

## TREE SEEDS: A PACKAGE OF WONDERS

Trees have many creative ways to package their seeds. This activity will give young learners a chance to describe the similarities and differences between each kind, and to have fun, too, making use of seeds in decorative crafts.

Students will also become aware of the kinds of people who work with trees, protecting forests and encouraging their renewal. This will help students understand the role we all can play in protecting the trees around us.

### Seeds Comes in Many Covers

Students will discover that trees make seeds in many different “covers.” (Teachers may want to relate cones to blankets that keep seeds warm and dry.) They will be able to describe seed characteristics such as size, shape, colour and texture.

Students will gather, examine, describe, and discuss a variety of deciduous and coniferous seed covers and their seeds.

*Learning Skills:* Observation; Description; Analysis; Classification

*Location:* Classroom (possibly outdoors)

### Preparation

Seed covers protect the seed and assist it to travel away from its parent tree. Seeds of deciduous (broadleaf) trees are usually contained in berries, fruits, keys or nut-like covers. Seeds of coniferous (cone-bearing, generally evergreen with needles) trees are contained in cones. There is great variation in the number, size, shape, texture and colour of seeds produced by different trees.

Some examples of seed “covers” are:

Cones: Douglas-fir, pine, true fir, cedar, spruce, hemlock, larch

Berries: Dogwood, cherry, holly, juniper

Fruit: Apple, pear, peach, plum

Nuts: Chestnut

Acorns: Oak

Pods: Locust

Capsules: Cottonwood

Keys: Maple, ash

## Materials

For each group of three to four students provide:

- variety of tree seed “covers” containing seeds (be sure to source some coniferous and deciduous cones – see “Gathering Seeds” activity following this lesson)
- one plastic kitchen knife
- magnifier(s)
- newspaper to cover desks

Vocabulary: [coniferous](#), [deciduous](#), cone

## Suggested Instruction Strategies

- Divide the students into groups of three to four around a working space. Cover the desks or floor with newspaper. Present each group with a knife, magnifier(s) and a common tree fruit, like an apple, for each member.
- Ask the children to examine the fruit. Can they identify them? Where did each fruit come from? Describe shape, colour, texture, size. What do they think they might find inside?
- Allow the children to break open the fruit (using the knife if necessary) and examine its insides. Discuss their findings. Emphasize that all trees produce seeds, but each tree puts its seed in a different “cover”. Ask the students to suggest how the “cover” helps the seed (protection; helps seed travel away from the parent tree).
- What about other seed “covers”? Take the class outside to gather natural items they believe might contain seeds and return with them to the classroom (optional).

- Present the remaining seed “covers” from your own collection. Again, examine and discuss the seed “covers” and investigate their “insides”. Pay particular attention to any cones with seeds. Explain that trees which bear their seeds in cones are called coniferous, while most broad-leaved (deciduous) trees have seeds in fruits, nuts or berries of various kinds.

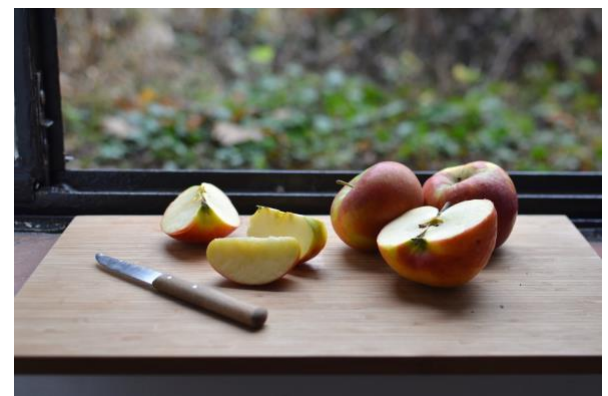
**Extensions:**

- Have the children sort their seeds and/or seed “covers” into “coniferous” and “deciduous” groups.
- Discuss the names and characteristics of some of the trees which have produced the seeds the children viewed.
- Count and record the seeds found in each seed “cover”. Which “cover” seems to contain the most/least seeds?
- Discuss/find pictures or samples of seed “covers” from trees which grow in other countries (e.g. the tropics, such as mangoes, oranges, avocados.)
- Discuss jobs of people who work with seeds. How do they use seeds? (i.e. genetic research, planting in nurseries, etc.)



**Suggested Assessment:**

- Observe classroom participation and cooperation
- Assess students’ ability to compare and explain similarities and differences between coniferous and deciduous trees and their seed “covers”
- Assess ability to accurately count numbers of seeds



**Summary**

Have the children draw a picture of their favourite seed “cover” and the seed which it

contains, showing how the seed is arranged inside the cover.

**Teaching tip:** Allow children to share the leftover fruit. You will want to save the seeds for the next lesson and/or to plant later.

## Gathering Seeds


- Another way to get seeds is to gather them yourself. You'll remember that conifer seeds grow inside cones. Each cone contains many seeds. Each seed is on a little flap of the cone called a scale. The seed is attached to a "wing" that helps it glide through the air from the tree to the ground. See picture and a helpful overview from [Wild Birds Unlimited](#). Trees seeds are a treat for birds.
- Seeds that are just about ready to sprout are found in ripe cones. This is the kind of cone to look for when you're gathering your own seeds. Look for cones that are brown. Ripe cones may also have drops of pitch on them.
- Be sure to look for cones with closed scales. When the scales are closed, the seeds are still inside. If the scales are open, the seeds have already left the cone. Some information on open and closed pine cones [here](#). More on Coniferous cones and photos [here](#) and [here](#). [Scientific American](#) also offers a neat activity on open and closed cones for those learning at home.
- A good place to look for cones is on the lower branches of a conifer. Or you might find closed cones under the tree after a windstorm.
- When you collect your cones from the tree, take a few needles as well. When you get back to class, you can

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### A Look Inside a Pine Cone


Activity at birdfeeders in our area has been very slow for over a month so we've been talking to customers alot about the abundance of natural food sources out there for birds. Birds are amongst the wildlife that have been feasting upon this year's bounty of seeds, nuts, insects, fruits and berries.

We should've known it was coming with this summer's above average rain and mild temperatures. Early in the season, you could see clusters of cones forming at the tops of the pine trees. And now the ground is covered by them. Stand outside for any length of time and you'll hear a steady stream of cones dropping from the tree tops, being chewed off by industrious squirrels.




Pine tree tops full with cones

All this got me curious to do a little hands-on learning about the pine cone. I step over around, and on them almost daily, but have never picked one up to really study it.




The cone of course is the fruit of a coniferous tree and its main function is to be the carrying case for the tree's previous seeds.


Rows of tough scales protect the seeds, but as the cone dries and the scales open up exposing the inside of the cone, the seeds that had been nestled away safely near the core of the cone become more accessible to the wildlife. I brought some cones inside with the scales barely open; 2 days later, the scales had peeled back, exposing the seeds.




The seeds are attached to a wing. As they fall out of the cone, the weight of the seed pulls it toward the ground, while the helicopter-like action of the wing slows its descent, providing a fun whirlygig-like descent.






When you look inside the cone, there are 2 seed heads tucked up close to the inner core of the cone and the wings rest neatly on the top of each cone scale.



The seeds near the bottom of the cone were more developed than those near the top. Within an average size Eastern Pine cone like the one I studied, there could be more than 100 seeds encased within, protected by the 50+ scales.



As the cones open, the seeds can either fall out or be picked out by wildlife. Here's a few images of a Dark-eyed Junco feeding on seeds from the Eastern Pine.



These seeds provide a feast for the birds, along with all the other natural food that is still so abundant and available. But as days pass, insects will become less available when temperatures drop and the ground freezes. Uneaten fruits and berries will shivel and fall, and snow will eventually cover the ground making natural food less accessible. And as fall turns into winter, like during the closing hours of a buffet, natural food sources will become depleted. It is then that the familiar feeder birds that have been enjoying nature's smorgasbord will again turn to our feeders for the high energy snacks that make it just a little easier to survive the long, cold winter months.

use the needles and a tree key to find out what kind of tree it is (refer to the BC Ministry of Forest's [Tree Book](#)).

*The next step is to get the seeds out of the cones. Here's how you do it:*

1. Place the cones on a cookie sheet and spread them out. They will need to dry for three to four weeks in a warm, dry place. Stir the cones around each day. Wait for the cones' scales to open, and the seeds to fall out. You can help them by putting the dry cones in a paper bag, and shaking the bag.
2. To clean the seeds, put them in a mesh laundry bag. Gently rub the bag between your hands. This will knock the "wings" off the seeds. Pick out the seeds and throw away the wings.

#### Related Resources/Links

- Time lapse [YouTube video](#) of seeds growing into plants
- Tree growth [video](#) showing fruits, cones and seeds. Cool fact, some trees need fire to grow!
- [Almanac](#) tells you when's the best time to plant your seeds based on your location.
- [Green Teacher Magazine](#) This Canadian-published environmental education journal features articles on eco-philosophy and teaching techniques. Included are resource listings and a Canadian events calendar.
- [Trees for Life](#) Trees for Life provides information and resources to K-6 teachers to promote a better understanding of the importance of trees. Students receive seeds to grow their own tree. An accompanying manual provides instructions for introducing topics and ideas for extra group activities.
- [Plant Something BC](#) Plant Something BC offers tips to gardeners of all ages who want to make a difference with their gardening -- and know why it's important.
- [National Gardening Association](#) The National Gardening Association offers teaching and learning activities for garden-based learning. It publishes a regular e-newsletter and other resources for educators interested in using herbs and other plants to explore science concepts, environmental themes, natural history and multicultural studies.

- [Science Rendezvous: Seed Collection](#) offers some seed collection videos and lesson plans.
- [Child's Play Collecting Seeds](#) Fun educational activity ideas, from nature play, arts, crafts, and sensory to recipes, science experiments, STEM, and wildlife conservation
- [Gardening Know-How and when to Collect Seeds](#)
- [Indigenous Tree Seed Collection](#) Indigenous peoples have been the stewards of forests for generations, relying on them for food, shelter, medicine, spirituality and culture. The Indigenous Seed Collection Program supports Indigenous communities and organizations interested in developing their own [seed collection](#) programs or storing seed collections at the NTSC. The principles of tree seed conservation also apply to many [non-timber forest species](#) and other plants with Indigenous values.
- [BC Government Tree Seed Centre](#) The Tree Seed Centre is the primary provider of cone and seed services to B.C.'s forest industry and B.C. government staff. Tree Seed Centre clients include forest licensees, woodlot licensees, District and B.C. Timber Sales, seed orchards, forest nurseries, tree seed dealers, First Nations, researchers, educators and the public.
- [Vancouver Sun](#) feature story on tree seeds used in replanting forests. "This year more than a quarter-billion seedlings will be planted in B.C. forests with seeds provided by South Surrey's Tree Seed Centre's 36 tonnes of stock from 15 species. Back in 1958, the centre supplied seeds for 8 million seedlings, to give an idea of how much the operation has grown to today's 275 million a year." "And we still have seeds here in the freezer that are still viable and that were collected in the 1950s," said Michael Postma, manager of the

VANCOUVER SUN



Cones that will be processed for their seeds. PHOTO BY JASON PAYNE /PNG

Tree Seed Centre.