Nature WILD

For Kids
Who Love Nature
· Fall 2022 ·

NATURE KIDS BC
WWW.NATUREKIDSBC.CA

Space Invaders are taking over!

Become a Habitat Hero and stamp out invasive plants.

You can find me in your yard...what am I?

INSIDE...

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QUESTIONS? COMMENTS?

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Ecology and the Heart

When I was invited to join the ***NatureWILD*** editorial board, I jumped at the chance to share my love of ecology. Ecology is the science of how organisms (including us humans) are connected to each other and to their physical environment. But ecology is also a way of relating to nature. Much of what we value about nature comes from the heart, not the mind. As a professional ecologist, I believe we can't ignore that. Among the things that drew me to plants as a child was the joy I got from seeing things grow and the beauty of flowers. That is not to say that nature and our values are always aligned. Weeds create such big problems that B.C. laws require us to control them. Yet some weeds bring us pleasure because of their lovely flowers.

I am delighted to be involved with ***NatureWILD*** because every issue is filled with articles that connect us to nature with facts and with fun. There is no better way to show that ecology includes us, too.

Dr. Mike Simpson is a member of the **NatureWILD** *editorial board. He is a professional vegetation ecologist with WSP Golder and a science writer who lives in the Shuswap.*

@NATUREKIDSBC /NATUREKIDSBC @NATUREKIDSBC

NatureKids BC is **THE** club for children and families who love to be outdoors. Members discover nature on Explorer Days organized by volunteer leaders and guided by experts, participate in stewardship projects, earn Action Awards and receive NATUREWILD magazine 4 times a year.

Come join us! Family membership is complimentary for the 2022-2023 year! Or subscribe to NATUREWILD magazine: **$20** for 4 issues per year. For more information and to sign up, go to: naturekidsbc.ca

Thank you to our sponsors and supporters who share our vision of connecting all children with nature.

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Cover photos: Isopod: istock • your girl: ISCBC • Orange hawkweed & Burdock: Mike Simpson, B.C. • **Page 2:** photo credit: Mike Simpson, B.C.

Two Maple Leaves, acrylic, 1967 ©Robert Bateman

Looking at Leaves

If you find yourself worrying, go outside, take three breaths, address a tree and quietly say, "Thank you." If you can't find a tree, a dandelion will do… . Nature is magic. – Robert Bateman

Leaf facts

Leaves come in different sizes, shapes, and arrangements.

Broad/Simple:

Toothed Lobed Toothless

Compound:

Opposite Alternate

- Chlorophyll makes leaves green. It enables the leaves to make food for the tree.
- Leaves change colour in fall when the chlorophyll breaks down. Over the winter, the tree stops making food.

Your turn

Practise paying attention to leaf shapes by drawing the other half of these three leaves. *Can you identify them? See the bottom of the page for the answers.*

Activity:

1. Draw the other half of these 3 leaves
2. Now go outside and hunt for leaves. Make a sketch of each one you find:
   - lobed leaf
   - compound leaf
   - brown leaf
   - toothless leaf
   - leaf with holes in it
   - red leaf
   - a leaf that smells good
   - a leaf from the tallest tree

NATURE Sketch

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L to R: Cottonwood, alder, Douglas maple

Space invaders

By Dr. Mike Simpson

Weeds seem to follow humans wherever we go. Whether we're in the city, on a farm, or in a cabin in the woods, weeds won't be far away. That's because when we build things, plant things, or just kick over rocks, we create spaces where nothing is growing. Weeds fill up those spaces fast, and once they've taken root, it's hard to get rid of them.

That's one reason scientists call them **invasive plants**. Another is that, like alien invaders, weeds often come from another world (although in this case that may be another province or country, not another planet!). Invasive plants come to B.C. in many ways. Seeds may get accidentally transported here when produce is brought in, or they may be attached to travellers' clothing. Other weeds are **garden escapees**: they were planted in a garden, and then their seeds spread to parks and roadsides. Some have been brought in by people who don't know, or don't care, about Canadian laws restricting the transport of non-native species.

Annual weeds live for one season and generally produce many seeds that germinate and grow quickly. This gives the next generation a better chance of being the first plants to take over any newly cleared patches of soil. Another way some species achieve this is by producing seeds that can remain dormant in the soil for several seasons, ready to germinate if the soil is disturbed.

Perennial weeds, like the Dandelion (*Taraxacum officinale*), can come up year after year because they put down deep roots. Below the soil, the Dandelion has a long tap root that keeps the plant alive over winter so it can grow again in the spring. That root is difficult to pull up and can resprout if any of it remains in the ground. Plus the Dandelion spreads very easily because it makes masses of seeds. Each plant produces an average of 15,000 seeds, each of which can be carried far by the wind.

Mountain Knapweed
a garden escapee

Orange Hawkweed

Photo credits: page 4 & 5: Mike Simpson, B.C.

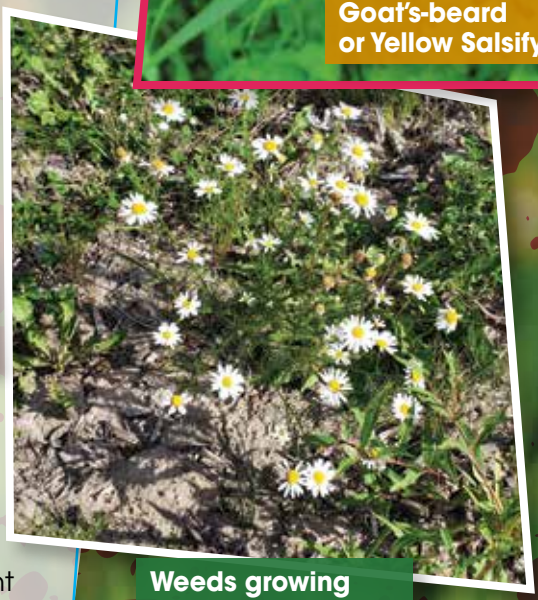
Although the term "weedy" generally suggests something that is scrawny, spindly, and unattractive, several invasive plants, like Dandelion, Spotted Knapweed (*Centaurea nigra*), and Goat's-beard (*Tragopogon dubius*), produce attractive flowers. Others, such as Japanese Knotweed (*Fallopia japonica*), are sturdy and vigorous. Knotweed and species like it squeeze out native species so they can win the competition for space and other resources. If left unchecked, they can replace native plant communities.

Spotted Knapweed

To try to protect BC's biodiversity, the provincial government has passed a law called the Weed Control Act. It makes landowners responsible for controlling specific weeds that "potentially harm the province's natural environment or adversely affect people's health." Some weeds contain toxic substances that can hurt livestock or people. These **noxious weeds** must be removed by landowners.

Goat's-beard or Yellow Salsify

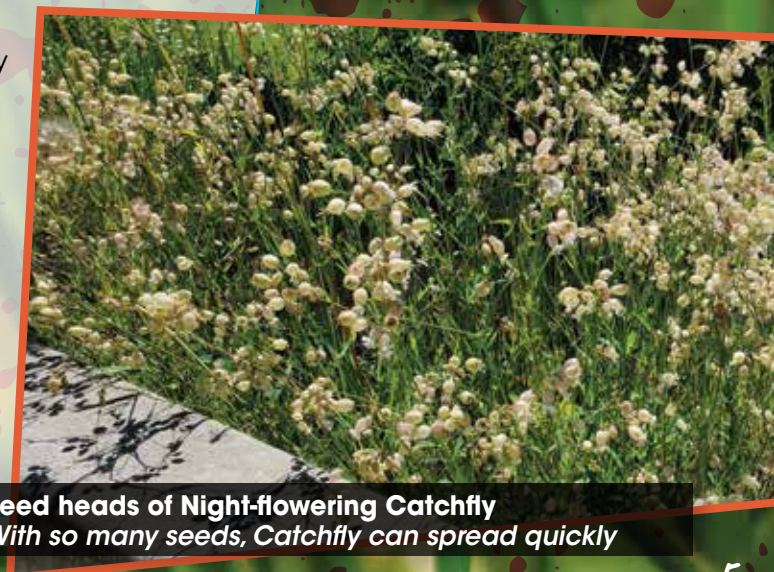
Japanese Knotweed



Weeds growing on open soil

Landowners aren't the only line of resistance against weeds, though. We can all help to keep invasive plants at bay. By growing only native plants in our gardens, we can prevent exotic species from spreading into the wild. Also, we can limit the spread of seeds by cleaning mud and plant material off tires, boots, and clothing if we have been anywhere that weeds are growing. Seedheads of Bedstraw (*Galium* species) and Burdock (*Arctium* species), for example, spread naturally by attaching to animal fur, so they can easily get on pants and coats. If you find these on you, throw them in the garbage, not on the ground. Perhaps the simplest thing we can do, though, is to watch out for weeds in disturbed areas and to pull them up. If we pull the weeds before they flower, they won't be able to launch a fresh invasion of B.C.'s natural habitats.

Dr. Mike Simpson is a Registered Professional Biologist, vegetation ecologist, and science writer based in Salmon Arm, British Columbia.



Seed heads of Night-flowering Catchfly
With so many seeds, Catchfly can spread quickly

Be a Healthy Habitat Hero!

Did you know that B.C. has more species of plants and animals than any other province or territory in Canada? The many different habitats in our province—grasslands, alpine meadows, rainforests, deserts—provide homes for a rich variety of life. But many native plants and animals are threatened by invasive species.

Invasive species are plants, animals, fungi, and other living things that have been introduced into ecosystems and spread rapidly. If they take over habitats from native species, invasive species can cause a lot of harm. The good news? You can help stop invasive species in their tracks! Here's what some kids in B.C. have been doing to protect biodiversity.

Removing Burdock in Fernie

In Fernie, Kootenay Discovery School students who were choosing plants for their school garden got curious about what plants and animals are non-native and invasive in their community. When the students went out on the local trails, they noticed a lot of Burdock. So they decided to pull it out on Earth Day. They found out that it is hard work removing invasives!

They also learned how important it is to remove invasive plants before they get established. Burdock spreads by means of its sticky burrs. The Kootenay students learned to check for burrs on their clothing so they wouldn't accidentally spread the plants.

Photo credits: Burdock: Mike Simpson, B.C. • Young girl: ISCBC

Did you know that BC is home to more than 3,500 native plant species?

The Discovery School also took part in the City Nature Challenge BioBlitz for the East Kootenays. They learned that many of the plants that they had taken pictures of and uploaded to iNaturalist were listed as invasive. Now the Kootenay Discovery School is connected with the City of Fernie, and they have become official stewards for the Maidon Lake area. They will be collecting data about invasive species in the area and continuing to pull weeds.

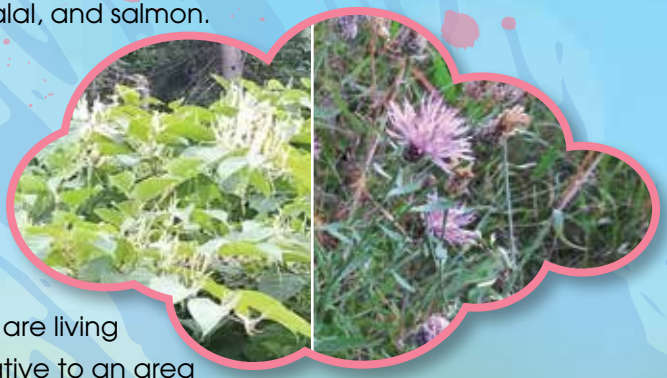
Restoring Caribou Heights Forest

Matthew Syvenky noticed that Himalayan blackberry was taking over Cariboo Heights Forest in Burnaby. So he joined the Invasive Species Council Youth Program to tackle this problem. Although blackberry produces tasty berries, it also forms dense patches that our native plants cannot grow through. Its sharp thorns can injure animals (including people).

Matthew and his friends pulled over 500 kilograms of Himalayan blackberry out of the forest. That's about the same weight as a horse! In the cleared area they planted native species, which included Red-flowering currant, Nootka rose, Western sword fern, Oregon grape, Thimbleberry, and Snowberry. Matthew is a Youth Champion: his Rubus Restoration project helped bring the community together to learn new skills and keep natural spaces safe from invasive species.

Definitions/Fun Facts:

Native species are living things that have lived and evolved in an area for a long time and are part of a natural, balanced ecosystem. Some examples of native species in BC are moose, salal, and salmon.



Invasive species are living things that are not native to an area and that spread rapidly and take over, causing harm to people and the environment (e.g., *Japanese Knotweed and Spotted Knapweed*).

Not all non-native species are invasive.
Some examples of non-native species that do not spread and cause harm in B.C. are tomatoes and tulips.

Our thanks to the Invasive Species Council of BC for this story. For more information, fun games, and learning activities, check out **bcinvasives.ca** or email **education@bcinvasives.ca**

Photo credits: Matthew: Matthew Syvenky, B.C. • Japanese Knotweed and Spotted Knapweed: Mike Simpson, B.C. • remainder: istock

Meet So Isop

You might think this is an insect, but it's not! It's an *isopod*.

Newly releas offspring!

Isopods belong to the class Crustacea. Most crustaceans have a hard **exoskeleton** with at least ten legs. Crabs, shrimp, prawns, beachhoppers, and even barnacles are crustaceans.

Isopods live in many different environments—some in the ocean, some in fresh water, and some on land. All isopods, even the terrestrial ones, breathe with gills. The gills must be kept moist, so isopods need water wherever they live. Terrestrial isopods can be found in forests and gardens, under rocks or logs, hiding in leaf litter or in crevices. Some species are nocturnal and avoid being out in the sun.

Isopods use their antennae to search for food and taste it. Adult isopods have seven pairs of legs on the thorax, and all those legs are the same. That's where the name isopod comes from: *iso* means same and *pod* means foot.

Isopods vary in colour from dark gray to white or even orange. Some have spots or stripes. Colourful, patterned isopods are sometimes raised as pets.

Isopods are **detritivores**: they eat dead plant and animal matter. They love compost piles!

Female isopods carry fertilized eggs (up to 100) in a marsupium or brood pouch until they hatch. Baby isopods look like small, white adults but they have only five pairs of legs. After the young leave the marsupium, they live in family groups until they are grown.

Each mated pair of isopods produces a chemical "badge" for their family that lets them know which baby isopods are theirs. The pair will not allow any strange young isopods to cuddle up with them. They won't share any food with strangers and will actually chase them away or even eat them!

Isopods molt in two stages. First the back half molts, and two to three days later, the front half molts. Coloration of both halves may be different at this time, and often you can see this as you collect them.

Photo credits: Newly released offspring: Brian Herrin, B.C. • Remainder: istock

me Local
oods

By Brian Herrin

Many species are fast walkers, but it is easy to pick them up and observe them in the palm of your hand.

Here are some isopods you might meet:

Roly Poly or Pill Bug (*Armadillidium vulgare*). They can roll up into a sphere (just like an Armadillo) to protect themselves from predators.

Wood Louse or Sow Bug (*Porcellio scaber*). It cannot roll up into a ball. Although most sow bugs are gray, there can often be brown, yellow or orange specimens. They often live in groups under rocks, flowerpots, boards, logs or any cover that provides darkness and dampness.

Wood Bug (*Oniscus asellus*). It is particularly fond of rotting wood. This is one of the commonest species found under logs and stones.

Many animals prey on isopods: toads, shrews, young owls, foxes, centipedes, and spiders. The red-brown Woodlouse Spider has large fangs well-suited for piercing a woodlouse's exoskeleton and injecting venom. Fearsome!

Powered by Water

Our thanks to BC Hydro for providing this story and the accompanying illustrations.

Some words in this story are missing. Can you find the right word for each blank?

Turbine • Kits • Evaporate • Penstocks • Precipitate • Freshwater • Electricity • Condensation

Hi, I am Wakwi, a water droplet. I am as old as the earth. Sometimes I am up in the clouds and fall to earth as snow or rain. When the sun comes out, I heat up and _____ back to the clouds. Round and round I cycle, having different adventures each time. Would you like to come on an adventure with me?

The Earth's water cycle began about 3.8 billion years ago https://education.nationalgeographic.org/resource/water-cycle

Let's start in the clouds as _____ and float for a while. Down below, we can see snow on the tree tops and a deer drinking from a stream. And there's someone swimming in the lake. Water is everywhere, and every living thing needs it. We need to save water so that there is enough to go around. Even small actions help, like turning off the tap when we brush our teeth, and taking shorter showers.

About 75% of the earth's surface is covered by water or ice https://education.nationalgeographic.org/resource/water-cycle

Let's get ready to _____ now. Close your eyes and hold on! We'll rain on the Coast Mountains. When we land, we'll sink deep into the ground. Some other droplets will go into the tree roots and rise up the tree by transpiration. We are always on the move, falling with gravity and evaporating with the sun.

Let's slip through the soil, down the mountain and into the Stave River. Look! Is that a beaver down there?

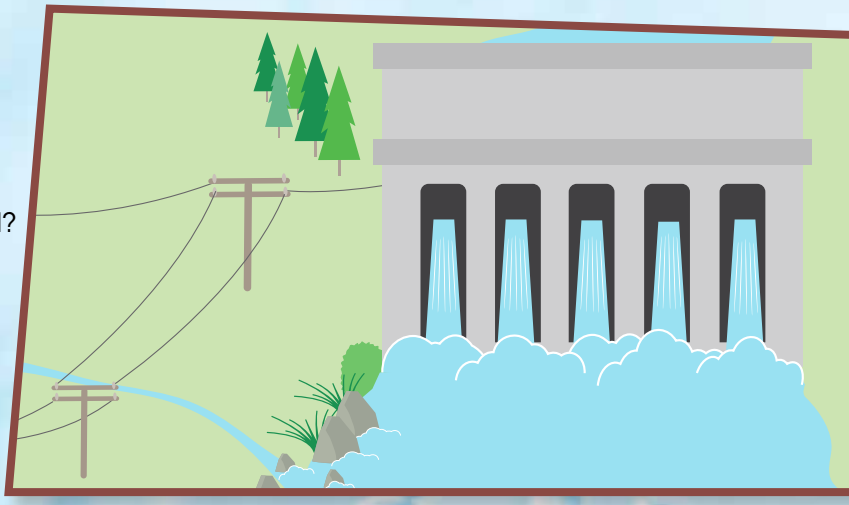
"Hello, Beaver. What are you doing?"

"Hello, Wakwi. I'm building a dam out of trees and branches. It's going to make the water rise in my pond and hide the entrance to my lodge. That will keep my family of _____ safe inside.

All beavers need water to survive. They live in or around freshwater ponds, lakes, rivers, marshes and swamps. https://www.livescience.com/52460-beavers.html

Beavers need lots of water for drinking, cooling off, and building their homes. If we humans use water carefully, there will be more to share with the beavers and other creatures.

But wait! We're slowing down. What's up ahead? There's a huge lake. And is that a Bald Eagle?



"Hello, Eagle. You have a good view from up there. What can you tell us about this lake?"

"Hello, Wakwi. This is Stave Lake. See the dam at the far end? Follow me and we'll have a closer look. It's like the dams that beavers build, only it's concrete and much bigger. The water held back by the dam spills down pipes called _____ . The falling water makes the _____ spin like a wheel. The spinning makes electricity, and that powers lights in people's homes. Amazing, eh?"

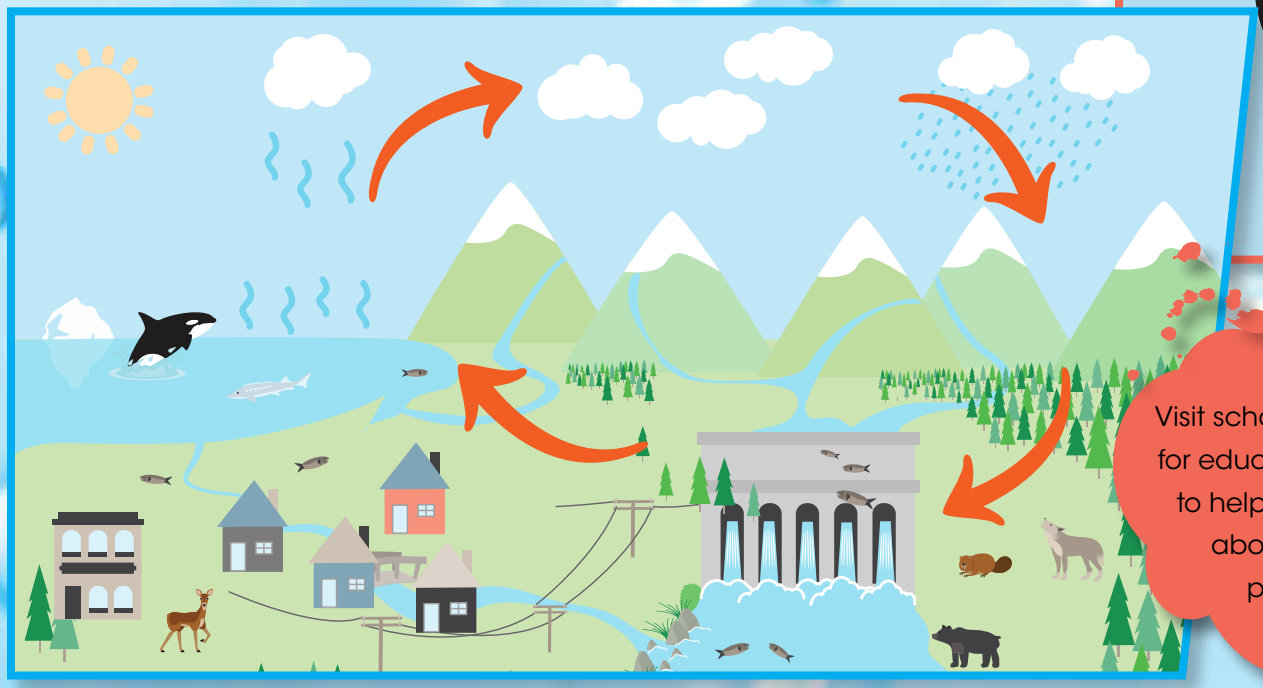
Water is everywhere. Plants need water, animals need water, and humans need it to make electricity. So let's conserve water and _____ . Let's turn off lights, hang our clothes up to dry, and play outdoors instead of watching screens. Remember, saving electricity saves water.

Now that we've passed the dam, let's flow down to where the Stave River joins the Fraser. Do you taste salt? We're getting close to the ocean. Did you know many species, including humans, can't drink ocean water? They need _____ to survive. That's another reason to share this precious resource – me!

Only **about three percent** of Earth's water is freshwater. Of that, only about 1.2 percent can be used as drinking water; the rest is locked up in glaciers, ice caps, and permafrost, or buried deep in the ground. https://education.nationalgeographic.org/resource/earths-fresh-water

Now we're in the Pacific Ocean, and there's an Orca. She's coming closer and closer, and oh no, she's swallowing me! It's very dark inside, but wait! Whee! I'm flying out her spout. And the sun is shining and evaporating me up, back up into the sky.

Well, that was an amazing adventure. Thanks for coming along!



Visit schools.bchydro.com for educational resources to help you learn more about a province powered by water.

Wakwi's adventure is called the **water cycle**.

Level: Nature

Illustrated by Izzy Law

A Read Aloud Story


wewwwww~
look at him go!
rustle rustle
hm?
whoa.
That was so cool!
I've never seen a fox before.
?
WHAT?!
NO. WAY.
This is so much cooler than leveling up...

END!

Have a Nature Question?

ASK AL & ROB

Al Grass has worked as a career park naturalist and ranger throughout B.C. Now he is a well-known nature tour leader and photographer. He and his friend Rob Alexander often go on nature walks together. Photo Credit: Rob Alexander, B.C.

Why do trees have bark?

Fire-scarred Ponderosa pine

Bark, the outer covering of a tree's trunk, branches, and roots, protects the tree from weather and insect pests. It can even protect the tree from fire.

Trees also have an inner bark that carries the tree's sap. The sap is rich in sugars and minerals, and the inner bark distributes this food throughout the tree. Tree bark varies in texture. It can be smooth or rough, papery or thick.

This Red-breasted nuthatch is going to store his sunflower seed in the rough bark of a Douglas fir.

This Brown Creeper is looking for insects in the bark.

This Red-breasted Sapsucker is drilling through to the inner bark to get the sap.

Photo Credits: Rob Alexander, B.C.

How is a dog like a tree?

It has a bark too!

Make a Castle for a Crowd of Isopods

Dr Eucan Doowitt

WHAT YOU CAN DO!

What you need:

- some humus or good garden soil
- a container with clear sides, like a plastic cake box

Turn the clear top upside down and put in a 3 cm layer of humus or soil. This is the "floor" for your castle. Use the black plastic base as a loose-fitting lid.

Gather up a few families for your castle. Don't worry: isopods do not bite! When you have 25 or 30, place them in your castle. Add a few leaves for them to crawl under.

Keep your castle in a shady spot. Spray water on it every day or so. Although isopods cannot swim, they need constant humidity to keep their gills damp.

But make sure there is some dry land in your castle. To see how important this is, place an isopod on a waterlogged paper towel. Very soon it will lift its back end. It is gasping for air! Don't let your isopod do this for very long!

Every few weeks, add fresh humus like lawn trimmings, tea leaves, or fish food. Do not give your isopods any mouldy food.

Be sure to release the isopods once you've had a chance to observe them for a while.

Photo credits: Brian Herrin, B.C. • soil and isopod border: istock

Nature WILD NEWS

Autumn is here, and it's back-to-school time! NatureKids across the province have had a busy summer—fishing, canoeing, hiking, chasing tadpoles, and planting food gardens!

Our friends at Fresh Water Fisheries Society of BC have hosted fishing days for children in Nelson, Abbotsford, Barriere, Hope, Oliver, Merritt, Kamloops and Vancouver. And the club in Merritt hosted its annual Weed Warrior weed pull and BBQ.

This summer we had the chance to connect with communities in person! In Kelownd, with our friends from the Central Okanagan Naturalists Club, we attended farmers markets, the Kelowna Days Festival, and Canada Day celebrations.

We've also been building community partnerships. With Colour the Trails, we went birding at Reifel Bird Sanctuary, and with Vancouver Aboriginal Children & Family Services Society, we had a great day at Cates Park in North Vancouver.

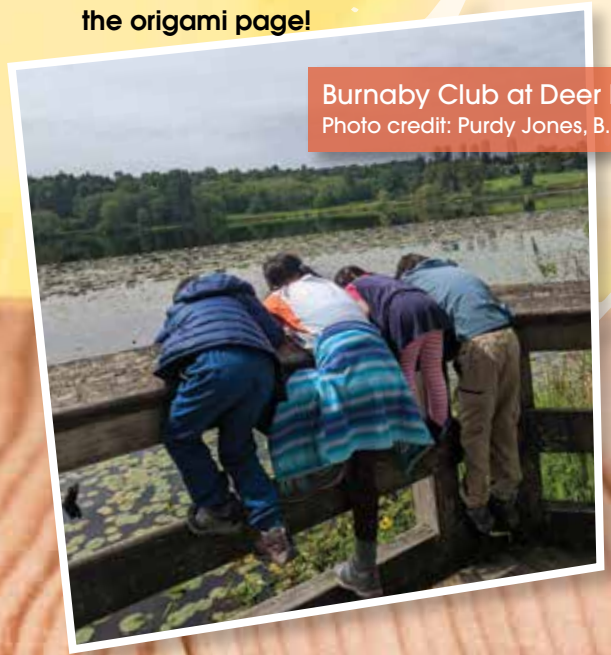
On September 25 we will celebrate B.C. Rivers Day by learning about the ecosystems that depend on our rivers. Throughout the province, NatureKids and their families will attend salmon festivals to welcome this year's run as the fish come back to spawn.

At the NatureKids office, we've been getting our Powerful Plant toolkit ready for launch this autumn. The toolkit will help you identify native plants, tackle invasive species, and learn about indigenous uses of B.C. flora.

We are sincerely grateful to all of our nature mentors and club leaders. Your work motivates our members and their families to protect our native plants and animals.

Finally, don't miss the special insert in this issue of *NatureWILD*. It's an activity sheet from our partners at BC Hydro. **Have fun with the origami page!**

Barriere, Fishing at Dixon Lake
Photo credit: C. Staples, B.C.



Burnaby Club at Deer Lake Park
Photo credit: Purdy Jones, B.C.

Texada Island Painted Turtles
Photo credit: Lisa Leves, B.C.

Native Edibles

Many native plants are edible. Huckleberries and salmonberries are easy to harvest: just pop them in your mouth and enjoy! But some native plants require special preparation. The root of the Common Camas has to be roasted for up to two days in order to bring out its sweetness. Bitterroot has to be peeled, dried, and boiled before eating.

Be sure to check with an expert before eating any native plant. Some look-alike plants are poisonous.

1. Northern Boreal Mountains **Crowberry**

2. Taiga Plains **Cloudberry**

3. Boreal Plains **Soopolallie**

4. Sub-Boreal Interior **Bunchberry**

5. Coast and Mountains **Salmonberry**

6. Central Interior **Black Huckleberry**

9. Georgia Depression **Common Camas**

8. Southern Interior **Arrowleaf Balsamroot**

7. Southern Interior Mountains **Bitterroot**

Photo credits:
4, 5, 7, 9: Rosemary Taylor, B.C.
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