

Red-billed Quelas Activity

Background:

Red-billed queelas are common birds in parts of Africa. These birds make nests and breed in large, very dense colonies. A male and a female mate and occupy a shared nest to raise offspring. During the year, both male and female birds have identical light brown coloration.

During the breeding season, males produce more colorful feathers ranging from red to yellow. Red and yellow pigments come from the bird's food. Based on previous studies of feather color in birds, it was assumed birds with red feathers had a more nutritious diet than birds with yellow feathers.

Biologists have hypothesized that female queelas may prefer to mate with males that have red feathers.

Question 1:

Based on all of the information provided so far, briefly explain the reasoning underlying the hypothesis that female queelas may prefer to mate with males that have red feathers. Your answer should make specific reference to the fitness effect of female choice on female fitness. **(6 marks)**

Question 2:

Decades later, James Dale studied coloration in quepas. He found that the male plumage color is highly correlated with the plumage color of their father. The birds' diet did not affect coloration after all. All birds have the same average number of offspring regardless of their feather color.

Your friend suggests that the feather coloration (red vs. yellow) in red-billed quepas indicates that sexual selection is occurring and feather coloration is a signal used by females to evaluate male quality. Do you agree with his claim? Explain your reasoning with specific reference to the criteria for selection and how they are met or not met in this case.