

Nature WILD

For Kids
Who Love Nature
• Spring 2019 •

 NATURE
KIDS^{BC}
www.naturekidsbc.ca

What would
you do if you were
this small?!



Drop that
watering
& can!

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Whether you have a garden or patio, or share a community garden, it is never too early to start thinking about what to plant when it gets warmer. In this issue we share ideas about xeriscaping, or 'water-wise gardening', with flowers and vegetables that will do well in dry summers. As you choose your plants, also think about which ones are good for pollination. In **NATUREWILD** last summer we wrote about the importance of pollination and how to provide the right plants. If you do not have these articles, they are posted, along with a butterfly i/d card, at <https://www.naturekidsbc.ca/be-a-naturekid/stewardship-citizen-science/waterwisegardeningandpollinators/>

Happy Gardening!



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Cynthia Berg, President
president@naturekidsbc.ca

Christina Chowanec,
Program Coordinator
coordinator@naturekidsbc.ca

Niki Dun, Membership and Office
Coordinator: info@naturekidsbc.ca

NatureWILD Editorial Committee
naturewild@naturekidsbc.ca

Editorial Board:

Daphne Solecki, Kristine Webber,
Brian Herrin, Tricia Edgar, Simon Briault,
Susan Fisher and Al Grass.

Design & Production: Alison Garrad

NatureKIDS BC Head Office
1620 Mt. Seymour Rd.
North Van, BC V7G 2R9
Tel: 604-985-3059

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: **\$35** per year. Individual adult membership: \$25 per year. Or subscribe to **NATUREWILD** magazine: \$20 for 4 issues per year.

For more information and to sign up online go to: naturekidsbc.ca

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QUESTIONS?
COMMENTS?



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The Five Hummingbirds of B.C.



One of the most fascinating activities of hummingbirds is the **courtship display** where the male zooms high in the air and dives down at great speed to impress the female. As the male dives he sends out squeaks or trills which are made as his dive speed vibrates his tail feathers. Each hummingbird species has a different dive pattern: this pattern can help you identify them.



1. Rufous

Display: flies high straight up, then dives steeply with whining and popping sounds at the bottom of the dive.



3. Calliope

Display: Calliope males zoom straight up as much as 10 metres, then go down a short way and hover for a few moments, go down some more and hover again, over and over until they are level with the female, then they sometimes spin around together in a 'circle dance'.



4. Ruby-throated

Display: the male flies up 15 metres or more, then dives down, ending with fast side-to-side swings in front of the female.



2. Anna's

Display: zooms straight up and back down, wings folded. The male is travelling so fast that when he pulls out of his dive he can experience about 10 gs - more than a jet pilot can withstand.



5. Black-chinned

Display: dives by swinging back and forth in wide U-shaped arcs, making whirring sounds on each dive.

I am a Fish

by Walleye Nick

It's not easy being a fish. For starters, we don't have eyelashes and we know that only animals with cute eyelashes make the posters!! And life in water is w-a-a-y more difficult than on land. Just think about it.

Breathing

First, we had to evolve a way to breathe underwater. All living things need oxygen so if you can't get oxygen into your body, life is not possible. There **is** oxygen in water, lots of it, but you can't get any by using your lungs, as you humans have no doubt found out in the swimming pool. Over many thousands of years, we fish developed a brilliant system that can get the oxygen from the water. We developed **gills**, which are located just behind our mouths and are protected by the **operculum** or gill cover.

Want to know how gills work? Next time you observe a fish (it might be me!) in an aquarium or in a pond, look closely at the gill covers on the side of my head. You'll see them move in and out, but what you can't see is that the water is going in through my mouth and coming out through the back of the gill covers. As the water flows over my gills, the oxygen in the water is taken up by parts of the gills called the **lamellae**. The lamellae have tiny blood vessels that can take up oxygen from the water into my bloodstream. Then my heart pumps the oxygenated blood all through my body.

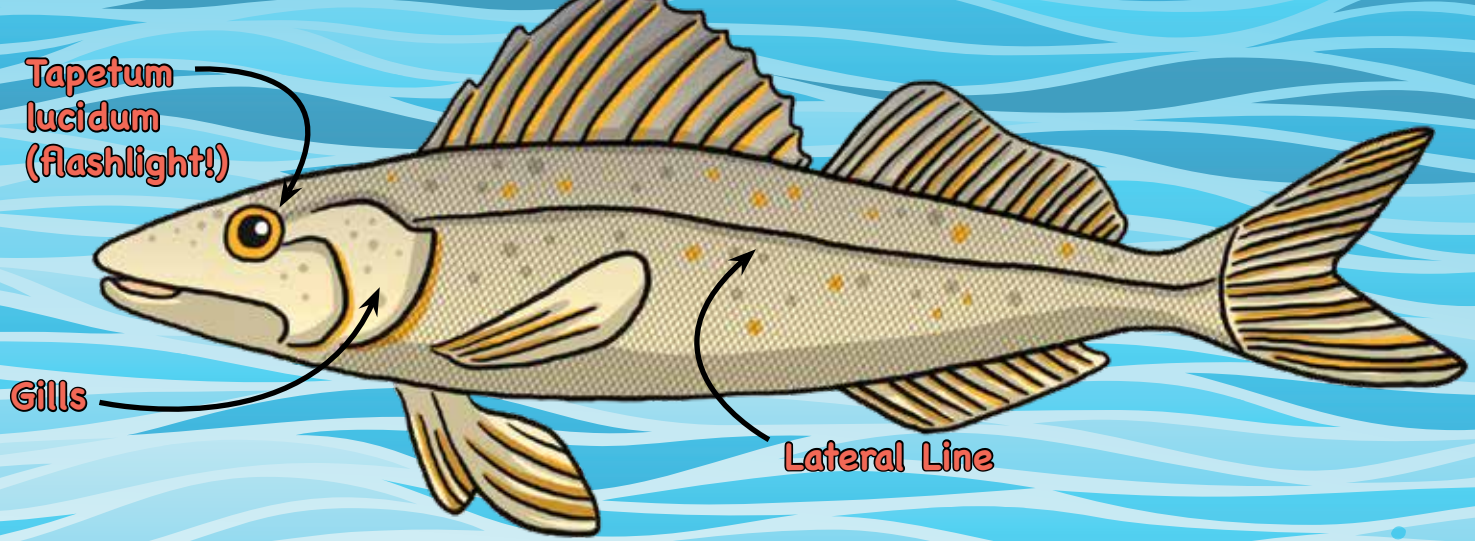
Finding Our Way Around

Have you ever thought about how we fish navigate in water? Just imagine what it's like to have to find your way through huge oceans and large lakes, or to swim in large rivers with incredibly strong currents. Not only do we need very strong muscles but - more importantly - we often need to find our way around in places that have little or no light.

OXYGEN!

We fish need oxygen just as much as land animals do. Fish and other aquatic animals must have water with plenty of oxygen to survive.

One of the ways that oxygen is used up in water is by people dumping things like human waste and garbage from boats into the water. This stuff uses up lots of oxygen as it decomposes, leaving little or no oxygen for fish and other animals. Please do everything you can to keep our lakes, rivers and ocean clean!!



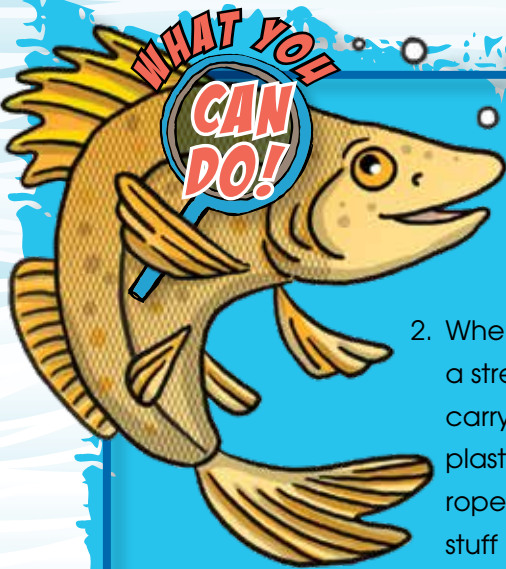
A **walleye** such as myself has an organ in its eye called the **Tapetum lucidum** that reflects the light back through the retina of the eye to make more light, almost like a low-power flashlight.(***)

To help us navigate, our body also has another special organ called the **lateral line**. In most fish you can see the lateral line like a faint stripe along both sides of the body. The lateral line is made up of tiny specialized cells that can detect changes in water pressure due to movements and vibrations. For example, we can tell where we are in a river because the lateral line can feel the different water current pressure on each side.

We can also detect vibrations in the water made by movements of other fish, warning us of predators or signalling something good to eat.

These are some of the clever ways that we fish survive in our challenging watery environment. I could tell you a lot more, but I don't have any more space!

(***) Many land-based night-hunters such as owls, cats and spiders, also have a Tapetum lucidum.



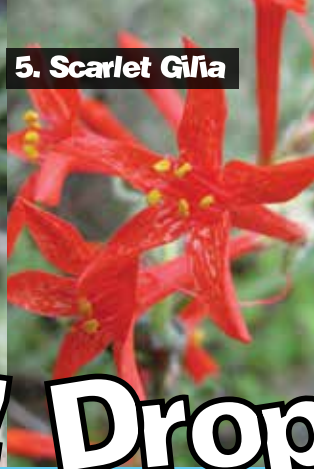
...to keep water clean.

1. Don't flush even small plastic trash like band-aids or Qtips down the toilet.
2. When you go for a walk beside a stream, lake or sea shore, carry a bag and collect up plastic cutlery, bags, drink cups, rope, any kind of man-made stuff before they get into the water.

Put it into a garbage can with lid.



Walleye Nick (aka Nick Baccante) is a retired fish biologist living in Fort St. John.



Turn off that hose! Drop

Get Water Wise This Summer - By Tricia Edgar

You know that the way to make your plants happy is to provide them with lots of water. Plants need water to survive. Water is part of photosynthesis – that's the way plants make their food. With enough water, a plant can grow tall and make lots of leaves, flowers, fruit, and seeds.

As the weather gets warmer, you might be thinking of rushing outdoors to water your garden.

Stop!

Taking care of your garden uses a lot of water, with the most amount of water used in the summer months. But - summers are getting warmer and drier, while we won't be getting any more water.

SO - How can you use less water in the summertime? Try **xeriscaping**, which is the name for 'water wise gardening'.

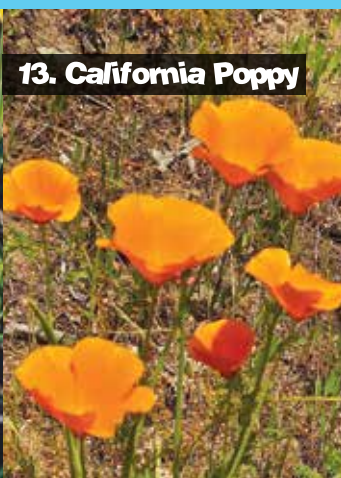
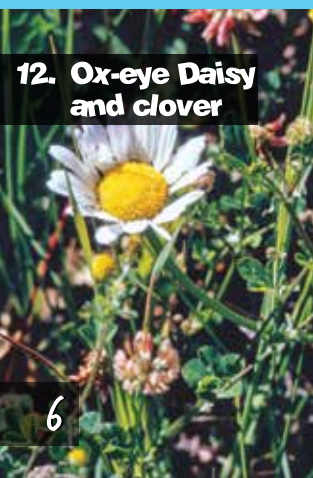
Choosing Plants:

- Look for tougher plants that have 'armour' to help them survive the hot, dry summers. Plants with thick, waxy leaves such as salal or sword fern are best at keeping the water inside a plant.
- Choose plants that normally grow in hot, dry places like the beautiful prickly pear cactus or balsam root.
- If you want to grow plants from other parts of the world, choose plants that love dry places. Flowers such as brown-eyed Susan, aster, coreopsis, bellflower, daisy, and purple coneflower can make a meadow in your garden, and you won't need to water it very often.

Vegetables:

arugula, chard, beans, and many Asian greens like hot dry weather. Plant them in loose soil with lots of compost, which has holes in it to keep water in the soil instead of letting it evaporate or drain away.

Tomatoes need lots of water so use the water you've collected in a rain barrel instead of getting water from the tap.



6. Ocean Spray**7. Larkspur****8. Horsebrush****9. Pink Yarrow****10. Manzanita****11. Hollyhock**

that watering can!

Saving Water:

- Water your plants early in the morning or in the evening. If you water them in the afternoon when the soil is really hot all that water may just evaporate and head back into the air again.
- Give your plants a blanket to keep the water in. Put a mulch of leaves from last fall on top of your garden beds to protect your plants from the hot summer sun. When the water soaks into the ground this mulch will stop the water from evaporating into the air again.
- Let your lawn go brown in the summer. The grass will turn green again when it rains later in the year.

With some planning, you can be an 'ecosystem engineer', designing a garden that works well for people, plants, wildlife, and water.

Design Your Garden To Save Water:

- Plant your garden in 'storeys' like an apartment building. Grow taller plants like Oceanspray and Hairy Manzanita, then grow other plants below them. The big plants provide shade that keeps the smaller ones cool and damp.
- Do you have some favourite plants that really need more water? Make a 'rain-garden'. Dig a hollow at the bottom of a slope in your garden and run a shallow, pebble-lined gutter from your down-pipe to the hollow. Place those water-loving plants here. When rain falls it will run down to that hollow, collecting more water than the rest of your garden and your plants will be happy.



Photo credits: 1, 2, 4-8, 10-11, 13, 17, 21: Rosemary Taylor, B.C.
 • 3, 9, 15: Rob Alexander, B.C. • 12, 14, 20: David Shackleton, B.C.
 • 16, 18-19: Ron Long, B.C. • Watering can: DustyPixel, istockphotos.com

17. Asters**18. Prickly Pear Cactus****19. Milkweed****20. Brown-eyed Susan****21. Penstemon**

The McAbee - a Time Machine

Imagine if you had the chance to go back 53 million years to a time just after the dinosaurs had died out. Come with us as we explore the forested shore of an ancient lake. In the mild climate of this mountainous upland, insects never seen before rested on the plants while new species of birds and fish flew and swam close to shore hoping for an insect meal or even a fish dinner.

As life on earth was changing the lake began to fill up with the sediment that preserved remains of the life in this ancient forest. Tiny creatures in the water called diatoms died and their delicate shells fell to the bottom by the millions. These microscopic shells helped create a very fine mud that eventually solidified around anything else that fell into the water and saved them in the form of fossils that we can now see. These fossils include insects, birds, fish, flowers and other plant parts from the forest that grew there, including some large trees such as palms, redwoods, sassafras and ginkgos.

The fossils of the insects are especially numerous and are among the finest from this time that have ever been found. Even the minute hairs and colour patterns on their tiny wings are preserved. These world-class treasures are right here in B.C.!

This amazing place is the McAbee Fossil Bed near Cache Creek, a few hours' drive from Vancouver. Dr. Bruce Archibald, a research associate at the Royal B.C. Museum, Simon Fraser University, and Harvard University, recently visited the area for three weeks and found at least **278** new species which he says are just "the tip of the iceberg".

The stunning photos with this story show some of the examples carefully exposed and photographed by Bruce to show amazing details such as delicate wing veins and tiny hairs.

When he investigated the area, he realized what an incredible opportunity this would be for scientists, tourists and keen young people like you to step into this 'time-machine', especially if you were accompanied by naturalist interpreters trained to show off the wonderful finds.

Fortunately, the McAbee is now protected as a provincial heritage site but these very detailed fossils deserve even more protection. Scientists and other experts who know the priceless value of the McAbee could plan a park in the B.C. Park system - a park for scientific exploration as well as carefully sited tourist facilities. This would allow for strong protection while offering experiences and opportunities for families to get glimpses of our past that lie within the rocks.

Wouldn't **you** like to visit such a place? If so, you could help make it happen! Join your voice with those who have already supported this idea - send a letter to:

The Honorable John Horgan
Langford - Juan de Fuca Community Office
122 - 2806 Jacklin Road
Victoria, BC V9B 5A4

OR email him at: premier@gov.bc.ca



Machine for British Columbia!

All the fossil species shown here have been found only at the McAbee site.



The McAbee fossil site in the Thompson River valley. The 53-million-year-old fossils are found in the light shale exposed on the hillside, behind paleontologist Bruce Archibald.



This scorpion fly, *Eomerope eonearctica*, is almost identical to a species that lived at the same time north of Vladivostok in Pacific-coastal Russia. At that time, 53 million years ago, you could have walked through forest from Vancouver to Vladivostok without getting your feet wet. Today, its only relatives live in the Valdivian forests of Chile.

Huge horntail wood wasp *Ypresiosirex orthosemos*, about seven centimeters long. This female has an impressively long egg-laying ovipositor on her end.



Fossil green lacewing *Adamsochrysa aspera*. This lacewing is now extinct. Today's lacewings help gardeners by eating aphids.



Winged queen ant, *Ypresiomyrma orbiculata*, about two and a half centimetres long, with a prominent stinger. At the time this ant existed its closest relatives lived in Russia and Denmark which shows there were connections between northern continents. Today, its relatives live only in the Australian region.



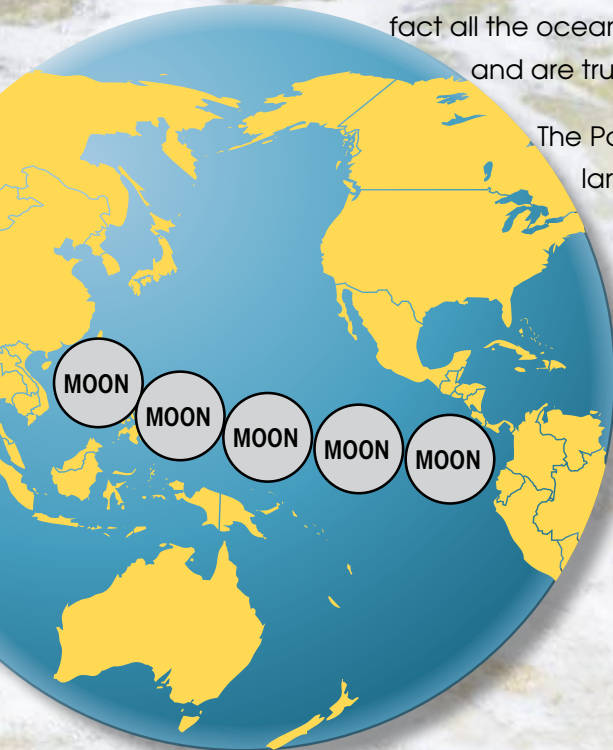
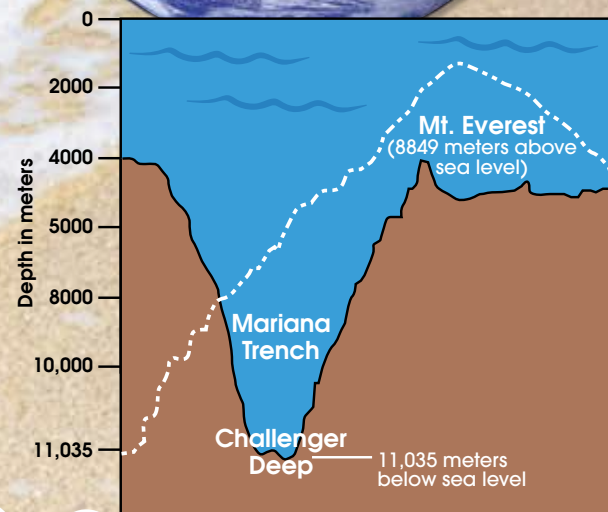
Large scorpionfly, *Dinokanaga hillsi* with a wingspan similar to that of a swallowtail butterfly, shows details of the beautiful colouration of its wings. Its family, *Dinopanorpidae*, flourished in our region and in Pacific-coastal Russia but is extinct today.

Amazing facts about the WATER on Planet Earth!

From outer space Earth looks blue because almost three quarters of the planet is covered in water, most of it in the oceans.

We usually count five Oceans – Pacific Ocean, Atlantic Ocean, Arctic Ocean, Indian Ocean and the Southern Ocean – but in fact all the oceans of the earth are connected and are truly one “World Ocean”.

The Pacific Ocean is the world’s largest ocean. At its widest it is five times as wide as the moon! At its deepest it is more than two km deeper than Mt. Everest is tall.



The world still has as much water on land, sea and air as it did millions of years ago. Why? Because water is recycled. Water on earth and sea evaporates into vapour and goes up into the cold upper atmosphere. There it condenses back into water and comes back to earth as rain or snow.

Watch the watercycle in action by making a rainforest in a jar.

see page 14 for directions!

So – just imagine! The rain you feel on your face today could include some of the same molecules of water that slid down the back of a dinosaur many, many years ago!

Water can change. It is the only substance found on earth that naturally comes in three forms – solid (snow, ice), liquid (rivers, lakes, seas) and gas (water vapour or steam).

Water can float on water. As water freezes, its molecules expand so that solid water (ice) ends up being less dense than liquid water. This is why ice can float.

When a sheet of ice forms on the surface of a lake, it actually keeps the water below warmer and stops it from freezing. If ice could not float, it would sink. Then rivers and lakes would freeze from bottom to top and nothing that lives in lakes could survive the winter.

Water can be powerful. When it rushes along in flooding rivers and in avalanches it can take everything with it – earth, rocks, trees, bridges and buildings. Glaciers do the same, only very slowly.

Even when it isn't moving, water can be powerful. When water that is sitting in cracks in soil or rocks or in walls freezes, it becomes solid and expands at the same time, so it can shatter rocks and walls into pieces.

Ocean water can freeze like fresh water, but at lower temperatures. Fresh water freezes at 0 degrees Celsius but seawater only starts to freeze at about -1.9 degrees Celsius because of the salt in it. When seawater really freezes, at about -21° Celsius, the ice contains very little salt because only the water part freezes. This ice can be melted down and used for drinking water by polar expeditions.

The polar ice cap at the North Pole is a giant slab of frozen ocean water, but at the South Pole there is land under the ice, so most of the ice comes from fallen snow.

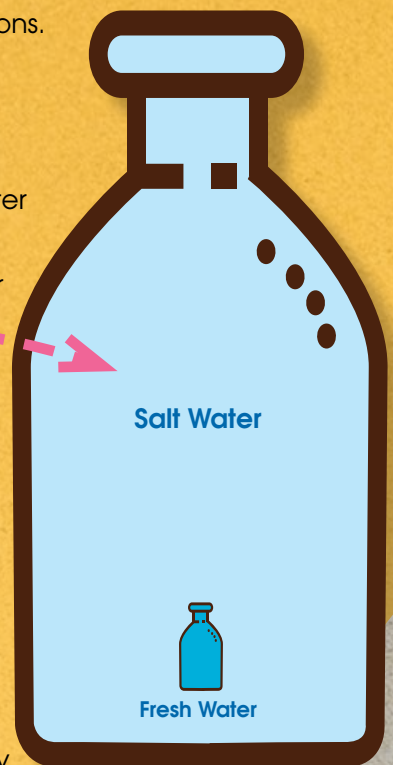
For land-based life the most important kind of water is fresh water, but of all the water that exists on Earth only about 2% is fresh water. The rest is in the ocean and is salty. Imagine if you could take all the water in the world and put it in two bottles, one for fresh water and one for salt water, it would look like this...

But only some fresh water is actually drinkable – more than half of the fresh water is locked up in glaciers and icecaps or is undrinkable in other ways.

So you can see that fresh water for people, wildlife and plants is very, very precious.

In many places on Earth there is not enough fresh water for people, animals and plants. Other places may get too much water all at once and suffer from flooding. In Canada, most of us are lucky enough to get clean drinkable water from the local water supply,

but even in B.C. there are places where people must boil their water before drinking it.



Contributors – Dr. Rita Winkler, Brian Herrin, Daphne Solecki, Kristine Webber.

A Read *Aloud* Story

If You Were Really Tiny

An entomopoem by Brian Herrin

Illustrated by Sara Theuerkauf



If you were really tiny,
half a centimetre tall,
Just think of all the
things that you could see.
The world you see around you
that you think of now as small
Would tower over you just like a tree!

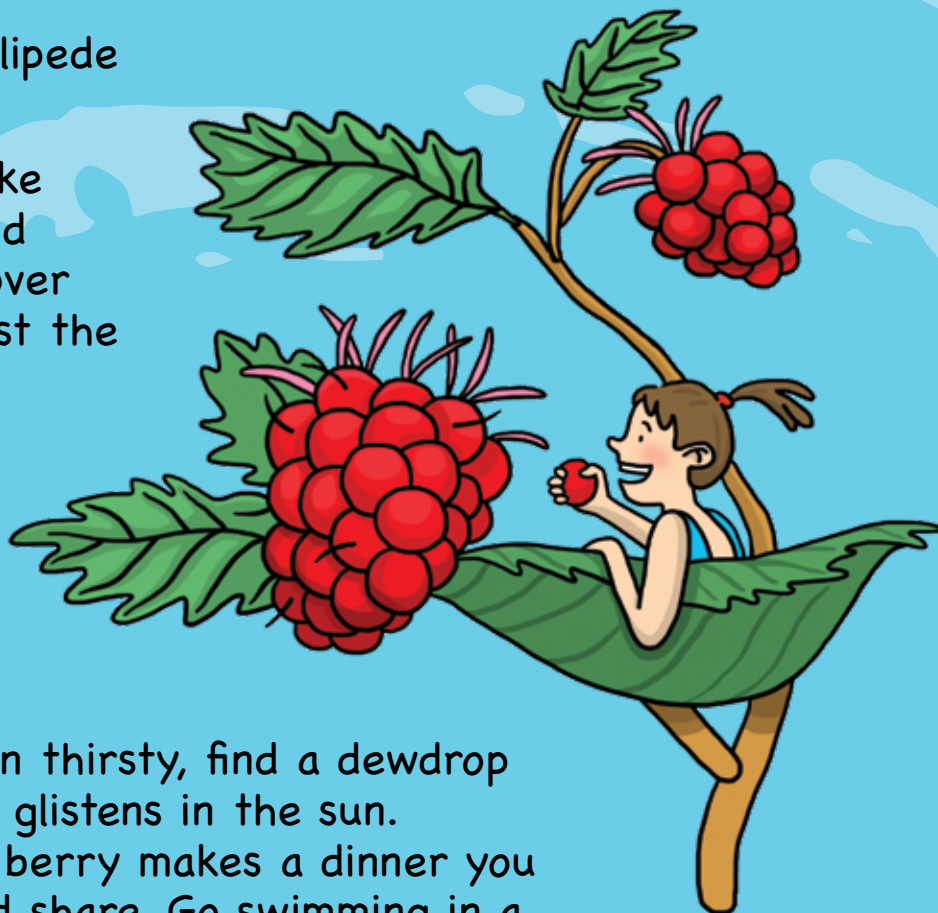


A leaf could be a shelter
if it drifted down just right.
A dragonfly could take you
on a trip.

Some cotton from a
cottonwood would keep
you warm at night. Sweet
nectar from the flowers
you could sip.

You might find that a millipede
was slowly passing by.

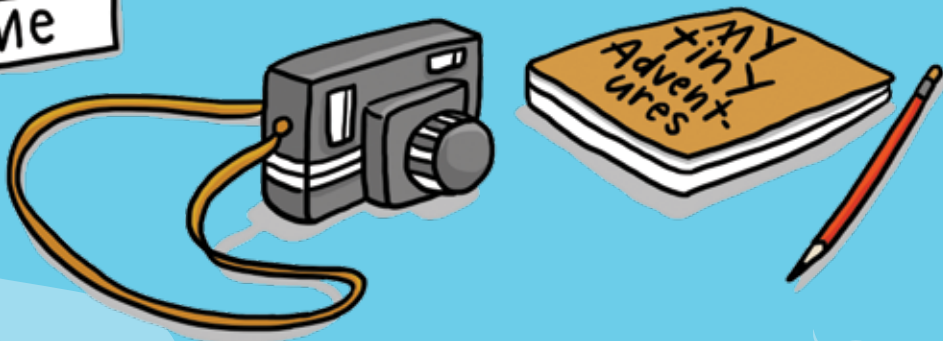
A thousand legs could take
you for a ride. You'd spend
an hour climbing up a clover
to the sky. And in amongst the
blossoms you could hide.



When thirsty, find a dewdrop
as it glistens in the sun.
One berry makes a dinner you
could share. Go swimming in a
puddle, if you want a little fun,
And use a fuzzy leaf to dry
your hair.



You'd have so much to talk
about, because of all you'd seen,
You'd need to write a book to tell it all.
You'd have so many stories of
the places you had been
When you were half a centimetre tall.



ASK AL

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. Al especially likes birds, insects and spiders. Photo Credit: Robert Alexander, B.C.



A Stump Story

This stump was once a living tree. It saw many seasons come and go - rainy, sunny, snowy, windy days. And then for some reason the tree died.

Now, seemingly dead, it is actually full of life and a very important part of the forest. Over many, many years the stump will break down as fungi, like the Turkey Tail, digest the wood, helping to return it to the soil. Insects tunnel through the dead tree and become food for woodpeckers. Some dead trees provide nesting holes for chickadees, woodpeckers and bats, to which they return year after year.

Yes, a dead tree, a stump or a fallen log is full of life.... Insects, spiders, millipedes mosses, liverworts - and more. They're all yours to discover and treasure.

To find out more about protecting wildlife trees go to
<https://www.for.gov.bc.ca/hfp/publications/00037/signs.pdf>

Photo credits: Stump: schizoform, CC • Turkeytail fungus: Todd Carnahan, B.C.



Dr. Doowitt: RainForest in a Jar.

Ever wish you could live in the forest? Next best thing – grow your own living rainforest (**biosphere**) in a jar to keep in your room.

What you'll need:

1. A mason jar or other glass container with a sealable top
2. Clean sand
3. Soil (that drains well)
4. Pebbles or small pieces of wood
5. A couple of 'mini-beasts' (worms, pill bugs, millipedes)
6. One or two small slow-growing plants (ferns, moss) collected from a location where you have permission to do so.
7. Water

What to do:

Make sure your glass jar is really clean (scrub with dish soap, rinse off, let dry).

Then add:

1. 2-3 cm sand at the bottom of the jar
2. Layer of soil 5-6 cm deep
3. Plants and mini-beasts
4. Enough water to dampen the sand layer (but don't make the soil soggy!)

NOW – tighten the lid securely on your 'biosphere' and put it in a place where it gets good lighting but is not in direct sunlight (too much sun will 'cook' your forest world!).



If you put in the right soil, plants and animals, and provide the right amount of light, your biosphere can exist for a very long time without you doing anything. **How does that happen?** The plants take up moisture (liquid = water) from the soil and release it through their leaves into the air (as a gas) where it collects on the lid of your jar and falls back down as "rain". It's the water cycle in action!



Nature WILD NEWS



Passports to Nature

Congratulations to siblings Abigail and Alister (Nanaimo) for completing their first Passports and to Julian (South Okanagan), Saffi (Nanaimo) and Tivon (Victoria) who sent in their 2nd passports. Emaya from (South Okanagan) completed her 6th passport and Maya (Delta Home Learners) completed her 12th(!) passport.

Many NatureKids clubs participated in this year's Christmas Bird Count for Kids. **Delta Home Learners** met at Boundary Bay Regional Park and identified a banded Bald Eagle, a Harris' Sparrow and Sanderlings. Thank you to all NatureKids for contributing to citizen science which aids in bird conservation! Delta HL Photo credit: Manon Coutu, B.C.



Comox Valley NatureKids had fun on their January Explorer Day at Wildwood Interpretive Forest, with a hike through the forest, a sensory scavenger hunt and listening to frogs.

Wildwood Photo credit: Haley Datto, B.C.



Nicomekl Explorer Day Photo credit: Anthea Farr, B.C.



The **Vancouver NatureKids** took part in the Christmas Bird Count for Kids. In January they explored Maplewood Flats with Nature mentor John Morton. One of the best ways to remember the colour markings of each bird is to draw them, so the club also brought along a lot of art supplies. Photo credits: Leslie Bol, B.C.

• Louise Pedersen, B.C.

A big 'Thank you' to Al and Wild Birds Unlimited! For many years, Al has been donating the money he gets for leading Wild Birds Unlimited walks to **Naturekids Nicomekl**. This money has helped keep costs down for some Explorer Days.

Anthea Farr (Co-leader, Nicomekl NK), Cathy Steele (Wild Birds owner), Jude and Al Grass. Photo credit: Lisa Dreves, B.C.



ASTER

LARKSPUR

Plants
that don't
need much
water

OCEANSPRAY

OXEYEDAISY

GAILLARDIA

CLOVER

A T I N A Z N A M O C O

Y D Q V O I A J P L X C

A E H L B R S O V E U E

R E Y O E S U F Y D R A

R W L V R N S E J A A N

O K O L J S D P E Q I S

W L U Z E A E P I U L P

C I H S I B Y B V T I R

M M G S C L E H R U G A

Y Q Y J K E N R I U P Y

W I G C H T W S A K S B

U V I N T Z O X N H B H

L R P M L A R K S P U R

P G S I Z J B A S T E R

G A I L L A R D I A R D

HORSEBRUSH

YARROW

HAREBELL

MILKWEED

MANZANITA

GILIA

BROWNEYEDSUSAN

PRICKLYPEAR

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• Prickly Pear: Ron Long, B.C. • Barrel: ISerg, istockphotos.com

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