

DEER IN THE YARD

Overview of the activity

Students construct a 'deer yard' on the playground and race through deep and shallow snow to simulate how white-tailed deer adapt to winter conditions

Students will

- Explore adaptations of White-tailed deer to life in deep snow
- Simulate behavior of white-tailed deer that is necessary for survival
- Measure physiological changes that occur in response to winter stress

Concepts

Limiting factors, adaptation, forest management

Background Information

Temperature, snow depth, snow density and duration of winter all play a role in how well animals survive the winter. Those that inhabit cold, snowy climates demonstrate different features and behaviors that help them cope with the stress of winter. For example, White-tailed deer adapt to deep snow by moving into "deer yards". These spaces found in softwood forests offer protection from extreme cold and also provide sources of winter food. They are generally found on southern slopes to help minimize wind and maximize exposure to the sun. In these 'yards' deer will also develop a network of trails that make movement easier thus reducing the expenditure of precious energy reserves.



Activity Requirements

- The activity requires an area of undisturbed deep snow. Minimum area of 10 m x 30 m
- The snow must be deep and soft enough that students will readily sink to a depth of 20 cm or more.

Preparation of 'the yard'

Have the students create a packed trail that is approximately 1.5m wide and at least 30m long. Snowshoes are ideal for making this trail but just having students walk repeatedly along the path will also work. Make sure the packed trail is firm enough to prevent sinking.

Running parallel to the freshly-packed trail should be an equal area of undisturbed snow.

Activity

- Inform the students that they are about to become white-tailed deer!
- Explain that one of the strategies white-tailed deer use to survive winter is to move deep into softwood forests where they create a network of common trails in the snow. Have students consider & suggest reasons for this behavior.
- Arrange students in pairs and inform them that they are going to race each other.
- Prior to each race, measure and record pulse and breathing rates of both members of the pair.
- The students (pairs) will then race each other a measured distance, with one running along the packed trail, the other in the deep snow.
- After each pair has crossed the finish line, the 'winner' is recorded along with the post-race pulse and breathing rates of both participants.
- Note: As the races progress, ensure that if the deep snow starts to get packed down, the students move into fresh snow.

Debriefing

With the individual races completed, gather the students and discuss their results. A portable white board could be used to display 'before and after' results in table form- See Appendix A.

- Have the students review the pulse rate and breathing rate data
- Ask the students how they felt at the end of the race. The deer in deep snow in particular will report that they were tired, possibly sweaty, and had a harder time running. Pay particular attention to any references made by the students to feelings of 'exhaustion' after running and ask the students to relate this to energy expenditure.
- Explain that like many animals active in winter, deer depend on their fat reserves to help sustain them through the cold months when food is hard to come by. Anything that can help them reduce calories burned is beneficial.
- Ask them to consider how much energy was burned by the deer travelling the trails compared to the deer in deep snow. Determine which deer would have the better chance of escaping a predator.
- Explain that deer yards are so important to winter survival that forestry companies in some parts of Canada are now required to maintain a certain amount of habitat for deer wintering areas.

Assessment

Older students could demonstrate their understanding of the importance of deer yards by writing a persuasive letter to the appropriate provincial government department, requesting forest companies be required to set aside (more) hectares of crown and privately-owned forest for winter deer habitat.

Extension Ideas

- If there is a significant stand of coniferous trees adjacent to the school have the students create a model deer yard. Students could identify areas for the trails and sites where the deer will obtain food, water and find warmth from the sun.
- On a cold winter day take the students outside to experience wind chill. Have them compare the relative cold in sheltered and unsheltered areas. Students can then relate these findings to the importance of deer yards and energy conservation.
- Many populations of White-tailed deer in eastern Canada inhabit the northern limit of their range. Yarding is so important because unlike moose, the deer are a more temperate species and are not well-adapted physically to deep snow and extreme cold temperatures. Have students determine how and why moose are better suited to our Canadian winters.

APPENDIX – A

Pair	(circle the winner)	Pulse & Breathing Rates			
		Breathing		Pulse	
		Pre-race	Post-race	Pre-race	Post-race
1	Trail Deep Snow				
2	Trail Deep Snow				
3	Trail Deep Snow				
4	Trail Deep Snow				
5	Trail Deep Snow				
6	Trail Deep Snow				
7	Trail Deep Snow				
8	Trail Deep Snow				
9	Trail Deep Snow				
10	Trail Deep Snow				