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Clark's Nutcracker Caching Game

Objective-Demonstrate how cone masting results in years of high recruitment vs low recruitment in years of normal seed production.

Background- Whitebark pine typically produces small cone crops with a “mast year” every five years or so. These masts are very large cone crops that overwhelm the Clark's nutcracker, a bird that feeds and hides seeds for future consumption. One theory behind this relationship is that if cone crops stay low, then the population of Clark's nutcrackers are also kept low and

in years when a mast crop is produced, there are far too many seeds to consume; thus, more seeds will be cached and hidden in these years. Seeds that are not found may germinate and grow into trees, also providing future food for the nutcrackers- a win- win.

Set-Up-Each player gets 25 seeds of the same colour, if there are more colours than students, have them work in groups or have them hide seeds in different areas. Each student or group only hides or finds their colour.

HINT: I use different colored buttons for this game.

Year One: Non-Mast Year- Each player gets 5 seeds of the same colour to hide. Give them 2 minutes to hide them-this first two minutes represents fall when the seeds are available and the Clark's nutcrackers are actively feeding and caching. Next, make them wait for 2 minutes to possibly forget locations-these two minutes represent winter when the snow is too deep to find seeds. Then give them 4 minutes to find the seeds that THEY hid-this 4 minutes represents late winter, spring and summer. Count the recovered seeds and see how many each student forgot.

(During the 2-4-minute wait time, I usually get them to sing a song like ***Down by the Banks*** or some other game to distract them and make the game more difficult.)

Result- Most students will find every seed they cached; thus, in non-mast years when cone crops are low, most seeds are found by the nutcrackers.

Year Two- Mast Year- Each player gets 25 seeds of the same colour to hide. Repeat the time sequence, Year One and see how many seeds each student forgets.

Result- The mast year should result in more seeds being recovered (eaten), but also more seeds forgotten (lost to possibly germinate), demonstrating how important mast years are to the regeneration of the Whitebark pine and to the diet of the nutcracker.

Have students think about what would happen if every year was a mast year. It is likely that nutcracker populations would increase and the effect of the mast would be lost as more birds would be feeding on the same number of cones.

You can repeat the game and have them think about ways to make finding seeds easier. Ways to make it easier may include;

- Visual cues to assist in finding the seeds
- Shortening the 2-minute winter- as many nutcrackers do this by hiding seeds on sites most likely to be snow free
- Putting more seeds in each cache so a smaller number of locations need to be memorized.

Fun Idea – Turn some of the students into nutcrackers, grizzly bears, or red squirrels. They can act out their animals while

hunting for their seeds. There are a lot of variations for this game, the only limitation is your imagination. Have fun!



