

NATUREWILD

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

- Pollinators
- Sandpipers
- Ospreys



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a look
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One hundred years ago, in May 1918, a group of men and women who loved being outdoors and learning about nature, came together and started the **Vancouver Natural History Society**. They wanted to share their love of nature with other people. They also wanted to show how important it is to take care of nature. They stopped people from killing so many birds and animals, and they pushed the government to make parks to protect the land.



The VNHS, now called Nature Vancouver, is still hard at work sharing their love of nature and protecting the land. In the year 2000 they started a nature club for children called **NatureKIDS BC**. Those naturalists of 1918 would be proud to see so many **NatureKIDS** in 2018 learning and caring about nature all over British Columbia.



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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. 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

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: Osprey: Gordon Gore, B.C. • Bottom Images L to R: Rob Alexander • David Shackleton • Jason Puddifoot • Page 2: Top - Terry Taylor: Eva Nagy, B.C. • Bug Hunting: Daphne Solecki, B.C.

If you go out in the woods tonight you're sure of a big surprise!

By Dr. Eucan Doowitt

This late evening **insect collector activity** is sure to provide surprises! The best place is a forest glade or other wooded area, or by a lake, but the garden is a good place too.

The plan is to attract moths and other night insects to a bright white screen so you can look at them more closely.

You need:

- A length of cord
- A smooth white sheet
- Four clothes pegs
- Four small rocks
- Some see-through containers with lids
- A piece of stiff clean paper

In the woods you need:

- A camping lantern or flashlight (with extra batteries)

In the garden you need:

- Lantern or flashlight, or electric light on a cord plugged into the house.

To make the screen: string the cord between two trees, high enough to hang the sheet over, leaving about 6" on the ground. Use the clothes pegs to pin the sheet to the cord, and use the rocks to weight the sheet so that it stays smooth and tight.

Shine your light onto the sheet from about 3 metres away. Soon the night-flying insects will be attracted to the light and will land on the brightly lit sheet. Make sure you look on **both** sides for visitors.

To study an insect: put a jar over it and use the piece of stiff paper to slide the creature gently into the jar. Quickly put the lid on.

Record your visitors in a notebook and take a photograph if you can. Then let them go. Next day you can identify the moths and other insects. You could also make a poster with the photos to take to school.

Good luck with your 'evening out'! Please send me pictures of the insects you collected.

Dr.Doowitt@naturekidsbc.ca

Photo credits: Sheet set up: Brian Herrin, B.C. Moths: Rosemary Taylor, B.C. • cropped moth: Iuliia Morozova, istock • Background: AllAGRI, istock



QUESTIONS?
COMMENTS?





Why do half of the world's Western Sandpipers like to feed on the tidal flats south of Roberts Bank near Vancouver?

'Snot' Eaters! Who knew?

At low tide each March and April huge flocks of Western Sandpipers swoop down to feed on the 6,000 hectares of brownish-grey gooey mud south of Roberts Bank.

Thousands and thousands of sandpipers – half the world's population – land here as they migrate from wintering as far south as Peru to their breeding grounds in the Arctic. They work their way over the flats, pecking furiously at the mud and stoking up for their long flights.

Scientists used to think that the sandpipers were eating the bugs and worms **IN** the mud. By using video film close-ups, they discovered it is the slimy stuff called 'biofilm' on **TOP** of the mud that sandpipers like to eat.

What is 'biofilm'? It is a kind of oozy glop made up of microorganisms such as bacteria, algae and diatoms, which are rich food for sandpipers. At low tide the seawater slowly seeps out of the mud, leaving the microorganisms as a slimy mucus on top of the mud. The technical name of this mucus is *mucopolysaccharide*, which basically looks and feels the same as snot.



Dunlin and other shorebirds don't eat biofilm. So what is the sandpipers' secret? The close-up studies showed that sandpipers have fine hairs on their tongues. The snot-like layer of biofilm is very, very thin so sandpipers slurp it up with their hairy tongues and specialized beaks.

As the birds move slowly across the mudflat, they simply place their open bill tips on the surface of the mud and collect a tiny ball of biofilm, work it back and forth then swallow it. They're just snorting it up!

Scientists also now know that biofilm provides sandpipers with as much as half of their daily energy requirements during migration. The flocks of tiny sandpipers, (which weigh only about 30 grams each), suck 20 tonnes of the sticky slime off the mud every day to keep up their energy during their long flight.

This means the mud flats at Roberts Bank are an extremely important feeding ground for sandpipers.

The biofilm on these flats is the richest in nutrients and gives the tiny birds the energy to continue their long migration to the Arctic. Without the biofilm most of the birds would not make it to the end of their journey.



Biofilm being drawn up by hairy tongue.

Sandpiper Migration

Conservation note:

Unfortunately the biofilm on the mudflats has been damaged by building a large port at Roberts Bank and the numbers of sandpipers have dropped by half. Now there are plans to expand the port. Scientists, environmentalists, naturalists and community members have been working hard to see this does not happen. The recent Environment Canada report says that loss of the biofilm is something that cannot be replaced so there is hope that the mudflats with their nutritious 'snot' will be preserved for the thousands and thousands of sandpipers who come here in spring every year.



Many thanks to Dr. R. W. Elner and to Jason Puddifoot for their assistance with this article on biofilm in Roberts Bank, written to celebrate the August 2018 International Ornithological Congress being held in Vancouver.

All photographs: Jason Puddifoot, BC

'Botanical Dust'

by Shona Ellis, Associate Head of Biology, UBC

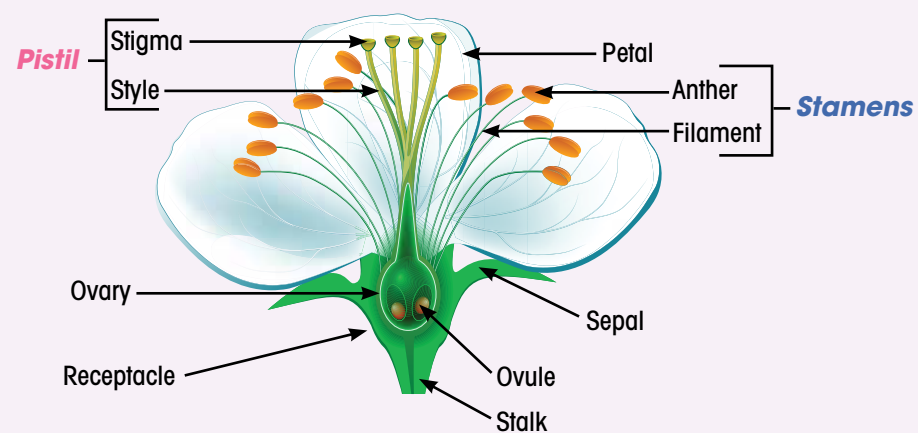
(abridged from an earlier version)

Any kind of dust makes people sneeze and botanical dust - **pollen** - certainly makes lots of people sneeze, but we have to love it anyway. Why?

Without 'botanical dust' we would not have seeds, fruit or vegetables to eat and neither would the animals and birds. Wheat and oats for our morning cereal, delicious fruits such as apples, pears, blueberries and strawberries, tomatoes and peppers for salad – none of these will make new plants unless their female flowers are pollinated.



What **is** pollen and what does it do? Pollen is the male part of the plant that fertilizes the egg (the female part). Pollen is produced in the part of the flower called the **stamens** and the eggs are produced in the **pistil**. Each fertilized egg becomes an **embryo** (new life) within a seed and from each seed grows a new plant.



Pollen needs help to get to the right flower. One way they get help is to use the wind, though this is wasteful because huge amounts of pollen are cast into the air (and make you sneeze!) and only some will reach their target.



Bats, birds such as humming birds and insects of many kinds, are better pollinators. Plants attract these pollinators by using different shapes, colours, patterns, and smells, which is why there is such a variety of flowers in the world.

As the pollinator feeds on a flower, its hairy body picks up some pollen. When it flies to another flower, some of this pollen lands on the sticky stigma of the second flower. Here the pollen fertilizes the ovule and it can grow a seed.

Some of the most important pollinators are the many types of bees and for many reasons. If they find a good source of nectar or pollen they will collect only from that plant species. Bees use the sugary nectar as food and also collect the pollen to feed their developing larvae. With special combs on their legs, bees wipe off much of the pollen that sticks to their hairy bodies and put it in pouches called *pollen baskets*, which they take back to the hive. Of course some of the pollen gets missed and this will end up being rubbed off on a waiting female flower.

So - not only do the plants get pollinated from the visiting back and forth between the bees and plants, but we get honey that the bees share with us!

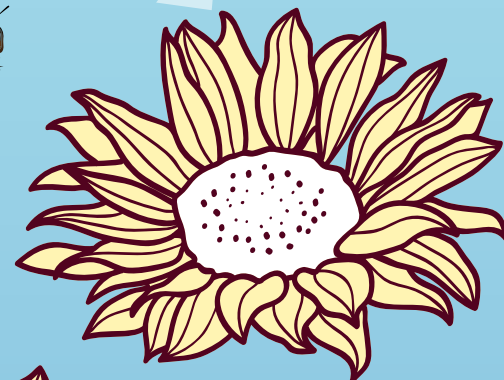
Not all plants need to be pollinated to grow new plants but most of the plants that we humans (and birds and animals) live on, do need to be pollinated. So you can see how important pollen and pollinators are to almost all of the creatures that live on land. In the story on pages 10 & 11 you will find out how to help pollinators stay healthy and strong.

Photo credits: Bee with pollen sacs: Rosemary Taylor, B.C. Bat: Geerati, istock • Hummingbird: mtruchon, istock • Butterfly: panda3800, istock Bee illustration: loradoraa, istock • Sunflower illustration: Mashaberlin, istock

Pollination: how insects help plants to make seeds

Insects take pollen between flowering plants of the same type. The pollen fertilises egg cells to make seeds.

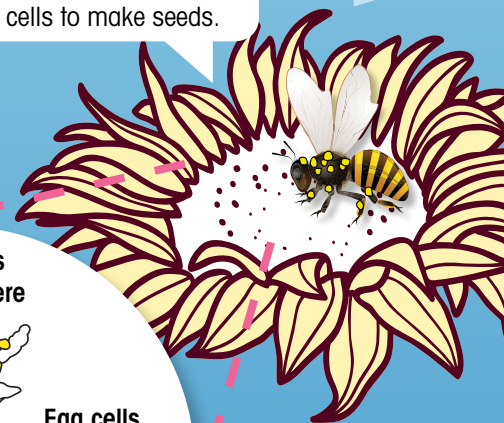
1. The bright colours and smell of that flower tell me that it's got the sugary nectar I love to eat and the pollen I feed to my kids. Yum!



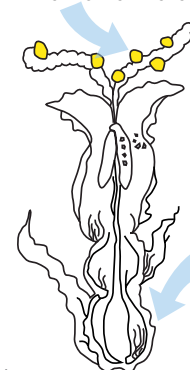
2. Oh my, my! While eating at this flower some of the pollen has rubbed off on me by accident.



3. At this second flower the pollen from the first flower will fertilise the egg cells to make seeds.



Pollen enters the flower here



Egg cells are fertilised by pollen and grow into seeds

With many thanks to the teacher information site **The Eden Project**, Cornwall, UK. Diagram information by Chris Bisson, Eden Project Plant Records Manager.

A Year in the Life of an Osprey

Photographs by Gordon Gore, words by Kristine Webber.

Each April a mated pair of ospreys make the long journey – more than 6000 kms – from their wintering grounds in Central America to Kamloops, BC. The ospreys, named Oscar and Oprah, return to the same nesting site each year at the Dunes Golf Club to raise their family.

The first thing Oscar and Oprah do when they return is to re-build their nest. They gather sticks from the ground or break them off trees by flying into them, then take them to their nesting site, a tall pole topped with a platform that was built for them by BC Hydro.

(The platform keeps the birds safely away from the real power pole nearby. Power lines are very dangerous for ospreys and other large raptors.)

When the huge nest (1-2 metres wide and 30-60 cm deep) is complete, Oprah lays two or three eggs. She cares for the eggs and waits for them to hatch, which takes about a month.

Young osprey trying out his wings

Building the nest

WOW! 154-171cm

Bringing fish to a hungry chick

Eating prey head first

Young osprey misses its target

Young ospreys squawking to be fed

The ospreys fiercely defend their territory against other large birds like eagles and owls, who would like to eat the young, and the Great Blue Heron who would happily take over their well-built nest!

The young ospreys eat a lot, up to six fish a day, and grow quickly. After two months they are ready to learn to fly. They flap their wings and practice in the nest, building up their strength and courage, before taking off for their first flight.

They also have to learn to hunt. Flying over the water, they use their sharp vision to spot fish under the water's surface and then dive, feet first, into the water to try and catch their prey. Learning to fish can be hard work and this young osprey comes up empty-handed!

One day late in summer, Oscar and Oprah tear the nest apart. This tells the younger ospreys that it is time for the family to travel south to their winter home.

About the photographer:
Gordon R. Gore has been observing and photo-documenting the ospreys at the Dunes Gold Course in Kamloops BC since 2014.

This year two eggs hatched! Oprah watches over her young and rarely leaves the nest while they are growing. Oscar is kept busy bringing fish for his hungry, growing family. He hunts in the North Thompson River and also catches fish from the ponds on the golf course.

Cool Facts!

- Also called SeaHawk or Fish Hawk because of its fishy diet.
- Catches fish by skimming the water or diving with claws stretched forward, then carries the prey by its head.

- Has four toes (while other raptors have only three). To help it hold its slippery prey, the Osprey has a curved claw on each toe plus special spikes called 'spicules'.
- Wingspan is approximately 160 cm (The length of your dining room table!).

- Female (1.6 kg) is larger than male (1.4 kg)
- Usually nests in tall trees that have had the tops broken off providing a natural platform to build the nest; will also use artificial nest platforms.

How to help bees and other pollinators

by Simon Briault

The story on pages 6 & 7 of this issue tells us what pollen is and how important it is in growing the plants we eat. Pollinators like bees and butterflies need to be able to find food and safe places to build their nests. So how can you help them where you live? What kinds of plants and flowers do they like, and where should you plant them? Here are five top tips:

1. Plant many different plants and shrubs

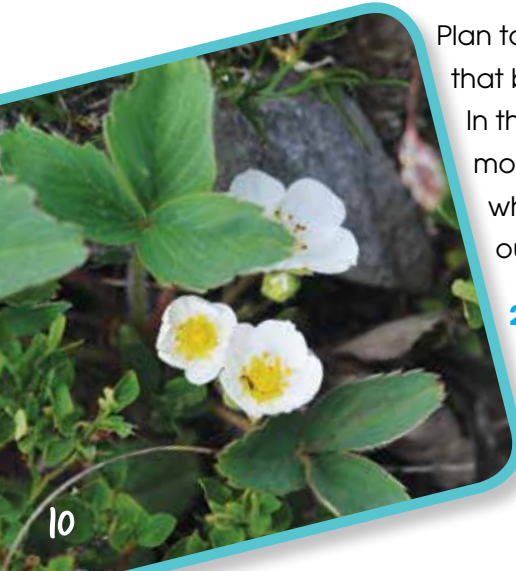
Bees love lavender and other plants in the mint family such as bee balm and salvia, and many herbs that we too enjoy - rosemary, basil, oregano, sage and marjoram to name a few. Clover is another favourite.



Plan to have trees and flowers (native species if possible) that bloom at different times all through the season from March to October. In this way pollinators can always find food when they need it. For the colder months, winter heather is an excellent source of food for bees, depending on where you live in B.C. Talk to somebody at your local garden centre to find out what to plant and when.

2. No back yard? No problem.

You don't have to have a back yard to grow plants and flowers that pollinators will love. You can scatter seeds of nectar-bearing plants along the boulevards and the edges of alleys to provide safe routes from one good feeding location to the next.



Try planting fruit trees, shrubs and herbs in pots on your balcony, your back deck or your roof garden. Even a window box will do. And why not see if there's a community garden near you that you can turn into a bee paradise in the summer months?

3. Don't pull all your weeds

Weeds and wild flowers are great for bees and other pollinators so don't pull them all. Those big, golden dandelions that people hate coming up in their lawns? Bees love them. Ask if you can leave at least a few of them to grow.

Many small solitary bees live in the soil just under the surface. If you do have to do some weeding, pull the weeds out carefully but do not dig over the soil because you could damage the bees' nests.

4. Something to drink?

Just like people, bees and insects like to drink as well as eat. Plant kale, cabbage and Brussels sprouts in your vegetable garden. These plants gather shallow pools of water in their leaves. Can you spot a thirsty bee or butterfly coming by for a visit?

5. Avoid pesticides and fertilizers

It's very important **not** to use artificial pesticides and fertilizers. Bees in particular are very sensitive to the toxins they contain. Garden stores usually offer natural options such as ladybugs and parasitic worms as well as organic fertilizers for the soil. Be sure to protect and conserve spiders because they work tirelessly to keep pests in check.

What to do if you get stung by a bee

There are more than 450 different kinds of bees in B.C. Most of them are not able to sting you at all. Just watch bees and let them get on with their work. It's only if they feel like you're threatening their nest or if you are unlucky enough to sit on one that you might get stung. If this happens, TELL AN ADULT RIGHT AWAY.



Photo credits: Himalyan Blackberry with a Tri-coloured Bumble Bee, Brown-belted Bumble Bee male feeding on nectar, Clodius Parnassian female: Rob Alexander, B.C. • Wild Strawberry, Paintbrush: David Shackleton, B.C. • Bee illustration: loradoraa, istock

The Totally Awesome Backyard Campout!

By Brian Herrin

Today was the day – Bria and her friend Alice were going to camp out in the backyard!

It would be a new-moon night, perfect for staying up late to see the stars. Bria's Dad had borrowed a green laser pointer and he promised to take them on a 'Galactic Field Trip' when it got really dark.

When Alice arrived after lunch she asked "What first?" "Put up the tent," said Bria.

They picked out a level grassy spot between the magnolia and their cherry tree. They strung parachute cord between the house and tree and Bria's Mom and Dad helped pull it really tight.

Then the girls threw a clear plastic tarp over the cord and stretched it out. They attached the four corners, using some small bouncy balls tied into the plastic sheet and anchored them with wooden pegs they had made from kindling pieces. By using the balls they didn't need to rip holes in their tarp.



After a picnic supper, they went for a walk just before sunset and watched as the night sky spread over them. They saw the International Space Station pass right on time. The dot of light slowly arrived - the brightest object in the sky - until it faded after about two minutes. Imagine having a sleepover up there! Who could sleep?

The International Space Station with 6 astronauts aboard orbits the Earth about 15 times a day.

To find out when the ISS will pass over where you live, open spotthestation.nasa.gov and click on the nearest circle to your home. Keep on clicking to get to your location.

"Time for s'mores!" said Bria. "Yay!" said Alice. They went home and lit their tea light barbecue so the four of them could cook up some gooey s'mores.

(To see how to cook & make s'mores, check out page 14)

At last – it was dark enough for the Galactic Field Trip! The girls and Bria's parents lay down on a plastic ground sheet with feet out and heads touching. Dad pointed out the constellations... the Big Dipper, the North Star and the Little Dipper... Orion the Hunter, Draco the Dragon, Cygnus the Swan and the bright cluster of stars called the Seven Sisters.

When the viewing was over, with their minds whirling with stars, the girls took the ground sheet into their tent. Mom turned on the back porch light so the girls could see while they rolled out their sleeping bags.

They heard a soft call from Mom to "come up to the porch quietly and slowly!" There they saw the most enormous and beautiful moth any of them had ever seen, sitting on the wall beside the porch light. Its wings were 15 cm across!

As they admired its lovely orange colour and the huge eyespots on its back wings, Mom used her phone to Google **Giant Moth + BC** and found that it was a **Polyphemus** moth.

Beside it were other moths and insects, and even as the girls watched, more arrived, attracted to the light. It was a spectacular collection but the giant moth was the absolute best!

At last, the girls went back to snuggle into their sleeping bags. They listened to night noises – an owl hooting, twigs rustling, something small running through the grass, but it wasn't long before they were fast asleep.

Morning came early - the tent let in light as soon as the sun came up and the birds had been chirping even before that – it was the perfect end to the **Totally Awesome Backyard Campout!**



Seven Sisters



Polyphemus moth

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.

Al Grass: Credit - Robert Alexander, B.C.



Stories of the Salmonberry

The Salmonberry is a shrub that grows all along the coast of BC, on forest edges and beside trails.

Salmonberry flowers are pink and have five petals. In spring, Rufous Hummingbirds returning from their winter grounds in Mexico seem to arrive back in BC just as the Salmonberry comes into bloom, so their nectar gives the birds an energy boost after their long journey.

The salmonberry is related to the raspberry and blackberry and their berries look much the same - their fruit is made up of little "beads" - each with a hard seed. Salmonberries come in yellow and red, and sometimes orange. Yellow ones stay yellow and are just as tasty as the red.

Birds love to eat the berries. One bird, the Swainson's Thrush, was called the "Salmonberry Bird" by the indigenous people because it arrived back from its wintering grounds in May, just as the Salmonberries ripened.

When a bird eats the fruit, it later "poops" out the seeds with a little fertilizer so that new plants can grow. New bushes grow up with more flowers and more fruit; they also provide nesting and cover from the weather and enemies.

And all because a bird pooped out some seeds!

P.S. How did the Salmonberry get its name? It looks like a cluster of salmon roe (eggs).



Photo credits: Salmonberry flower, Rufous Hummingbird: Rob Alexander, B.C. • Swainson's Thrush: Minette Layne, CC • Salmon roe: iStock

NATUREWILD-NEWS



Passports to Nature

Gracie and Hunter (Victoria), Pernilla (N. Vancouver), Leah and Reid (S. Okanagan) sent in their first passports. Jacob, Andrew, Daniel and Olivia (Merritt), Anya (Vancouver) and Shelby (Nicomekl) all earned their NKBC caps. Shelby also sent in passport #3 as did Raco and Violetta (N. Okanagan), Kaylee and Emma (Kelowna). Congratulations, everyone!



Merritt NatureKIDS: had a 'Lab Day' at the Nicola Valley Institute of Technology and a spring adventure with Alan and Andrea Burger (centre). Photo credits: Roxanne Wallace

Lots of habitat restoration this Spring! Nicomekl NatureKids restored habitat along the Little Campbell River. Photo credits: Marg Cuthbert



NatureKIDS joined the **BC Parks Elders Council** and **BC Nature** in planting around the Heritage Centre in North Vancouver (NKBC Office building). Photo credits: Colin McQuillan



Planting is heavy work!

The Otter Club did bird identification with one of our school members, Cloverdale Catholic School. Cloverdale Catholic School also did a worm composting project. Photo credits: Sister Mary Bethany



How to make & cook s'mores

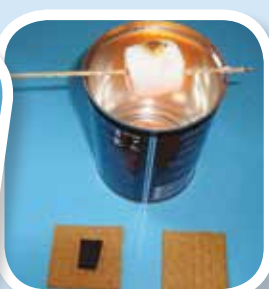
Photo credits: Brian Herrin, B.C.

WHAT ARE S'MORES?

S'mores are made by toasting marshmallows over a flame until they are soft and gooey. Then the marshmallow is put on top of a square of soft chocolate that is on a graham wafer. Another wafer is put on top to squish it all into a s'more. Do you want s'more?



What you need to make s'mores



Toast marshmallow



Squish marshmallow & chocolate between two graham crackers



S'mores are ready to eat!

Swallow Species in British Columbia

Six swallow species come north to BC each year to breed – Bank, Tree, Violet-green, Cliff, Northern Rough-winged and Barn. Cleverly, swallows have divided up good breeding spots. Barn and Cliff Swallows make mud nests, Tree and Violet-Greens are cavity nesters, while Northern Rough-winged and Bank Swallows make burrows in sand or dirt cliffs. All swallows return to re-use the nests from last year.

Barn Swallow (*Hirundo rustica*) The swallow most people recognize, with its long forked tail. They build their nests both inside and outside barns and other buildings. Two or three families nest near each other, but usually not more. Photo credits: Rosemary Taylor, B.C.



Cliff Swallow (*Petrochelidon pyrrhonota*) Cliff Swallows are very neighbourly and will build many nests close to each other, as many as 40, side by side below the overhang of a barn. Photo credits: Becky Matsubara, CC.



Tree Swallow (*Tachycineta bicolor*) The natural place for Tree Swallow nests is in a tree cavity, but they will happily use nest boxes. Nest boxes are often put on the top of poles in ponds and marshes, so the birds will get a good diet of insects. Photo credits: Rob Alexander, B.C.



Violet-green Swallow (*Tachycineta thalassina*) The Violet-green swallow is perhaps the most beautiful swallow, especially when sunshine catches their brilliant colours. They too will use nest boxes. Both Tree and Violet-green swallows like to line their nests with feathers. If you see a swallow building a nest, find an old pillow and throw some of the feathers into the air. The swallows will swoop down and collect them! Photo credits: Becky Matsubara, CC.



Northern Rough-winged Swallow (*Stelgidopteryx serripennis*) These swallows prefer to burrow into a sand or dirt cliff near a lake or in a gravel pit. They may use tunnels dug out by other birds and mammals or tunnel into the cliff to build their own burrows. They don't care for company and usually only two or three families will nest near to each other. Photo credits: Matt Tillett, CC



Bank Swallow (*Riparia riparia*) This is the smallest swallow, yet it can build tunnels over a metre long in a dirt or sand cliff. They are very sociable, unlike the Northern Rough-winged Swallow, and build in colonies of up to 300 nests. Photo credits: Aaron Maizlish, CC



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