Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part I. Pollinators** (Refer to Week 8 Reading unless otherwise provided).

1. How many species of bees are there in the US and Canada?

2. What is the estimated economic [contribution of native pollinators in U.S. crops](http://agpollinators.org/pollinators-101/)? And Oregon (find a resource, cite)?

3. Why is there so much difficulty in finding the information to properly answer #2?

4. Name three orders of insects that behave as pollinators in the Pacific Northwest, giving a specific example of each.

5. What is the difference between [Acute toxicity, Residual Toxicity and Extended Residual Toxicity](https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/pnw591.pdf)?

5. What [steps could farm managers](https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/farmers/) take to improve habitat for bees or to otherwise protect pollinator health? Describe three.

**Part II.**

Pollination is a mutually beneficial interaction between host plant and pollinator, but no matter how perfect the symbiosis, cheating always evolves.

For example, consider the flower *Helicodiceros,* the [Dead-horse Arum](https://en.wikipedia.org/wiki/Helicodiceros). This is an example of one way plants can trick insects into helping reproduction while providing no reward.

 a. What specific adaptations does this plant have to encourage insect activity?

 b. What insect is the target for this flower?

 c. How does the plant benefit, and why is this an example of “cheating”?

8. [What is Pouyannian Mimicry](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2396721/)? Give an example of this type of mimicry that is impacting the evolution of bees.