



# AP Bio

# FRQ Fridays

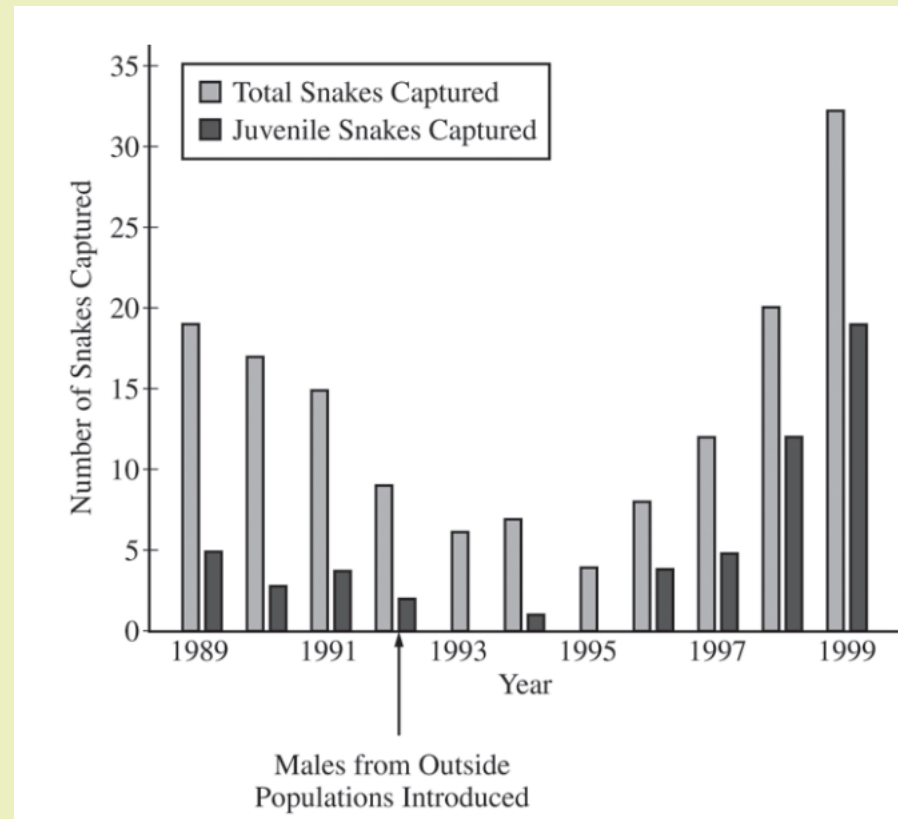
2015 #6  
Population Decline & Remediation

# FRQ Friday #26

2015 #6

In an attempt to rescue a small isolated population of snakes from decline, a few male snakes from several larger populations of the same species were introduced into the population in 1992. The snakes reproduce sexually, and there are abundant resources in the environment.

The figure below shows the results of a study of the snake population both before and after the introduction of the outside males. In the study, the numbers of captured snakes indicate the overall population size.



# FRQ Friday #26

2015 #6

(a) Describe ONE characteristic of the original population that may have led to the population's decline in size between 1989 and 1993.

## Description (1 point)

- Lacked genetic diversity/variation
- Was an aged/post-reproductive population/not enough young snakes
- Had unfavorable sex ratio/too few males
- Possessed a harmful mutation/disease

a) The original population could have had a limited gene pool because of stabilizing selection. Because this caused limited genetic variation in the population, none of the snakes were more fit for changes in the environment.



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(b) Propose ONE reason that the introduction of the outside males rescued the snake population from decline.

## Proposal (1 point)

- Increased genetic diversity in the population
- Increased reproductive success
- Established beneficial sex ratio/sufficient proportion of males for reproduction
- Introduced resistance to disease that was affecting the original population

b) Males from an outside population caused new genes to enter the population. Because of the increased genetic variation, the snakes were fit to fill niches in a changing environment.



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(c) **Describe** how the data support the statement that there are abundant resources in the environment.

## Description (1 point)

- Population can/does grow
- If resources are limited population would not grow

c) This population is growing exponentially and has not reached carrying capacity.

