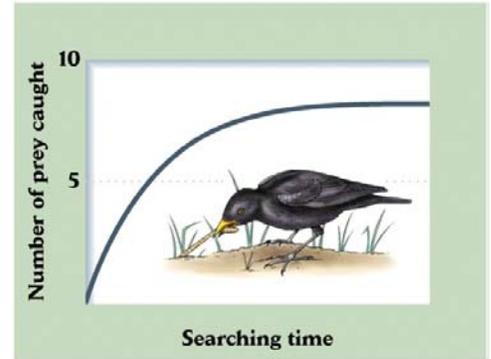


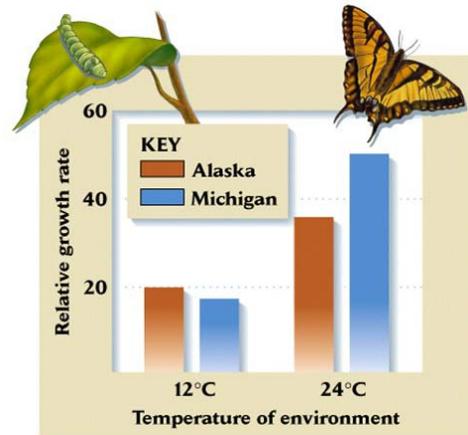
Ecology 203, Exam I. February 13, 2006. **Print name:** _____
 Rules: **Read carefully, work accurately and efficiently.** There are no questions that were submitted by students. “[FG:page #]” is a question based on information from the field guide, “[TB:page]” the textbook, and “[L]” the lectures. I hope this helps you track down information when you get the exam back. Good luck!

Multiple guess. (5 pts each, 50 pts total)

1. The graph on the right suggests foragers
 - a. increase the intake of food the longer they spend hunting in a patch.
 - b. get progressively less food per unit time in a patch.
 - c. get progressively more food per unit time the longer they remain in a patch.
 - d. all of the above.
 - e. none of the above.
2. Which of the following best describes the theory of evolution and the theory of intelligent design (ID) as bringing about complex structures in biology?
 - a. Both theories are testable but neither has been proved.
 - b. Evolution is based on proof while ID is a theory.
 - c. Evolution is a theory and ID is a fact.
 - d. Both are theories supported by evidence and should be given equal treatment in science curricula.
 - e. Evolution is a scientific theory and ID is an idea based on faith alone without supporting scientific evidence.
3. We learned that Trofim Lysenko [L]
 - a. was the first to describe evolution by means of acquired characteristics.
 - b. laid the foundation for evolution by means of changing gene frequencies.
 - c. guided science largely through his political and ideological beliefs rather than using the usual scientific approaches based on observations and hypothesis testing.
 - d. was the first to identify the importance of genes by environment interaction, resulting in our current understanding of norm reactions.
 - e. all of the above.
4. In evolutionary theory we talk about “fitness.” This is best defined as [L]
 - a. the number of offspring an individual has relative to other individuals of the same species.
 - b. the ability of an organism to gather resources and avoid being a resource.
 - c. the absolute number of offspring and individual has.
 - d. all of the above.
 - e. none of the above.
5. Hadley Cells [TB:76, L] are largely driven by
 - a. the heavy rains found in the tropics.
 - b. the snows that occur at or near the poles.
 - c. the droughts that occur at 30 degrees north and south latitudes.
 - d. the sun beating down on a spherical planet.
 - e. none of the above.

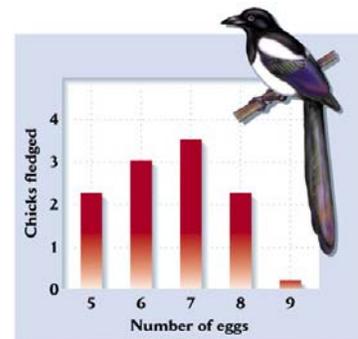


6. The figure of swallowtail butterfly larvae suggests that their growth rates [TB: 203, L]
- exhibit phenotypic stochasticity.
 - are genetically determined.
 - are environmentally determined.
 - exhibit a genotype by environment interaction.
 - all of the above.



7. Lake turnover is a process where (TB: 82; L)
- changes in temperature result in decreases in species diversity.
 - changes in temperature result in a mixing of cold and warm water.
 - glacier periods come and go, resulting in the appearance and disappearance of lake ecosystems.
 - changes in temperature result in water becoming uniform in temperature and, therefore, able to mix.
 - all of the above.

8. The figure to the right suggests that Magpies [TB: 201, L]
- fledge the largest number of chicks when they have seven eggs.
 - experience the greatest chick mortality when they have seven eggs.
 - most frequently have seven eggs.
 - have lowest fitness with longer tails.
 - all of the above.

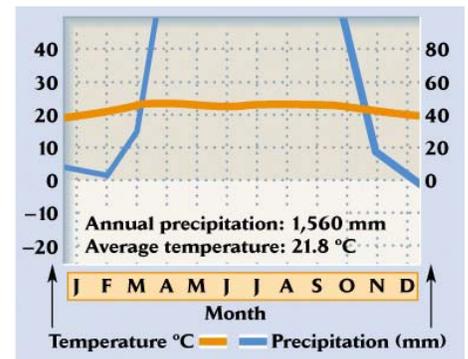


9. Assume you conduct a reciprocal transplant experiment using two sets of seeds from a single species. One set (population #1) comes from habitat A, the other (population #2) from habitat B. Individuals from both populations are short when grown in habitat A while individuals from population #2 are both tall when grown in habitat B. This is strong evidence that the trait is (TB: 204-205; L)

- genetically determined.
- environmentally determined.
- there is a genetic by environmental interaction determining plant height.
- natural selection favors appropriate height for these plants.
- there is not enough information to determine this.

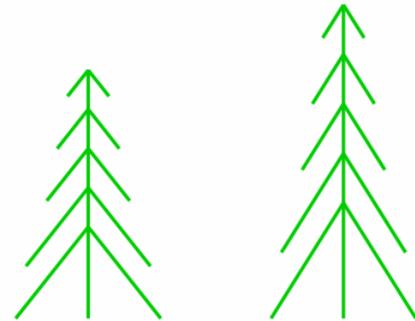
10. The Walter climate diagram to the right is consistent with a biome from which region or country?

- Brasil.
- Greenland.
- Siberia.
- Hawaii.
- Mid-Atlantic ridge ecosystem.



Short-answers. Write legibly. Use ONLY the space provided. Answers should be succinct - this means **no brain dumps**. Graphs should include axis labels. **Choose 4**. (10 pts each, 40 pts total)

1. Two trees are used to test the hypothesis that fertilizer increases plant growth. The tree on the right is the one that received fertilizer. The researcher submits the following sentence in the result section of a scientific paper, hoping to get it published: "The fertilizer I used significantly increases the height of plants." As a reviewer of this paper provide **two** reasons why you are skeptical of this result.



- a.
- b.
2. What's the major problem with this graph? Redraw the data correctly. Explain.



6. Why does the Earth have seasons? Be sure to be quite clear on this.

7. What does the figure suggest about individuals in the physical environment? Provide a more general graph for individuals in one species, indicating the outcome of individuals away from the center of the distribution. Label graph completely. [TB: 101-102, 184, L]

