

CHECKS

AND



BALANCES

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CHECKS AND BALANCES GAME

This game has been adapted from SECONDARY PROJECT WILD
1983, 1985

It is advisable to run the card sets in different colors. This makes it easier for the students to follow the card order.

This activity works well with extinction. The activity can be used to meet the following Standard.

Standard II Life Science – Unit of Study: Classification, Diversity, and Adaptations of Organisms Over Time

A. Diversity and Adaptations of Organisms

2. Biological change accounts for the diversity of species developed through gradual processes over many generations. Biological adaptations, which involve the selection of naturally occurring variations in populations, enhance survival and reproductive success in a particular environment. How a species moves, obtains food, reproduces, and responds to danger is based in the species' evolutionary history.
 - a. Suggest evidence of how species have adapted to changes in their habitats.
 - b. Examine how natural selection increases the variations within populations.
3. Extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient to allow its survival
 - a. Determine the factors that contribute to an organism becoming extinct.
 - b. Explain some of the natural and human-made pressures that can cause extinction.
 - c. Examine ways to prevent the extinction of an organism.

CHECKS AND BALANCES

OBJECTIVES: Students will be able to: 1) evaluate hypothetical wildlife management decisions; 2) identify at least four factors, which can affect the size of a wildlife population.

MATERIALS: Paper and pencil; condition cards; graph paper; dice.

PROCEDURE:

1. Each student group is to be the manager of a moose (or other animal) population. The carrying capacity of the habitat is 100 animals. The point of the activity is to end up with a viable population after nine rounds, (nine years). If at any time the population reaches less than 10 or more than 200 individual animals, that group no longer has a viable population and must plot the information on graph paper.
2. Each group has a beginning population of 100 animals. The cards are to be separated into three decks of a total of 36 cards: a condition deck (18 cards), a reproduction deck (9 cards), and a management deck (9 cards). Shuffle the cards within each deck. **Draw the cards in the following order: condition card, reproduction card, condition card, and management card.** After the draw, roll the dice and follow the instructions on the card to determine the herd's new size. You will do this nine times to gather enough data to plot the information.

EVALUATION:

1. Name four factors that can affect the size of a population
2. Some wildlife managers have said that wildlife management involves more management of people than of wildlife.
Explain what they might mean by the comment.

Reproduction Card – Average Year

This has been an average reproduction year. Increase your herd by $(100/\text{your current population size})$ times three times your roll, if your current population is over 50 individuals. If your population is between 50 and 10, increase your population by three times your roll. If your population is under 10, don't reproduce.

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Reproduction Card – Excellent Year

This has been an excellent reproduction year. Increase your herd by $(100/\text{your current population size})$ times five times your roll, if your current population is over 50 individuals. If your population is between 50 and 10, increase your population by the number equal to five times your roll. If your population is under ten, you may not reproduce.

Reproduction Card – Excellent Year

This has been an excellent reproduction year. Increase your herd by $(100/\text{your current population size})$ times five times your roll, if your current population is over 50 individuals. If your population is between 50 and 10, increase your population by the number equal to five times your roll. If your population is under ten, you may not reproduce.

Reproduction Card – Excellent Year

This has been an excellent reproduction year. Increase your herd by $(100/\text{your current population size})$ times five times your roll, if your current population is over 50 individuals. If your population is between 50 and 10, increase your population by the number equal to five times your roll. If your population is under ten, you may not reproduce.

WEATHER CARD

Blizzard (big snow storm) has a serious negative impact on the survival of the herd. Decrease your herd by the percentage equal to five times your roll.

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HABITAT DESTRUCTION CARD

Fire has occurred, destroying critical habitat. Decrease herd size by the number five times your roll.

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PREDATOR CARD

Predation has occurred, affecting the herd size. Decrease herd size by the percentage equal to your roll.

DISEASE CARD

Disease has struck the herd. Decrease herd by the percentage equal to your roll.

POACHING CARD

Poaching – illegal killing of animals – has reduced the size of the herd. Decrease the herd by the number equal to two times your roll.

HABITAT DEGRADATION CARD

Timber harvesting has occurred, damaging critical habitat.
Decrease herd by the number equal to three times your roll.

HABITAT DEGRADATION CARD

Road building has occurred, damaging critical habitat.
Decrease herd by the number equal to three times your roll.

HABITAT DEGRADATION CARD

New factories have occurred, damaging critical habitat.
Decrease herd by the number equal to three times your roll.

HABITAT DEGRADATION CARD

An airport has occurred, damaging critical habitat.
Decrease herd by the number equal to three times your roll.

HABITAT LOSS CARD

Cutting the rainforest has resulted in a loss of critical habitat for the herd. Decrease herd by the number equal to five times your roll.

HABITAT LOSS CARD

Severe drought has resulted in a loss of critical habitat for the herd. Decrease herd by the number equal to five times your roll.

HABITAT LOSS CARD

Dam breaking has resulted in a loss of critical habitat for the herd. Decrease herd by the number equal to five times your roll.

HABITAT LOSS CARD

A hurricane has resulted in a loss of critical habitat for the herd. Decrease herd by the number equal to five times your roll.

HABITAT LOSS CARD

Bombing has resulted in a loss of critical habitat for the herd. Decrease herd by the number equal to five times your roll.

HABITAT RESTORATION CARD

Reforestation has occurred, restoring critical habitat. Increase herd by the percentage equal to five times your roll.

HABITAT ALTERATION CARD

A new road has occurred, altering critical habitat. Increase or decrease (students choose which before rolling the die) herd by the percentage equal to three times your roll.

HABITAT ALTERATION CARD

A hog farm has occurred, altering critical habitat. Increase or decrease (students choose which before rolling the die) herd by the percentage equal to three times your roll.

HABITAT IMPROVEMENT CARD

Hunting preserve has occurred, improving critical habitat. Increase herd by five times your roll.

RESEARCH CARD

Deer population research has been successfully accomplished. Increase or decrease (students choose which before rolling die) herd by two times your roll.

LAW ENFORCEMENT CARD

Game wardens law enforcement activities have protected the herd against illegal actions like poaching. Increase herd by the percentage equal to two times your roll.

EDUCATION CARD

Environmental education activities have led to increased understanding of wildlife and habitat. Increase or decrease (students choose which before rolling the die) herd by the percentage equal to two times your roll.

HABITAT ACQUISITION CARD

Habitat acquisition has increased the area of available and suitable habitat. Increase herd by five times your roll.

HUNTING CARD

A request for a hunting season has been made. Do you wish to allow hunting in your area? If yes, decrease your herd by the percentage equal to five times your roll. If no, record no change in the size of the herd.