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QUESTIONS? (OMMENTS?

For me, September marks the start of a season of change and new beginnings. Summer fades, leaves change colour, a new school year begins. Even though I'm not heading back to school like you are, it will be a big time of change for me too! This summer my family moved to a farm on Mayne Island and after nine years with NatureKids BC I will be leaving my role as Executive Director to become a farmer!



I hope you enjoy this issue of **NATUREWILD** and thank you for the wild ride! Yours in nature, Kristine Webber







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Nature KIDS 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: \$25 per year. Schools membership: \$45 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

Thank you to our sponsors and supporters who share our vision that all children be connected with nature.



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Kristine on

Little Red!'!



van**o**uver foundation





Elders Council for Parks







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Glaciers, gases and changing weather: The facts about

CLIMATE CHANGE

By Steve Kux, Climate Policy Analyst, David Suzuki Foundation

A lot of people talk about **climate change** these days and what should be done about this global (worldwide) problem. They don't often talk about the **science** of climate change. So what is climate change anyway?

WHAT IF GUMATER

It is important to understand what the word **'climate'** means. We all know how weather changes. Some days it's cold and rainy, other days the sun is shining and the weather is hot. These day-to-day changes in weather don't matter much to climate scientists. It is the **patterns** in weather

we see by comparing a large number of days over different areas that are important. These long-term **weather patterns** make up the **'climate'** of a particular area.

When we understand climate, we can predict (forecast) when to expect rain, snow, sun or clouds and when it will be hot or cold outside. These important predictions tell people when to plant and harvest food, when to expect hurricanes or other powerful weather events, when wind farms will get a good wind or solar panels will get sunshine.



Mexico has a warm climate: Credit - Michael Kappel, C.C.

SECOLES CENTRES ELECTES

The Earth is over 4.6 billion years old. Since it was formed, Earth's climate has changed many times. Throughout the hundreds of thousands of years of human history and even before humans arrived, the Earth's climate has continually changed, alternating between cold periods where massive

Windfarm: Credit - rasmithuk, C.C.

The Arctic has a cold climate: Credit - Greenland Travel, C.C.

ice sheets covered much of the planet (ice ages) to warmer periods like we live in today.

HOW DOES GLIMATE GHANGE?

As continents slowly move around the globe, oceans and mountain ranges are formed. These new oceans and mountains change the flow of air and water and lead to new weather and climate patterns.

How is guimate ghance <u>today</u> different from in the past?

Today, when we talk about **climate change** we mean the recent, very rapid increase in global average temperature. Much of this increase is caused by human activity. To heat homes, power cars or make electricity, humans burn fossil fuels such as coal, oil and natural gas. When fossil fuels are burned, they produce **greenhouse gases** (like carbon dioxide).

Boreal Conifer Bog: Credit - Nicholas_T, C.C.

At the same time, humans are destroying green spaces such as wetlands, bogs and forests. These green spaces absorb and store greenhouse gases, keeping them out of the thin layer of gases that makes up the Earth's atmosphere.

We need **some** greenhouse gases because they act as a blanket that holds just enough heat from the sun to keep us warm. If the atmosphere didn't have any greenhouse gases, Earth would be too cold for life. The problem comes when humans send too many greenhouse gases into the atmosphere. Then the blanket gets thicker and hotter. This makes the whole planet heat up.

WHY DOES GLIMATE GLANCE MATTER?

Human-caused climate change leads to many other changes in life on Earth. Climate change is already changing weather patterns around the world – too little rain (drought) in California and too much rain (flooding) in Calgary and Toronto, for example.

As the planet warms up, ice at the North and South poles and in glaciers melts and runs into the sea. Add to that the fact that water expands when it gets warmer. This causes sea levels to rise. Many cities and even some entire countries may one day be under water if we don't act now to stop climate change.

WHAT CAN WE DO?

The best thing we can do is to **REDUCE** the amount of greenhouse gases we put into the atmosphere.

- 1) Reduce air pollution from traffic:
- 2) Reduce greenhouses gases from today's electricity plants
- 3) Protect forests, bogs and wetlands

Most importantly we can all – children and adults - work together to tell our Prime Minister and our Premier to put reducing greenhouse gases on the very top of their "To-Do List".

Governments have many ways to reduce greenhouse gas emissions – they can make polluters pay for the gases they produce; they can make it easier for people to buy electric cars and energy-efficient homes; they can make better public transit systems.

There are many great actions already taking place around the world. It's up to us to make sure they happen where we live too.



Truck traffic pollution: Credit - The Victorian Greens, C.C.

Aerial view of the Amazon Rainforest: Credit - CIFOR, C.C.



BURNS BOB

One of a kind?Yes!

Burns Bog is the largest domed or 'raised' peat bog on the west coast of the Americas. It is about five thousand years old and is five times as large as Stanley Park!

Burns Bog is important because it is a major stopping place for birds migrating down the Pacific Flyway. Every year the bog provides food and rest for approximately 250,000 migratory and wintering waterfowl and one million shorebirds. It is also home year round to hundreds of plant, animal and bird species.

HOW WAS BURNS BOO FORMED?

agmum Moss.

Thousands of years ago, BC was covered with ice. The ice was so heavy it made hollows in the land below it. When the glaciers melted, many of these hollows were left full of water and started filling up with sand, silt and clay. Grass and woody plants

started growing, followed by sphagnum moss.



Sphagnum moss is the most important plant in a peat bog. It is able to hold about 30 times its weight in water. Each new layer of vegetation grows on top of the one before. Over thousands of years, the mosses, leaves and roots build up faster than

they can decompose, and peat begins to form.

There's no air in the bog, so if you lost a boot in there, it would not rot. It would still be there, undamaged, for hundreds of years as more bog grew over the top of it. Perhaps one day Round-leaved Sundew cluster:

someone studying the bog might find it. A bog is like a time capsule.



Burns Bog: Credit - ubcmicromet, C.C.





Sphaanum Moss: Credit - Todd Carnahan, B.C.



Hardhack: Credit -Rosemary Taylor, B.C.

OF A KIND!

WALKING IN A BOG

Bogs are sensitive ecosystems. They can also be dangerous. 'Bog holes' are places in a bog that seem to be solid ground until you step on them. All of a sudden, your leg sinks through the surface and is deep in thick muck. As easy as it is to fall into a bog hole, it is VERY difficult to get out of one. There's no firm ground to climb out onto.



Salal flowers: Credit - Rob Alexander, B.C

There are many other smaller bogs throughout BC which may be safer to enter, such as Camosun bog in Pacific Spirit Park. If you go on a field trip into a safe bog, the surface will probably be spongy and bouncy. If you jump up and down on the spongy ground you can make trees move!

FIRE IN THE BOG!

In early July this year, Burns Bog caught fire, but it was soon under control. If it is not too large, a fire can be good for the bog. Fires are a natural part of an ecosystem's life cycle and encourage new bog plants to grow. Also, this fire burned trees that were starting to grow at the edge of the bog. Over time bogs gradually dry up and turn into forests.

By removing trees - which drink a lot of water - the fire actually helped the bog.

ALL WETLANDS ARE IMPORTANT BUT PEAT BOOS ARE SUPER IMPORTANT.

Peatlands are one of the most important ecosystems in the world. Not only do they purify the water that passes through them but they are also 'carbon sinks' – they store tons and tons of carbon.

Climate change is happening because people are letting too much carbon in the form of carbon dioxide - a greenhouse gas - escape into the atmosphere. It is very important to keep peat bogs undamaged so that the carbon will stay in the peat. Because they are so slow growing, damaged bogs take hundreds of years to repair themselves and start storing carbon again.

People used to cut peat to use as fuel and to improve the soil in their gardens. Now we know this is not a good thing to do.



A bog is one kind of wetland.

Other wetlands are marshes and

swamps.

Peat: Credit - James St. John, C.C.



Some garden centres may sell peat, but you should not buy it. Be sure to tell the garden centre why you are not buying it.

THANK YOU to the Burns Bog Conservation Society for providing information for this story.

There is so much to find out about peatbogs

– go to www.burnsbog.org for more

amazing facts.

FORESTS AND THE MUSE

By Terry Taylor, adapted by Brian Herrin

Fall is the best time of year to see many different types of mushrooms and The forest is the best place to find them.

One of the fascinating things about mushrooms is the way they seem to pop up from nowhere. This is just an illusion (like a magic trick). Really, the parent fungus has been producing very tiny and invisible threads that gather nutrients just like the roots of plants do.

When the fungus has found enough food to produce a mushroom it does, and that is what we finally see. The truth is that most of the fungus is still invisible under the ground.

> Plants produce flowers so they can produce seeds. Fungi produce mushrooms which produce single-celled spores to grow more fungi. Spores are not actually seeds (which have many thousands of cells), but they do the same job by spreading the fungus.

CHECK OUT THE TRY THIS' ON PAGE 11 AND YOU CAN SEE THE SPORES FROM A MUSHROOMI

The fungal threads in the soil are called **hyphae** - they are one cell thick and many cells long. They may be in the soil, in rotten wood or growing inside another organism (such as another fungus). You can't see one single hypha, but you can often see masses of hyphae if you turn over a log or look under the dead leaves and pine needles. The white material you find is called a mycelium - clusters of hyphae busily eating and digesting dead plant leaves or wood.

When the autumn rains arrive, it is time for the fungi to produce a mushroom, often called a 'fruiting body'. Little buds appear on the mycelium: they expand, absorb water, and grow into mushrooms. There are so many different shapes, sizes and colours one can never stop finding new ones.

Background, Turkey Tails: Rosemary Taylor, B.C.

- 2) Birds nest fungus: Rosemary Taylor, B.C.
- 4) Coral Fungus: Todd Carnahan, B.C.
- 1) Orange Peel Fungus: Rosemary Taylor, B.C.
- 3) Mycelium: Bushman, PhotosForClass.com
- 5) Chicken of the Woods 2 Sulphur Shelf: Todd Carnahan, B.C.



AMANITA MUSCARIA

There are many varieties of Amanita mushrooms found around the world. **Amanita muscaria** is one of the most beautiful fungi in BC.

It generally grows under trees and can be found almost anywhere – in the park, in the forest, in your garden. It is also known as the 'fly amanita' because people used to think it kills flies or at least makes them woozy.

Amanita is POISONOUS! Do not put it near your mouth.



Maya Sirton (NKBC Delta Home Learners) found an Amanita muscaria in her front garden and observed it for a month from the time it first appeared.



The cap of an Amanita mushroom has just come up out of the ground.



Now the cap of the Amanita is turning red, and the white veil has broken up to make warts.



Now it is bigger and has grown a stipe (stem).



The Amanita mushroom is now fully grown.



It is now starting to fall apart (or has been nibbled by a small animal.)



It is starting to crumble away a lot, and maggots are starting to eat it.



It is a big pile of mush with maggots in it now.



You can hardly see it any more.

TRY THIS! BY DR. EUCAN DOOWITT

MAKING SPORE PRINTS

Mushroom spores are tiny. On a mature mushroom, many thousands of spores grow on just one gill. They can only be seen with a microscope. To see spores you can make a spore print. It is easy to do. Use a fresh, just-opened mushroom. Cut off the stalk (be careful to not damage the gills) and lay the mushroom, gills down, on a piece of white paper. Put a drop of water on the top of the cap to help release the spores. Cover the mushroom with a glass and leave overnight. Next day carefully lift off the cap. The spores will have fallen on the paper, making a spore print pattern.

Some mushrooms produce white spores so if you can't see anything, try again with dark paper.

Photographs of spore prints can be made into spectacular greeting cards!

Spore print



Amanita muscaria



In the last issue we had some problems with Page 12!

- Photo: Ants nest credit to: David Manning, not David Shackleton
- Photo: 'Ant dragging fly.'
 BCNK Members Maja and Monica noticed something strange about the ant. They think it is an ant-mimic jumping spider and not a real ant at all.

Brian Herrin says: "You are absolutely correct. It is a jumping spider. You can clearly see the vertical chelicerae and the two forelegs being held out to imitate the bent antennae of an ant. The two large eyes are also indicative of a jumping spider. All of these spiders, whether male or female, have enlarged pedipalps – clearly visible in the photo." He agrees that this would be a good topic for a future article – invertebrates are his special love.

3. Photo: 'Ants dragging worm.' Member Daniel notes that it looks like the ants are dragging a caterpillar, not a worm. Brian says "Yes, it is a caterpillar!" He's going to go over photos with a magnifying glass in future!





KING OF THE HEAP

At the end of the garden, there was a heap of old vegetable scraps and grass clippings. The small creatures that lived there wondered who should be king and live at the top of the heap. They had a meeting to decide. Worm and Wood Bug were there and Slug, some mites, springtails, millipedes and a snail or two.



Woodbug Bug: Credit - Wikipedia



Compost: Credit - kt.ries, C.C.

Slug: Credit - davidshort, C.C.

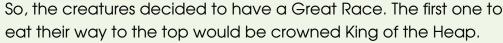
"I should be King of the Heap!" declared Worm!"

said Wood Bug

said Slug



Millipede: Credit - tomhouslay, C.C.





Off they set. **CHOMPI CHOMPI MUNCH! CHEW!** through the scraps and peelings. And as they ate the scraps and peelings, they turned them into lovely, rich compost, just right for growing flowers and veggies.

One day there was a terrible rumbling and tumbling as the Gardener took some compost from the bottom of the heap to add to his vegetable beds.

"The Heap is sinking," cried Worm. "Eat laster!"

CHOMP! CHOMP! MUNCH! CHEW!

Worm might just about have reached the top or he might not. He would never know, for just then the Gardener added another pile of peelings and clippings to the top of the heap.

Compost Bin: Credit - Sustainable sanitation, C.C.

On and on it went. Compost out the bottom and more scraps on top, so that no matter how much the foolish creatures ate, they never seemed to get any nearer the top. Still each of them wanted to be King of the Heap so they carried on eating. Upwards and higher. Higher and upwards.

CHOMP! CHOMP! MUNCH! CHEW!

But the Gardener kept adding more scraps. And the creatures kept making more compost.

Time went by and the creatures that had started the race grew old and tired. They each said to their children, "You must carry on the eating race in my place. You must reach the top first so that one day you will be crowned King of the Heap."

So their children carried on the Great Race. **CHOMPI CHOMPI**And the Gardener added more scraps. And all the different creatures' children made more compost.

CHOMPI CHOMPI MUNCHI CHEWI More scraps. More compost.

Time passed. The creatures' children had children. But by now the reason for the Great Eating Race had been forgotten. The creatures only remembered that they had to eat.

"We've done it all our lives, as our fathers and mothers ald, and their fathers and mothers before them," they told their children. "And so will you that is the way things are."

So CHOMP! CHOMP! MUNCH! CHEW! they went.

More scraps and more compost. And by the time their grandchildren had grandchildren, all the creatures had forgotten that they were in a race at all.

And if you look in a compost heap, you will see their descendants: worms and millipedes and slugs and mites, still eating their way through the scraps and clippings and still turning it into compost.

To this day they are no nearer the top than they were all that time ago when the Great Race began but the wonderful compost they make helps us to grow beautiful flowers and fresh tasty vegetables. So 'thank you!' to all those hard working creatures – don't ever stop!

CHOMPI CHOMPI MUNCHI CHEWI

Adapted from **Wild Times** January-February 2012 with the permission of RSPB Wildlife Explorers.



Have a Nature Question?

Al Grass has worked as a career park naturalist and ranger throughout BC. Now he is a well-known nature tour leader and photographer. Al especially likes birds, insects and spiders.

Polyphemus landed on my friend's hand and sat there for quite a while before flying off: Credit - Al Grass, B.C.

What is the most interesting insect that you found this summer?

> Moths come in many colours, shapes and sizes, but surely one of the most spectacular is the

> > Polyphemus moth, which I was lucky enough to find this summer - just breath-taking!

As you can see this moth is very large – its wingspan can be up to 125 mm! Because it is so

Al Grass: Credit

Robert Alexander, B.C.

beautiful, people often think it is a butterfly.

Notice how its forewings look like tree bark, for camouflage. Its antennae are not 'feelers', they are 'smellers' that help the male detect the

scent of females. When disturbed, Polyphemus spreads its wings to reveal a pattern that looks like an owl's face. This may frighten away predators birds in particular. The large polyphemus caterpillars feed on a variety of plants including birch and dogwood leaves.

Where does the name come from? Polyphemus is a one-eyed monster in Greek mythology. However, this moth actually has four fake eyes and two real eyes for a total of six! (The Polyphemus is not the only moth with "owl eyes" to spook its enemies; there are others, like the Eyed-hawk moth.)

NB: Whenever I need information on insects I rely on Bugs of British Columbia by John Acorn and Ian Sheldon. It is a wonderful book - it even includes some spiders! Everyone should have one in their nature library.

Al says: "Please send me more questions. If your question is chosen for NatureWILD you will win a Rite-in-Rain notebook and pencil. Send your questions to naturewild@naturekidsbc.ca, with To Al Grass in the subject line."

ANSWERS AND PHOTO CREDITS TO MAMMALS OF BC CROSSWORD PUZZLE PAGE 3: **ACROSS**

- 3) Skunk: Credit Rosemary Taylor, B.C.
- 4) Lynx: Credit David Shackleton, B.C.
- 6) River Otter: Credit Todd Carnahan, B.C. 13) Deer: Credit -
- 9) Grizzly: Credit Gerry Polman, B.C.
- 10) Porcupine: Credit Rosemary Taylor, B.C. 14) Bat: Credit -
- 11) Pika: Credit David Shackleton, B.C.
- 12) Wolf: Credit -PhotosForClass.com
- David Shackleton, B.C.
 - Todd Carnahan, B.C.



DOWN

- 1) Mink: Credit Rob Alexander, B.C.
- Black Bear: Credit Rosemary Taylor, B.C.
- Squirrel: Credit Rosemary Taylor, B.C.
- 5) Cottontail: Credit David Shackleton, B.C.
- 7) Coyote: Credit David Shackleton, B.C.
- 8) Raccoon: Credit Gerry Polman, B.C.
- 10) Pack Rat: Credit PhotosForClass.com

NATUREWILD-MENS

Passports to Nature

Seren (Nanaimo), Ziya (North Shore), Isaac (E. Fraser Valley) sent in their first completed passports. Daphne (S. Okanagan) sent in passports 1 & 2, and Cora (S. Okanagan), Brynna & Owen (Victoria), Theron (TriCities, Lina (Oceanside), Zoe, E.J., and Brianna (Vancouver) sent in passports #2 - all earned their NatureKIDS BC Caps! Janel (Oceanside) and Travis (Victoria) earned their Rite in the Rain notebooks for passports #4. Alida (Vancouver) sent in passports 6 & 7, and Elissa (Nicomekl) sent in passports 13, 14, & 15 – you must all be spending lots of time outside in Nature! that's what NatureKIDS is all about - great work, everyone!

Lina Janeski: Credit - Jennifer Janeski. B.C



As well as earning her cap, Lina Janeski (Oceanside) also earned her Silver Action Award.

Some of her Actions were: she became a certified 'Bug Detective'; wrote a book explaining how glaciers are formed and how they affect the landscape, and presented her book to her homeschool co-op; started a bird club with some of her friends, including far- away friends from New Zealand, comparing different birds from New Zealand and Canada.

Nanaimo NatureKIDS participated in a stewardship activity with Junior Streamkeepers at Walley Creek, Nanaimo in June. "Our Nature Mentor was RP Bio Dave Clough - he's AMAZING!"

Eastern Fraser Valley update on swallow boxes made last winter. Clegg's farm: One box had a family of Tree Swallows in it and the far box held a big surprise - a family of House Wrens! These are not common birds and even less common to have them breeding in the Fraser Valley. Very exciting! The boxes at Island 22 have swallows in almost all of them.





And a member who was inspired by our visit to O.W.L. Raptor Rehabilitation Centre.

Credit - Laurie de Jong, B.C.

MORE MUSHROOMS F

British Columbia has so many weird and beautiful mushrooms and as fall is the best time to find them, we couldn't resist filling up this page with more amazing specimens for you to look for and identify. Thank-you to all our photographers for sending us the marvellous pictures you see on this page and pages 8 & 9.



(people who study fungus) there is no difference. They are all fruit of different kinds of fungus. While people often think of **mushrooms** as edible and **toadstools** as poisonous, please never, NEVER, eat any fungus you find, even if it looks edible and always wash your hands after handling any kind of fungus.



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