

NATUREWILD

Magazine for the **NATUREKIDS** of British Columbia | Spring 2018

- Cats or birds?
- No mother could give more
- Secret life of eggs
- and much more!



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QUESTIONS?
COMMENTS?



My name is Cynthia Berg and I am the President of **NatureKIDS BC**. I am very excited about our Citizen Science projects. In 2016, **NatureKIDS BC**, partnering with Nature Canada, began a two-year long initiative – **Bird Aware Cat Care: Youth Citizen Scientists Protect Birds and Keep Cats Safe in BC**. Our members have been helping to test different ways to stop their cats from catching and killing birds by walking them on leashes and adding colourful collars, to their outdoor gear.

We're busy writing up our research report and will soon share with you what we have learned. Many thanks to all of you who have been involved with this project; in particular our youth scientists who have helped us try out these anti-predation strategies and to our funders, Environment Canada, the Vancouver Foundation and the Gosling Foundation.

Photo Credit: Claude Rioux, B.C.



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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. Schools membership: **\$50** 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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Front Cover photo: Fawn Lilies: Todd Carnahan, B.C. inset Images: Developing Paralarvae: Jim Cosgrove, B.C.
• Injured Hawk Now Healed: Shawn Fennel, B.C. • Dandelion Parachutes: Rosemary Taylor, B.C.

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Does it have to be *cats* or *birds*? The answer is *NO!*

Here's the story from Rachael (age 9) with pictures from Sophia (age 13), Youth Scientists from Vancouver.

We never thought in a million years that Ricka would ever eat a bird, though sometimes she'd sit in the window and make clicking noises when she saw birds in the garden.

Ricka is not aggressive but when it comes to birds, that's a different story. This summer I caught her in the act: I saw her come in with a moustache of bird feathers, and there were bird feathers on the porch. I knew that she'd killed a bird and then I saw it on the deck. I felt sorry for the chickadee, so we decided to do something about it - we put a colourful collar on Ricka, since obviously a bell was not enough to protect the birds from her.

At first Ricka seemed embarrassed about her new "outfit" and she wouldn't go outside; when she did go out it sounded like birds were laughing at her! I think she looks cute with the collar. Now she wears the collar all the time and she has the best fashion in the whole neighbourhood. Everyone can see her better and it is much more difficult for her to hide in the garden. She used to be well camouflaged with her fur, but it is difficult to hide with those polka dots! I think the birds are grateful for her new look, and Ricka has not caught a bird since!

Is it important to stop cats from killing birds? Yes!

Wild birds across Canada are in trouble; some species have declined by over 90%. Why? Research has shown us that the biggest single reason for the loss is free-roaming cats: The collars have been scientifically proved to reduce bird kills.

Learn more about what you can do to help cats and birds by visiting www.naturekidsbc.ca/be-a-naturekid/projects



my outfit is purrrr-fect!

I am in Nature and Nature is in me.

Three poems by Grade 7 students,
Columneetza Secondary School, Williams Lake, B.C.

Evergreen

The dew dancing down from the trees above,
the wind whispering, filled with love.
The evergreen forest is where I am,
no truck, car, train or minivan.
Air, fire, water and earth,
To these wonderful woods, they gave birth.
Emotions within me, a warm lively song,
the wind is now talking, it grows strong.
The sun is now setting, a deep fiery red,
the day is done, enough has been said.
Midnight beckons, most beautiful of all,
engulfs the evergreen, all trees short and tall.
And as shadows tiptoe around where I sit,
I wonder, "Why do people live off the land,
instead of with it?"

Colin Sterne

My Spring

Excitement runs through my veins,
The spring's mud tries to eat me,
The muddy water avoids protruding rocks,
That are in its path.
Green grass grows all around,
because of the water supply.
I wonder how the spring
chose its path?

Baileigh Stowell

The Wild Things

As my eyes gaze across the horizon I hear a ticking
like a really fast clock tick, tick, tick, tick
Then I hear a pinecone fall, and more chirping.
Now I realize that there are two squirrels chasing each
other away from the scene like ghosts running away
from the ghost busters.

Ben Huston



Have you found any of these Signs of Spring?

- bears
- cherryblossom
- dandelion
- fiddlehead
- frogcroak
- horsetail
- leafbud
- mud
- puddles
- robin
- salmonberry
- snowdrops
- swamplantern
- tadpoles
- treeswallow

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When you've done the puzzle, draw a line from the word to the picture; example, draw a line from the word 'mud' to the picture of 'mud'.

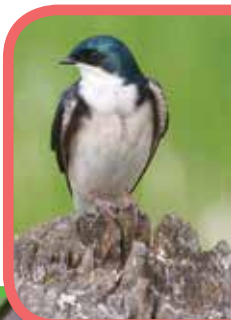


photo credits:
Rob Alexander: salmonberry, snowdrops • **Clive Bryson:** tree swallow, puddles,
Todd Carnahan: fiddlehead • **Rosemary Taylor:** robin, dandelion, swamplantern, bears
David Shackleton: tadpoles, horsetail, leafbud, frogcroak • **Wikipedia:** mud, cherryblossom

The Secret Life Of Eggs

How can the chick breathe inside the egg?

The secret is that the shell is not solid – it has thousands of very tiny pores (holes) which bring oxygen into the air sac and let carbon dioxide go out.

Parent birds do a lot more than sit on their eggs to keep them warm. When a parent bird comes back to the nest after being away to feed, it pokes and prods at the eggs until they are arranged in just the right way. Each one is turned so that it lies in the 'proper' position.

We used to think that turning was to make sure that the whole egg was warmed thoroughly with no cold spots. Now we know that this turning puts the **embryo** (unborn chick) in just the right position so it can grow properly.

To start with, the embryo needs to lie on top of the yolk. Later, the growing bird needs to be at the big end, near the air sac so that it can breathe oxygen. The yolk sits in the middle and the white part at the pointed end.

An egg is often all one colour, so how can a parent bird tell when it is in the position that the embryo needs? Surprise! The egg helps! If you could put an egg on a table every day during **incubation** (time until the chick hatches), you would see that it gradually rocks towards the pointed end. This lifts the thick end with the air sac upward. Just before hatching, the egg rocks back to its original position.

What is happening inside the egg to make it do this?

When the egg is first laid, the contents are quite warm from being inside the hen, warmer than the chicks need. So, the contents cool down a bit and as they get cooler they shrink, drawing air into the air sac at the big end.

As **incubation** goes on, water evaporates from inside the egg through the pores. This makes even more space and the air sac gets larger each day.

Air is light, so the heavier part of the egg is more toward the pointed end where the white is. When the parent rolls the egg, the heavy end is more likely to point down and the air-filled end will be upward.



Eventually the chick fills the whole egg. The head is still at the big end but the ankles are in the pointed end with the feet resting on the belly. When it is ready to

hatch, the chick twists its head to punch a row of little holes in the shell. Then it pushes upward with a kick of its feet so it can pop out of the egg.

Just before hatching, the chick's head bursts right into the air sac and the chick can fill its lungs from the air in the air sac. It can call out to its parents saying, "I'm in here and I'm okay!" or "Hey! Roll me over so I can hatch."

It also makes little clicking noises. These clicks are important in birds like ducks, where all the babies hatch at the same time and follow their mother away from the nest. The clicks 'talk' to the other eggs in the nest and when all the eggs are clicking together, they know that it is time to hatch. Faster chicks even wait for their slower brothers and sisters!

by Gary Kaiser, adapted from an earlier version

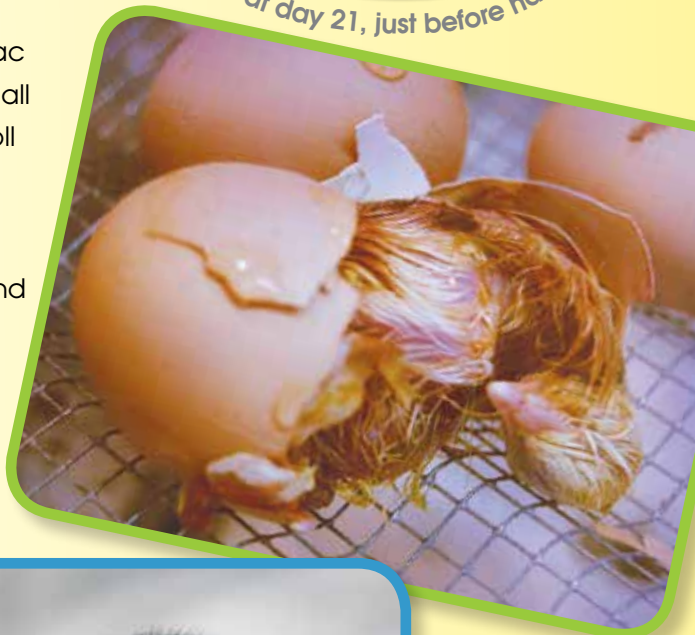


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• Embryo: ttsz, istockphotos.com • Chick just hatching: Pawsitive-Candie_N, CC
• Baby chicks: ap, CC • Chick and egg: Tsekhmister, istockphotos.com

The Giant Pacific Octopus - *Enteroctopus dofleini*

No Mother Could

Text and Photos by Jim Cosgrove



Octopus.



Mother with eggs.



Brand new string of eggs.



Sealed den.



Developing paralarvae.

My wife and I are in Saanich Inlet, just north of Victoria, swimming 15 metres below the water's surface. Over the past six months we've been observing a female octopus. Tonight we are hoping to attend a very special birth - 68,000 baby octopuses, maybe more!

At the den - a large rock with smaller rocks surrounding it - I remove some small rocks that the mother octopus has placed to block the entrance to the den. A flash of my light confirms that the eggs have not hatched. I replace the rocks, resealing the den.

The female octopus created this den more than eight months ago, after she mated. It is just large enough for the mother and her eggs. She roamed the surrounding area gathering up rocks which she used to block entrances to the den. Then she crawled inside and reached out for the final few rocks which she pulled in to completely seal the last opening. This protected it so that sea stars, crabs and other octopuses could not get in and destroy her eggs.


While hanging upside down, clinging to the roof of the den for 2 to 3 hours at a time, she spent the next 30 days laying approximately 68,000 eggs. As each individual egg came out it was fertilized using sperm she had stored from the mating. Each egg was woven onto a string until there were approximately 170 eggs. Then she glued this string to the roof of the den, rested for a while and made the next string - and the next and the next until there were almost 400 strings!

Give More

In each of the past six months I had removed one string of eggs and brought it back to the Royal BC Museum to study the eggs and photograph them as they developed.

At first, each egg was a gleaming white tear-drop about the size of a grain of rice. Inside the egg, the baby octopus (called a paralarva) was developing. As the yolk sac was consumed and the paralarva grew larger, there was enough room inside the egg for the paralarva to stretch and move around. Through the shells of the eggs I gathered, I saw the eyes of the developing paralarvae.

The paralarvae are amazing. Measuring 6 mm across and weighing about 3 milligrams, they are perfect miniatures of their parents. They have eight tiny arms adorned with a few suckers. They can change colours instantly and, when removed from the egg, can even produce a miniature puff of ink.



Mother with eggs. Mother is now grey.

The female octopus is a wonderful parent. She continuously grooms the eggs with her arms and suckers. She blows cold, oxygen rich water over the eggs and keeps them clean. Since she entered the den, she has not eaten, surviving only on stored energy.

She is much smaller now and is barely breathing. Her once brick-red colour is now a deathly grey. This is the end of the race for every female octopus. Tonight, when many of the predators are asleep she will blow all her babies out of the den. Then she will die.

Like a living plume of smoke, the paralarvae swim to the surface where they join a floating mass of plankton. In three years they will have grown into mature adults.

As we return to the surface, we can only marvel at the scenes we have observed.



Eggs with eye spots showing.



Eggs ready to hatch.

Jim Cosgrove (M.Sc.) is a leading expert on the giant Pacific octopus. He was manager of the natural history section of the Royal BC Museum until he retired in 2007.



The Rescue

Story and photos – Shawn Fennell

Here's a story with a happy ending from the Fennell family - Shawn, Lisa, Emma (9) and Kaylee (5), members of **NatureKIDS** Kelowna.

Shawn tells the story: "After I got home one Friday I was surprised to see a large bird perched on our patio table, about ten feet away. It just stood on the table watching me as I took a couple of photos with my phone.

It tried to fly away, and I saw it was injured, because one of its wings was held at an odd angle, and the bird could only flutter down to the grass.

I called our NatureKids leader, who advised that we call the South Okanagan Rehabilitation Centre for Owls (SORCO). I sent a photo and SORCO confirmed that it was a raptor and told us to take it to a local vet. They also told us how to capture the bird without hurting it.

After a few anxious minutes of trying to get close enough to the bird without causing it too much stress or hurting itself further and, with it hopping and jumping around the lawn, I finally got close enough and was able to toss a bed sheet over it, causing the bird to stop and be still.

I put on some leather gloves, just in case, as raptors have sharp pointy bits! I then gently lifted the bird, laid it inside a large cardboard box, with a towel on the bottom, carefully removed the bed sheet and placed the lid on top.

We quickly loaded our feathery cargo into the car and drove to the vet, hoping the bird could be rehabilitated. X-rays showed no broken bones, so the bird – a male Sharp-shinned Hawk – went to SORCO to be nursed back to health.

Fortunately, the bird healed quickly and within a month was released close to where we found it. We were all very happy."



Note If you see some wildlife in trouble ... before stepping in to help, contact your local wildlife rescue association for instruction. Google 'Wildlife Rescue' followed by the name of your town or district, to find the nearest place to get advice on your injured wildlife.

Dr. Eucan Doowitt



Plant Secrets – we can all agree that animals are much easier to observe than plants. Here are a couple of experiments that will reveal some secrets of how plants grow.

EXPERIMENT 1

How does water get all the way from the roots to the top leaves of a tree? Water travels the same way in all plants, so we can observe what happens in celery. The 'strings' in celery and bok choy stalks are actually pipelines and will show us part of the picture.

You need:

- A celery stalk
- Some red food colouring
- A glass with heavy bottom
- Water

ACTION:

1. Pour water into the glass, about 2 cm deep and stir in four (4) drops of food colouring.
2. Cut the celery stalk about 5 cm above the bottom end.
3. Cut it again higher up to make a piece about 5 cm long.
4. Quickly stand the bottom end down in the coloured water.
5. Leave it overnight.



Next day you will see a trail of coloured dots at the top of the 'pipelines' that show how the water has travelled up them. These very important 'pipelines' can be found in most flowering plants and shrubs, and even trees.

EXPERIMENT 2

Does a seedling always grow upwards? If yes, can you figure out what the seed is doing? Will it always do that? Here is a simple way to ask the seed to give you an answer.

You need:

- Some dried mung beans (available in the bulk section of any grocery store).
- Two squares of hard, clear, see-through plastic, about 8 – 10 cm, cut from a plastic container.
- Paper towelling; four elastic bands.
- Shallow container of water.

ACTION:

1. Fold enough sheets of paper towelling to create an 8 – 10 cm square pad at least 6 layers thick and soak it in water until it is wet right through.
2. Place two or three mung beans in the middle of this wet pad.
3. Sandwich the paper pad and beans between the two squares of plastic.
4. Use the elastic bands to hold the sandwich together, but do not bend the plastic.
5. Stand the sandwich **upright** in the shallow container of water. Make sure the paper is always soaked.
6. Wait for the beans to sprout.
7. When the rootlets are 2 cm long rotate the sandwich one quarter turn so they are pointed sideways.
8. After they have grown another centimetre or two, turn the sandwich one quarter turn more. Can you make a rootlet circle?

(Note: this may take a few days.)





A Read Aloud Story

Mrs. Wood Duck & her Eight Ducklings

Snug in the nest she had built in a hole way, way up in a tall tree, Mrs. Wood Duck settled herself on her eight beautiful cream-coloured eggs. She was proud of this fine nest, lined with her own breast feathers, soft and warm for her young ducklings when they hatched.



She had been sitting for a long time, only getting up from time to time to stretch her legs and to find something to eat. She knew her babies would hatch very soon, she could hear their little clicking noises signalling to each other that they were ready. Sure enough, that evening the first duckling started pecking at its shell and by morning all eight were hatched!



The little ducklings were hungry and Mrs. Wood Duck got ready to take them to the near-by pond. She climbed out of the nest and went a little way along a tree branch, gripping with the special claws on her feet so she wouldn't fall off.

"Listen, children," she said. **"I am going to fly down to the ground and wait for you. When I call, you climb out of the nest and jump down to join me. You won't hurt yourselves, I promise."**

Down she flew to the base of the tree, and called **"Come along, jump now!"**

One, two, three, four, five, six, seven, eight little ducklings climbed out of their nest, gripping with their tiny claws, and - one, two, three, four, five, six, seven, eight - they each jumped down to join their mother.



photo credits: Background: Man As Thep, istockphotos.com • Wood Duck pair together on a log: Rosemary Taylor, B.C. • Wood Duck nest: Kiskadee, CC • Mrs. Wood Duck's claw grips on tree branch: Frank.Vassen, CC • The ducklings jump from the nest: PunjabiDharti.Com

Just as she promised, they did not hurt themselves because they were so light they floated down like dandelion puffs and bounced and rolled to a stop, eager to walk on the forest floor.

“Follow me, quick march!” quacked their mother and the eight little ducklings followed her down to the pond.



Like all ducklings, the eight knew how to feed themselves as soon as they were born. Mrs. Wood Duck just had to take them to a place where they could find the nutritious food that would help them grow big. The pond she took them to had duckweed and water-beetles in the water and spiders and bugs in the nearby grasses.

The ducklings dived right in - one, two, three, four, five, six, seven, eight - swimming this way and that, eating as fast as they could – but never getting too far from their mother. She would keep them safe from the bullfrogs and big fish that like to eat baby ducklings.



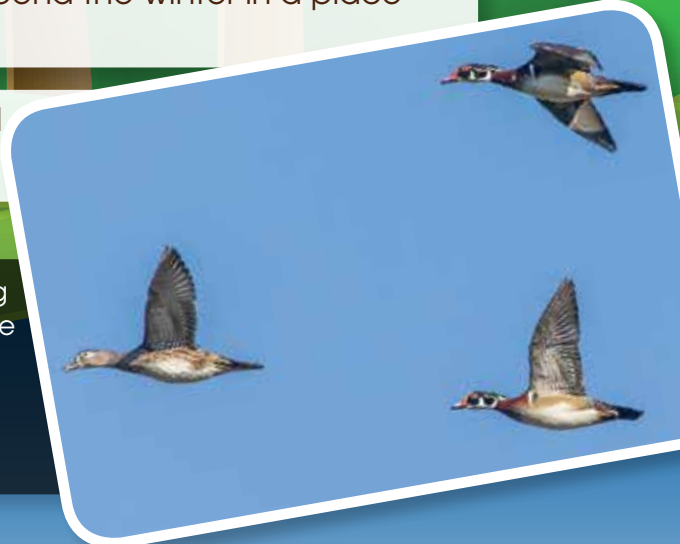
Every day they swam about in the pond, eating and growing, and every night in the long grass their mother kept them warm, tucked under her wings.

By the end of the summer the ducklings were big enough to fly, so away they flew, one, two, three, four, five, six, seven, eight....southwards with their

mother to join their uncles and aunts and cousins to spend the winter in a place where the ponds and lakes did not freeze over.

“That was a good place for a nest,” Said Mrs. Wood Duck to herself. **“I think I’ll come back next year.”**

Note to Reader. The Wood Duck is a true North American, having evolved on this continent. The male Wood Duck is considered the most beautiful drake in the world. While not as colourful as her mate, the female Wood Duck has prettier markings than other female ducks. Their scientific name is *Aix sponsa* which means “waterbird in wedding finery”.



Have a Nature Question?

ASK AL

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.



Why does a dandelion (Flower) turn into a puffball?

Plants that produce seeds use many ways to spread them around. Some have tasty berries so that birds (for example) will eat the fruit, and "poop out" the seeds with a little fertilizer. Others (such as burdock) have little hooks so the seeds can hitch onto the fur of animals (or your socks!). Still others, like dandelions and cottonwoods, use the wind.

The dandelion is a member of the Aster family of plants. Each flower head is made up of many tiny flowers. Look closely at a "puff ball". You will notice that each flower head has produced a little 'parachute' with a seed (which is called an *achene*) attached to it. A puff of wind will carry the **seeds** far and wide – a wonderful system.

Seeds of dandelions are eaten by many birds like the American Goldfinch and Pine Siskin. Butterflies, bees and other insects visit dandelion flowers for the sweet nectar.

Did you know that the name Dandelion comes from the French '**Dents de lion**' meaning '*teeth of the lion*' (which refers to the plant's toothed leaves.) Next time you find a dandelion "puff ball" - blow on it and watch the little parachutes float away on the wind, each carrying a seed to land somewhere and grow into a new dandelion.

photo credits: Rosemary Taylor, B.C.



NATUREWILD • NEWS



Passports to Nature

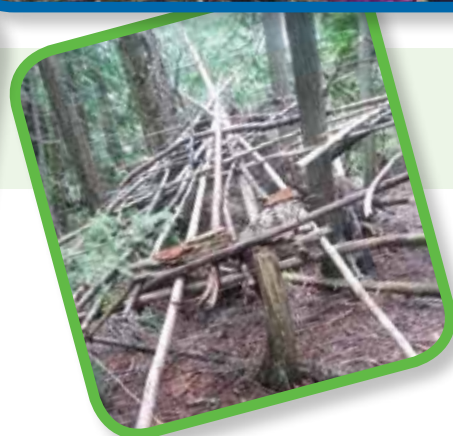
The following **NKBC** members completed passports. **Jacob, Andrew, Daniel** and **Olivia** (Merritt), **Kaley** and **Soren** (Nicomekl) and **Sarika** (South Okanagan) all sent their first passports. When they send in their second passports they will earn their **NKBC** caps. **Lou** (Tri-Cities) and **Emaya** (South Okanagan) completed passports #5. **Maya** (Delta Home learners) sent in passport #9!



Merritt NatureKIDS: Had an Amphibian Explorer Day last summer and found lots of baby toads which we studied through binoculars. Another day we went out and identified different ducks.
photos - credit: Crystal Wallace



Salmon Arm NatureKIDS: We had fun trying out different techniques for shelter building.
photos - credit: Molly Cooperman



Oceanside NatureKIDS: learned how to tap for maple syrup. Another day we went on a walk in the Discovery Forest with Haida Bolton, British Columbia's first Certified Forest Therapist.
photo credit: Cheri Naslund



Kamloops NatureKIDS: studied owl pellets and sorted out the rodent bones. Then we assembled them and glued the skeletons down on paper. photos - credit: Mandy Ross



Otter Home Learners NatureKIDS: had an amazing Explorer Day with WildResearch learning about bird banding and how the information helps research. We had the chance to hold a bird and then let it fly away! photos - credit: Colin McQuillan

Here are some of BC's earliest spring flowers.



Trillium – *Trillium ovatum*



Calypso Orchid – *Calypso bulbosa*



Bitterroot – *Lewisia rediviva*



Shooting Star – *Dodecatheon pulchellum*



Indian Plum – *Oemleria cerasiformis*



Chocolate Lily – *Fritillaria affinis*



Fawn Lily – *Erythronium oregonum*



Yellow Lady's Slipper – *Cypripedium parviflorum*



Blue-eyed Mary – *Collinsia parviflora*



Satin Flower – *Olsynium douglasii*

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- 1, 3 & 4) Rosemary Taylor, B.C.
- 2) David Shackleton, B.C.

middle:

- 1 - 3) Rosemary Taylor, B.C.
- 4) Clive Bryson, B.C.

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- 1) Rosemary Taylor, B.C.
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