoddy results into the pool, what is the effect on other scientists and graduate students?

## Notes

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