Question
1) We need your help interpreting some bee abundance and pollen limitation data (sound familiar?). In 2008 and 2009, we found higher bee abundance in suburban than wild sites. Based on this finding, how would you predict that higher bee abundance would affect pollen deposition onto stigmas and pollen-limitation of seed set in a native plant species in those sites? Why? Please explain your logic verbally and graphically.

a. In 2010, we sampled for bees again and found higher bee abundance in suburban sites, but we found no difference in pollen receipt and plants in both suburban and wild sites were pollen-limited for seed set. Why?

b. In 2011, we sampled for bees and once again found higher bee abundance in suburban sites. However, this year we found higher pollen receipt in suburban site but plants in neither suburban nor wild sites were pollen-limited for seed set. Why?

For (a) and (b), provide as many plausible hypotheses that you can think of (you should try and explain them verbally, and when appropriate, graphically), any literature supporting the hypotheses in other systems, and what additional data you would need to collect to differentiate among the hypotheses that you propose.

2) Imagine you have the opportunity to start your dissertation over, but you cannot work on the effects of suburbanization on plant-animal interactions. What question would you work on instead? Provide the general question you would ask, the rationale and justification for why it is worth pursuing (including appropriate literature cited), and the key initial observational or experimental studies you would use to address your question and hypotheses.

3) Although classically studied independently, many recent studies suggest that plant-pollinator and plant-herbivore interactions are intimately tied together. Provide a brief review of our understanding of the link between pollination and herbivory by focusing on the following three topics: (a) herbivory and plant
mating systems, (2) secondary metabolites in leaves and flowers (i.e., petal tissue, nectar and/or pollen), and (3) direct and indirect interactions between herbivores and pollinators on plant fitness.