

CHAPTER 2 Answers to Problems

Problem 2.1. Here is the answer to this question from a student in Biology 480, Conservation Genetics, at the University of Montana:

Dear Director,

I am aware that you have stocked Illinois lakes with large mouth bass from Florida under the auspices that this will provide the public with a larger variety of fish. I recently read that these fish are actually growing slower than native large mouth bass (Philipp 1991).

I would like to take this opportunity to comment on the possible causes of this occurrence. Often species develop genetic differences in response to environmental gradients (Conover and Schultz 1995). As a result, phenotypic traits are often largely responsive to the environment in which the species has evolved. While the Florida large mouth bass is large in its native environment, it may well actually be a smaller variety than native Illinois large mouth bass when transplanted because it is not genetically predisposed to grow quickly under colder water conditions.

In addition, while it is possible that a large bass variety from a colder environment might grow faster than it normally does if transplanted to a warmer environment, experiments have shown that native species will reach optimal development in their native environment. Therefore, it is unlikely that any species (from either a colder or warmer environment) transplanted to Illinois will grow faster or larger than native Illinois large mouth bass.

Thanks for your time. I hope these observations assist you in future management decisions.

Sincerely,

Karin McCoy

Problem 2.2. The simplest model is that blue is recessive to white. We would expect all of the progeny from blue x blue matings to be blue under this model. The 10% white progeny from these matings may result from extra pair copulations.

Problem 2.4. Dorsal rays has the greater heritability because there is greater similarity between parents and progeny for this trait.

Problem 2.5. Kermode bears should not be recognized as a separate group for conservation purposes because they are part of a larger breeding population from which they differ only at a single locus. See Chapter 16.