



FIGURE 3.3 Male frigate birds inflate an air sac in their chest to attract females. This trait has evolved through sexual selection.

▶ MAIN IDEA

Sexual selection occurs when certain traits increase mating success.

Mating can have an important effect on the evolution of populations. Both sexes benefit from having offspring that survive. However, the cost of reproduction often differs for males and females.

- Males produce many sperm continuously, making the value of each sperm relatively small. They can make many investments at little cost.
- Females are much more limited in the number of offspring they can produce in each reproductive cycle. Each investment they make is more valuable, and they want a good return.

In many species, this difference in reproductive cost makes females choosy about mates. **Sexual selection** occurs when certain traits increase mating success. There are two types of sexual selection:

- Intrasexual selection involves competition among males, such as the head-butting of bighorn sheep. The winner of the competition mates with the female.
- Intersexual selection occurs when males display certain traits that attract the female, such as peacocks fanning out their tails.

Traits that increase mating success are not always adaptive for the survival of the individual. As shown in **FIGURE 3.3**, bright red air sacs likely make male frigate birds very easy to spot by predators. How could such an exaggerated trait evolve?

Research has shown that some showy traits may be linked with genes for good health and fertility. Other traits are present in males that can offer better care for offspring or defense from predators. Therefore, females may use showy traits as signs of quality and health in males. These traits, such as the red air sacs of male frigate birds, can become very exaggerated over time through sexual selection.

Apply Male Irish elks, which are now extinct, had 12-foot-wide antlers. Describe how sexual selection could have caused such an exaggerated trait to evolve.

READING TOOLBOX

VOCABULARY

Intra- is Latin for “within.”
Intrasexual selection occurs within one sex.

Inter- is Latin for “between.”
Intersexual selection occurs between both sexes.

11.3 Formative Assessment

REVIEWING ▶ MAIN IDEAS

1. How does **gene flow** affect neighboring populations?
2. Name two processes through which **genetic drift** can occur.
3. How does **sexual selection** occur?

CRITICAL THINKING

4. **Analyze** Would a population of 10 individuals or 100 individuals be more vulnerable to genetic drift? Why?
5. **Infer** What impact can the **bottleneck effect** have on populations that have rebounded after near extinction?



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PREMIUM CONTENT

CONNECT TO

GENETICS

6. Ellis–van Creveld syndrome is a recessive trait. Explain why it has become common in the Amish of Lancaster County while remaining very rare in other human populations.