Genetic Probabilities

Biologists are studying a deer population in a provincial conservation area. The biologists know that many of the bucks (male deer) in the area have an unusual "cross-hatched" antler structure, which seems to be genetic in origin. Of 48 randomly tagged deer, 26 were does (females), 22 were bucks, and 7 of the bucks had cross-hatched antlers.

Several of the does have small bald patches on their hides. This condition also seems to have some genetic element. Careful long-term study has found that female offspring of does with bald patches have a 65% likelihood of developing the condition themselves, while offspring of healthy does have only a 20% likelihood of developing it. Currently, 30% of the does have bald patches.

1. Out of ten deer randomly captured, how many would you expect to have either cross-hatched antlers or bald patches?

2. Do you think that the proportion of does with the bald patches will increase, decrease, or remain relatively stable?

In this chapter, you will learn methods that the biologists could use to calculate probabilities from their samples and to make predictions about the deer population.