



BUILDING CLIMATE RESILIENCE IN THE OKANAGAN

A Homeowner's Resource Guide

“The South Okanagan Real Estate Board’s climate resilience resource guide for homeowners is ground-breaking work. This is the first time in Canada that a realtor association is taking the lead to educate realtors and homeowners about what they can do to prepare themselves and their communities to face the challenges of climate change events.”

—Kelly Johnston, Executive Director, Firesmart® Canada

Building Climate Resilience in the Okanagan —A Homeowner’s Resource Guide

Published by the South Okanagan Real Estate Board, 2019



Building Climate Resilience in the Okanagan—A Homeowner’s Resource Guide

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SOUTH OKANAGAN REAL ESTATE BOARD (SOREB)

This guide introduces you to the South Okanagan's unique environment and provides advice on how to use this knowledge to enhance your property. Choosing the right plants and hardscape materials can protect your property from drought, fire and flood while also reducing water, energy and landscaping costs.

VISION SOREB is a relevant leader within the real estate profession.

MISSION SOREB is committed to empowering our membership to attain the highest level of professionalism.

VALUE SOREB's core values are: **Transparency, Ethics, Education, Leadership, Integrity and Advocacy.**

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REALTORS[®], helping to build sustainable communities in the Okanagan region.



Photo: Shutterstock

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Links and websites for further information as referenced in the guidebook.



HOW TO USE THIS GUIDEBOOK

The intent of this guidebook is to provide residents and potential property owners with a useful resource tool. Chapter topics are colour coded, and throughout the guide the content is augmented by a recognizable computer image identifying a **RESOURCES** portal, connecting the reader with more specific, detailed information. Simply click on the embedded hyperlink, or enter the URL in your browser to directly access additional information.

DISCLAIMER Regulations, technology and best practices can change over time. Every attempt has been made to include the most up-to-date information and resource links.

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the South Okanagan Real Estate Board
103-3310 Skaha Lake Road, Penticton, BC V2A 6G4

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FOREWORD

This guide was created to inform local realtors and residents about climate resilience for the semi-arid Okanagan.

“The Real Estate Foundation of BC is very proud to have supported the creation of this guide—a unique collaboration between the South Okanagan Real Estate Board, Regional District Okanagan-Similkameen and RBC Blue Water Fund along with other partners, including local governments, First Nations government, NGOs, conservation groups, landscape organizations and associations.

The guide offers valuable information on a variety of relevant subjects such as flood, fire, drought, energy efficient buildings, biodiversity, invasive species and food security. It’s a timely, informative and inspiring resource that is addressing a pressing need in the Okanagan as the region prepares for extreme weather events and other climate change impacts. This guide

touches on several of REFBC’s key priorities and interests by introducing solutions to building community resilience and capacity in the face of climate change. We are very pleased to have been able to support this project.”

—Jack Wong, Executive Director and staff,
Real Estate Foundation of BC

“It’s a timely, informative and inspiring resource.”

—Jack Wong, Real Estate Foundation of BC



NOTICE TO READER

The climate in the Okanagan is changing.

This guide summarizes climate challenges, and introduces solutions to support Okanagan homeowners in their efforts to protect and enhance their real estate investment. The goal of the guide is to raise awareness and identify key actions homeowners can take to protect properties from flood,

drought, fire, and invasive species. Directed at both new owners and long-time residents, this guide illustrates cost-effective investments that create safer, more resilient communities and provides and illustrates simple options to modify homes and landscaping.

Our goal is to make Okanagan communities safer and better equipped to meet the ongoing challenges of our changing climate.



OKANAGAN BASIN

INTRODUCTION

How can the Okanagan homeowner better prepare to face the ongoing challenges of climate change events?

Mention of the Okanagan region conjures up happy images of beaches, lakes, spectacular wineries, cherries and peaches, and the unique semi-arid landscape that surrounds us. Recent news headlines, however, show us different pictures: flooded landscapes, wildfires threatening homes and businesses, and mudslides blocking roads. Both sets of images reflect the current reality of Okanagan living,

a reality that we must address to maintain what we value. These events are not unique to the Okanagan; they are occurring in many Canadian communities and around the world.

The good news story is that each of us can take practical steps to better protect our properties and ourselves. We can address new challenges and shift our practices to suit our changing climate.

We have much to learn from the *Syilx* Okanagan People's relationship of responsibility and reciprocity with the land and water. We must commit to make better decisions as stewards for the natural environment.

This guide also contains useful links for further reading, allowing the reader to dive more deeply into each topic.

Private property owners can make a positive change to land and water management.



THE SYILX OKANAGAN— THE INDIGENOUS PEOPLE OF THIS LAND

“We, the *Syilx* People, feel a deep connection with our land, our water and with our relatives, the animals and the trees, the rocks and all living things that share the environment.” —*nx^wəlx^wəltantət*, 2013

THE SYILX OKANAGAN PEOPLE

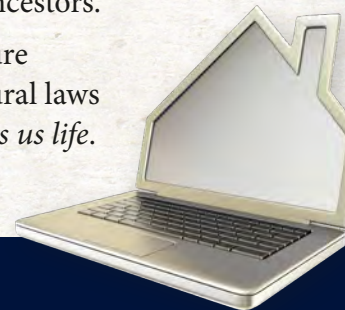
We respectfully acknowledge the *Syilx* Okanagan People as a distinct and sovereign nation—the original and enduring inhabitants of this region. They share the same land, *nsyilxcən* language, culture, and customs throughout their trans-boundary tribe. For thousands

of years they have been self-reliant through their own ingenuity, land and water stewardship and practices guided by the knowledge of their ancestors.

The *Syilx* language and culture continue to honour the natural laws of the *tmix^w*—*that which gives us life*.



Photos and map courtesy
Okanagan Nation Alliance



“We will survive and continue to govern our mother and her resources for the good of all for all time.”

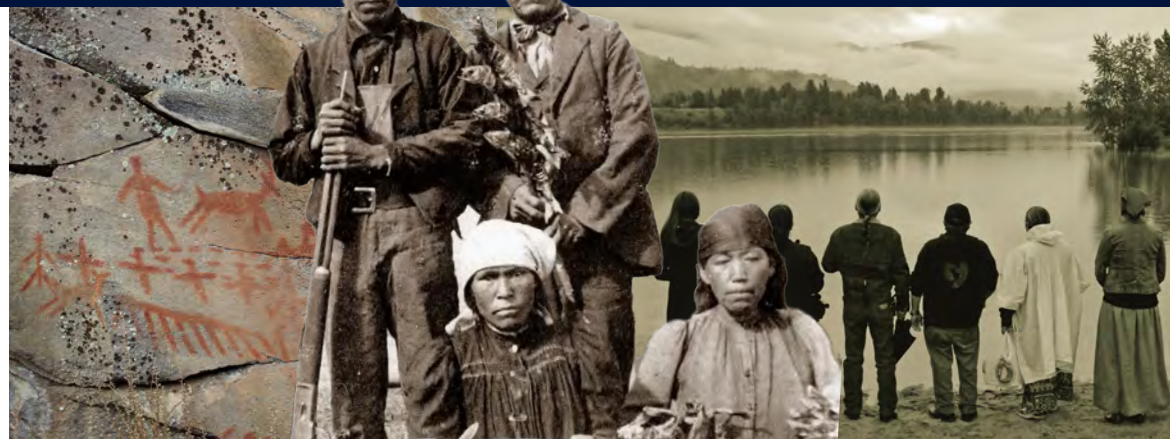
—Okanagan Declaration 1987

RESOURCES

Okanagan Nation
Syilx Nation Songs



Living within the *Syilx* Okanagan territory, it is likely that we may come across sacred objects, artifacts and human remains. These need to be in care of the *Syilx* Okanagan People. If you find potential evidence of past human occupation, please contact the Okanagan Nation Alliance, Executive Director at director@syilx.org or 250.707.0095 ext 214.



EVERYONE HAS A ROLE TO PLAY

PROPERTY OWNER | REALTOR | DEVELOPER | DESIGNER | BANK | INSURANCE | FEDERAL GOVERNMENT
PROVINCIAL GOVERNMENT | LOCAL GOVERNMENT | FIRST NATIONS GOVERNMENT | NGOs | RECREATIONAL USER

Successful climate resilient* communities require participation from property owners, developers, municipalities and regulatory agencies.

Much can be done on the home front by residents working to improve their landscapes and homes, complementing government efforts on climate adaptation and mitigation. Understanding that each residential property is part of

a larger landscape helps everyone, by keeping our watershed clean and reducing neighbourhood fire risk.

—Adapted from Low Impact Development Manual, University of Arkansas Community Design Centre

*Resilience: adaptability, elasticity, hardiness, strength, toughness, unshockability

CLIMATE-FRIENDLY PROPERTY MANAGEMENT

The economic benefits of climate resilient properties include:

- Increased property values when well-designed, functional methods are used.
- Time and cost savings related to maintenance, water use and irrigation.
- Reduced energy costs by reducing or eliminating the use of chemical fertilizers and pesticides.



CLIMATE

“Canada’s changing climate means more droughts, floods and storms—along with less ability to predict them.”

—Robert Sandford, EPCOR Chair for Water and Climate Security at the United Nations University Institute for Water, Environment and Health

Climate

CLIMATE is described by measurements like temperature, precipitation, atmospheric pressure, wind velocity and humidity for a particular region, measured over several decades.

WEATHER is the current condition of climate, or the day-to-day description: e.g. raining, snowing, sunny, current temperature, wind etc.

UNDERSTANDING OKANAGAN CLIMATE

The availability of water in the Okanagan valley is snowpack-dependent. Shifting climate is resulting in greater extremes in weather and the availability of water. Extended periods of drought and flooding are likely to occur more frequently in our region.

Future climate in the Okanagan is likely to include:

- Severe weather events occurring more often.

- Less snow and more rain in winter. (Annual average precipitation is 28 cm.)
- Snow melting earlier.
- More frequent flooding, with associated shoreline damage to creeks and lakes.
- Longer stretches of hot temperatures with no precipitation.
- Less water available in hottest months.
- Greater dependence on water storage during flood and drought.

Regardless of changing climate, the South Okanagan will continue to be one of Canada's most desirable places to live, work and play. Local residents can manage their properties to protect our vibrant community.



RESOURCES

A Changing Climate
Adaptation Primers



WATER | siwłk^w

Photo: Shutterstock



Understanding Water

KEY FACTS ABOUT WATER

- Floods and droughts are part of nature and are not unique to the Okanagan.
- The increasing frequency and intensity of floods and droughts is linked to climate change and human impacts on the land.
- Spring is the time of greatest risk for flood; summer and fall is the time of greatest risk for drought.
- Extreme weather events such as drought and floods may reduce water quality and increase risk of land erosion.

Compared to other countries, Canada has a very high per person use of water. And in the Okanagan, with our semi-arid climate, this doubles. At the same time, we have less water available per person than anywhere in Canada.



Water treatment costs increase as water use increases. Water supply is limited during periods of drought, a time when local governments must apply water restrictions to protect supply for all users, help sustain agriculture crops and maintain water to support wildfire suppression.

Image courtesy: Okanagan Basin Water Board–Okanagan WaterWise



“We have only the water that falls within this narrow valley, and what we do with it determines our collective health, wealth, and every aspect of the environment around us.”

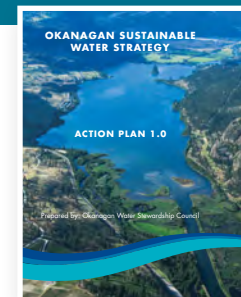
—Anna Warwick Sears, Executive Director, Okanagan Basin Water Board

The amount of available water in the Okanagan is snowpack-dependent. Warmer, wetter winters, will result in less snowpack and less accessible water for the drier summer months.



RESOURCES

Okanagan Waterwise



SYILX OKANAGAN NATION SIWŁK^w WATER DECLARATION

The *Syilx* Okanagan Nation *siwłk^w* Water Declaration serves as a living document on the *Syilx* Okanagan People's relationship to *siwłk^w* (water) which is based on reciprocity and responsibility and has been passed down to them since time immemorial.

The Chiefs of the Okanagan Nation Alliance signed the *Syilx* Nation *siwłk^w* Declaration in 2014 as a reflection of the collective voices of the *Syilx* People.



RESOURCES

The *Syilx* Okanagan People have provided their indigenous perspective, commitment and advice on water. Learn more by reading the *Syilx* Nation *siwłk^w* Declaration



The Declaration is a living document that affirms the commitment that we must safeguard *siwłk^w* for everyone in the Okanagan and throughout the territory, for perpetuity. —Okanagan Nation Alliance, 2017

iŕ siwłk^w sx^włx^waltət.

WATER IS OUR RELATION.

iŕ ı yŕayŕát stim siwłk^w iŕ ılmix^wmtət.

WATER BONDS US TO OUR ANCESTRY, OUR DESCENDENTS AND OUR LAND.

k^wu yŕayŕát iŕ k^wu sqilx^w kscpútaŕstm áłiŕ ılmix^wmtət iŕ siwłk^w.

WATER MUST BE TREATED WITH REVERENCE AND RESPECT.

áłiŕ iŕ nıx^włx^włtañtət lut kstañmúsmtm, áłiŕ kscxtŕstim yŕayŕát iŕ stim.

OUR RELATIONSHIP WITH WATER IS NOT TAKEN LIGHTLY, WE ARE RESPONSIBLE TO ENSURE THAT OUR RELATION CAN CONTINUE TO MAINTAIN THE HEALTH AND

RESILIENCY OF OUR LAND AND ANIMALS.

Iŕ siwłk^w nıx^włx^włtañs iŕ tmıx^wúlaŕx^w uł yŕayŕát iŕ stim

WATER IS THE LIFEBLOOD OF OUR LAND AND OUR ANIMALS AND WE AS SYILX PEOPLE

kscsux^wstm iŕ siwłk^w ıaŕıáŕ knaqŕ

ck^wisk^wsts y^sat a² cx^wlx^walt.

RECOGNIZE WATER AS A SACRED ENTITY AND RELATIVE THAT CONNECTS ALL LIFE.

i² siw^lk^w y^sat ta²kín k^l kscx^wlx^walts
i² tñx^wúla²x^w u^l k^l tmix^w.

WATER COMES IN MANY FORMS AND ALL ARE NEEDED FOR THE HEALTH OF LAND AND FOR THE ANIMALS.

mipnúntm i² s^xa²ǎ²s i² siw^lk^w
k^l y^say^sát i² stim.

WATER IS OUR MOST SACRED MEDICINE, WATER NOURISHES, REPLENISHES, CLEANSSES AND HEALS.

ǎ² ck^wúlm^{stm} i² siw^lk^w
kscha²stím u^l ksctxt^{stm}.

ANY USE OF WATER SHOULD BE AN ACT OF REVERENCE AND A COMMITMENT TO OUR RESPONSIBILITIES.

y^say^sát i² sx^wlx^walt^{ót}, ǎ²pná² u^l cm^l
t^l spñkin, á^li² k^wu s²uk^wna²qínx.

OF ALL LIFE. NOW AND TO COME, AS SYILX PEOPLE.

i² siw^lk^w cx^wuy t^l tñx^wúla²x^w t^l
wist u^l lut kscwsn^ccuts t^l stim.

WATER COMES FROM THE SKY AND THE HIGHEST PLACE YET IT NEVER WILLFULLY RISES ABOVE ANYTHING.

i² tay^xwú^t mi ct^yap, na^xm^l t^l
y^sat t^l stim, misk^wæck^wáct.

IT WILL ALWAYS TAKE THE LOWEST PATH IN ITS HUMILITY. YET OF ALL THE ELEMENTS, IT IS THE MOST POWERFUL.

k^wu scún^{ma}2^{stm} i² siw^lk^w
k^wu k^wcæck^wact u^l qm^qamt.

OUR SACRED WATER TEACHES US THAT WE HAVE GREAT STRENGTH TO TRANSFORM

THE HIGHEST MOUNTAIN WHILE BEING GENTLE, SOFT AND FLEXIBLE.

iwá ǎ² tqəqip ksk^sxñmíxa²x ití².
k^lǎ²u^lx^w, tqiltk^ms, km mlx^wuy^ms.

WATER WILL ALWAYS FIND A WAY AROUND OBSTRUCTIONS, UNDER, OVER AND THROUGH.

k^wu kscún^{ma}2^{stm} ksc^kw^llnustm
xi²míx stim.

IT TEACHES US ANYTHING IS POSSIBLE.

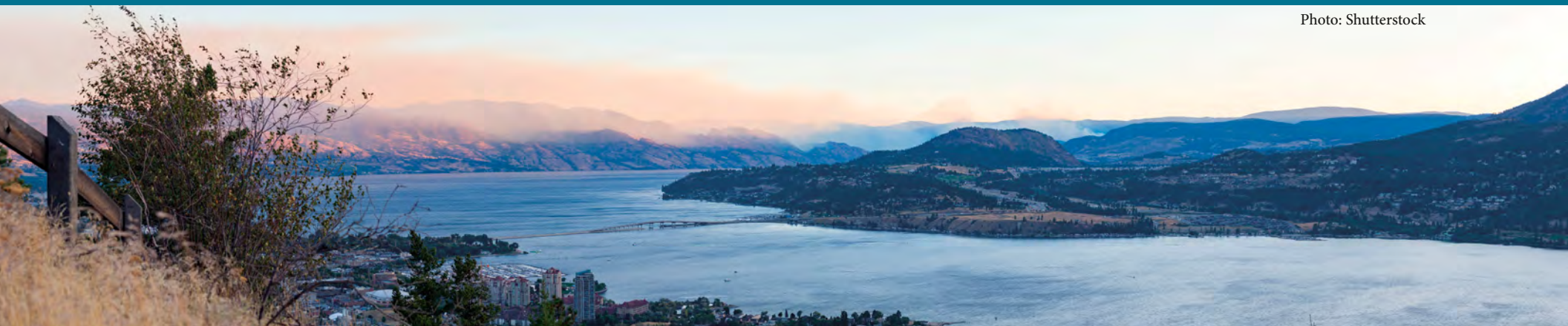
ǎ² ct^yap i² siw^lk^w lut stim ǎ²
ctílx^wsts u^l k^wu ks^xíla²x ití².

WATER MOVEMENTS, PATHWAYS RESILIENCY AND POWER TEACH US WHO WE ARE AND WHO WE CAN BE AS PEOPLE.

Excerpt, *Syilx Nation siw^lk^w Declaration*, 2014

k^lusxənitk^w | Okanagan Lake

Photo: Shutterstock





“Wetlands are one of the most important parts of our water system.”

—Syilx Elder, 2017

nᓂaᓄᓂᓂaᓄᓂᓂ (valley bottom wetlands) | kəlq̓wəsq̓əstam (high mountain wetlands)

OKANAGAN NATION ALLIANCE STAFF MONITORING WETLANDS TO PROTECT THE FEW THAT ARE LEFT.

KIDNEYS OF THE EARTH

In addition to being important areas for biodiversity, wetlands receive, store and filter water. In times of excess water, wetlands provide a function similar to our kidneys. Past land developers did

not realize the importance of wetlands, so over 85% of Okanagan wetlands have been filled in or drained. This loss has reduced our ability to manage seasonal floods. Protecting the remaining

wetlands and providing additional areas for water absorption (e.g. rain gardens) are important actions that will help reduce the effects of flooding.

Photo courtesy Okanagan Nation Alliance

Understanding Risks to Water

Climate change can be addressed by changing development and land use practices, not just on a broad scale, but also by changing management of individual private properties.

KEY FACTORS AFFECTING WATER QUALITY

EXTENSIVE HARD SURFACES (PAVEMENT, ASPHALT, BUILDINGS)

degrade water quality by:

- Preventing water from entering soil which increases the volume of surface water causing overland flooding.
- Increasing the dependence of communities on expensive pipes and drains for stormwater management.
- Triggering tax increases when pipes and drains need to be made larger to contain increased water from storms.
- Facilitating the flushing of chemical residue from roads into our lakes, rivers and streams when it rains.

BUILDING ON LOW-ELEVATION AREAS SUBJECT TO FREQUENT FLOODING (FLOODPLAINS)

causes problems by:

- Restricting the amount of land available to hold excess water when flooding occurs.
- Increasing the risk of flood damage and also negatively impacting water quality.
- Making flood insurance more difficult to obtain.
- Eliminating valuable wildlife habitat.

LACK OF SHORELINE VEGETATION (TREES AND SHRUBS)

damages our foreshore lands and waterways by:

- Promoting algae and milfoil weed growth in shallow shoreline areas.
- Negatively affecting water quality by removing the filter that prevents soil, pollutants and chemicals from entering lakes and streams.
- Contributing to loss of property due to shoreline erosion (bank sloughing, undercutting). Tree and shrub roots anchor slopes and shoreline banks.
- Increasing the volume and duration of flooding, because vegetation acts like a sponge, taking up excess water and releasing it slowly.
- Reducing shade along the water's edge that keeps water cool, reducing algae and bacteria growth, and providing habitat for fish.

LOSS OF WETLANDS

causes problems by:

- Removing storage locations for water, especially necessary during floods.
- Reducing water quality because wetlands filter water.
- Promoting floods and droughts because wetlands store water and release it slowly thus moderating drought periods.

DOCKS AND SHORELINE RETAINING WALLS

degrade our lakes by:

- Affecting water circulation, thus negatively impacting water quality.
- Disturbing and altering the lake bottom during construction—affecting both lake health and water quality.
- Impacting water quality when wood preservatives leach into lakes (docks and wood walls).
- Causing catastrophic flooding, ongoing repair costs, water quality impacts and erosion of adjacent properties (walls).

LOSS OF TREES

promotes flooding by:

- Affecting the timing, duration and magnitude of stream flows. Tree loss can occur due to urban development, some forest harvesting practices, roadworks, fires and insect outbreaks (such as pine beetle).

SEPTIC SYSTEMS

cause problems by:

- Affecting water quality and promoting algae and bacteria growth, when sewage leaks from poorly maintained or damaged systems.

Climate change can be addressed by changing development and land use practices, not just on a broad scale, but also by changing management of individual private properties.

PROPERTY OWNERS CAN ADAPT TO CHANGING CLIMATE AND REDUCE POTENTIAL FOR WATER DAMAGE BY

- Reducing the extent of impermeable surfaces.
- Restoring vegetation in key areas.
- Restoring wetlands.
- Reducing or eliminating retaining walls and docks.
- Avoiding development in floodplains.
- Improving the design and maintenance of septic systems.



“To plan for change tomorrow, we need to mitigate and build resilience in all that we do today. If you are not prepared, we are not prepared.”

—Paul Edmonds, Red Dragon Consulting Ltd., Emergency Response Expert

Photo courtesy Red Dragon Consulting Ltd.

Understanding Your Flood Risk

The amount of water that flows in creeks, rivers and lakes is connected to rainfall and water under the ground (groundwater)

and its proximity to the surface. A flood plain is an area of land adjacent to a creek, river or lake. Groundwater

is usually close to the surface in flood plains, which are subject to frequent flooding during periods of high rainfall.

EXPLORE AND RESEARCH PAST EVENTS

Understanding the surrounding drainage and past events will help you understand flood risk.

- Are you located near a lake, creek or river?
- If you have a lakefront property, what type of basement do you have?
- What type of soils are on the property and do they tend to remain wet or boggy for all or part of the year?
- Is there a known history of flooding on the property?
- Do your sumps, weeping tiles, and land drains in the yard flow to a recognized low area of your property?
- What is the drainage near you? Do highway drains flow near or toward your property?
- Have you reviewed provincial flood plain maps to check if the habitable buildings on your property are built to a Flood Construction Level?
- Know where the maximum lake level (also called full pool level) affects your property.
- Have there been any insurance or disaster financial assistance claims submitted for the property?
- Look at the design of existing gardens, landscaping and irrigation. Do these move water away from your house, window wells and low areas?

Know if you live in a flood-risk area. Living on an Okanagan property can be idyllic, but knowing your landscape, climate and weather conditions helps you manage risks and avoid problems.

PERMISSION IS REQUIRED

What you do on your property can affect water quality and flood risk elsewhere. If you live near a lake, stream or wetland, you may require multi-government permissions to undertake any drainage works or activities that require re-contouring or significant movement or disturbance of soils or vegetation near a water course (lake, stream, wetland).

RESOURCES

FrontCounterBC

Professional advice may be required and can be helpful in addressing flood risk. Contact your local government planning department regarding bylaws and permits.

www.frontcounterbc.gov.bc.ca/



FLOOD PROOFING YOUR HOME

BEFORE THE FLOOD EVENT

- Have a personal emergency plan and kit.
- Know how to turn off your utilities.
- Sign up for emergency notifications from your local government.
- Store valuables in upper floors.
- Install tiled floors in areas which may be susceptible to water inflow.
- Maintain roof gutters. Keep them clear of snow and debris.

- Secure and anchor propane tanks.
- Install a non-return sewer valve.
- Ensure eavestroughs direct water at least 1.5 metres away from the building foundation.

DURING THE FLOOD EVENT

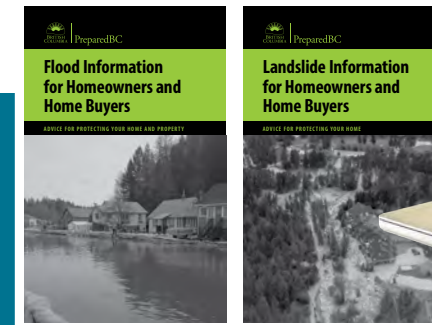
- In the event of a flood, plug toilet, sink, shower drains and sewer.
- Turn off power to all electrical circuits except sump pump.

- Move appliances above anticipated flood level.
- Stabilize and secure any permanently installed large fuel tanks with sandbags.

RESOURCES

Flood Information for Homeowners and Home Buyers. Advice for Protecting your Home and Property

Floods are not unique to the Okanagan. They are the most frequent natural hazard in Canada and the costliest because of the property damage they cause.



Floods can occur in any region, in the countryside or in cities. Floods have affected hundreds of thousands of Canadians. They can occur at any time

of the year and are most often caused by heavy rainfall, rapid melting of a deep snowpack, ice jams, or more rarely, the failure of a natural or human-made dam.

RESOURCES

Landslide Information for Homeowners and Home Buyers. Advice for Protecting your Home.

FLOOD INSURANCE AND PREVENTION

Since water damage is the number one cause of home insurance claims, it helps to know what types of water damage are covered.

BREAKDOWN OF THE COMMON DIFFERENCES IN WATER DAMAGE COVERAGE

TYPICAL Home/condo/tenant coverage for water damage

✓ Caused by plumbing leaks from burst pipes, malfunctioning taps, improper connections, hot water tank failures

✓ Covers losses from damage to your home, condo or personal property

✓ Included in most home, condo or tenant policies

✓ Available to all homeowners, condo owners or tenants

OPTIONAL Sewer backup coverage

✓ Caused by sudden back up sewers, pipes, drains, septic system, sump pumps

✓ Covers losses from damage to your home, condo or personal property

✓ Available as optional coverage added to an existing home, condo or tenant policies

✓ Available to most homeowners, condo owners or tenants

OPTIONAL Overland flood coverage

✓ Caused by overflow of lakes, ponds, rivers; or surface water from heavy rainfall or ground water or rising of the water table entering your home or rising of the water table entering your home at the ground level or seeping in through windows, doors and walls.

✓ Covers losses from damage to your home, condo or personal property

✓ Available as optional coverage added to an existing home, condo or tenant policies

✓ May not be available to all homeowners, condo owners or tenants

FLOODING CAUSED BY STORM SURGES, TSUNAMIS OR TIDAL WAVES IS NOT COVERED

STEPS YOU CAN TAKE TO PROTECT YOUR PROPERTY

INSIDE YOUR HOME

- Avoid keeping valuable items in the basement.
- Don't pour fats, oils and grease down your drains.
- Raise large appliances, furnaces, hot water heaters, electrical panels and oil tanks above any anticipated flood level.
- Install a backwater valve as recommended by your municipality. Some municipalities may offer subsidies to offset the installation cost.
- Reduce home water use during heavy rainfalls.
- Install flood shields or barriers for basement windows and doors. The tops of the shields should extend above ground level.

OUTSIDE YOUR HOME

- Ensure proper lot grading. If possible, build up the ground around your house so that water will drain away from basement walls.
- Landscape with plants that resist soil erosion. If you live in an area prone to wildfire, consider fire resistant plants.
- Keep water out of window wells. In the winter, clear snow away from the house foundation.
- Clean and maintain downspouts and eavestroughs at least once a year. Keep any city drains near your property free of leaves and other debris.
- Check that sidewalks, patios, decks and driveways don't shift over time and cause water to drain towards your house.

- Disconnect downspouts connected directly to the French drains, or weeping tile (trench filled with gravel or containing a perforated pipe that redirects surface water or groundwater away from your home) or sanitary sewer laterals (pipes that connect your home's plumbing system to your municipal sewer system).
- Make sure downspouts extended at least six feet from your basement wall. Water should drain away from your house, and neighbouring houses, towards the street or backyard.

PREVENTATIVE MEASURES SHOULD ALWAYS FOLLOW LEGAL REQUIREMENTS SET BY YOUR MUNICIPALITY.

Adapted from Insurance Bureau of Canada

TIP: REVIEW YOUR INSURANCE COVERAGE EVERY YEAR WITH YOUR INSURANCE REPRESENTATIVE.

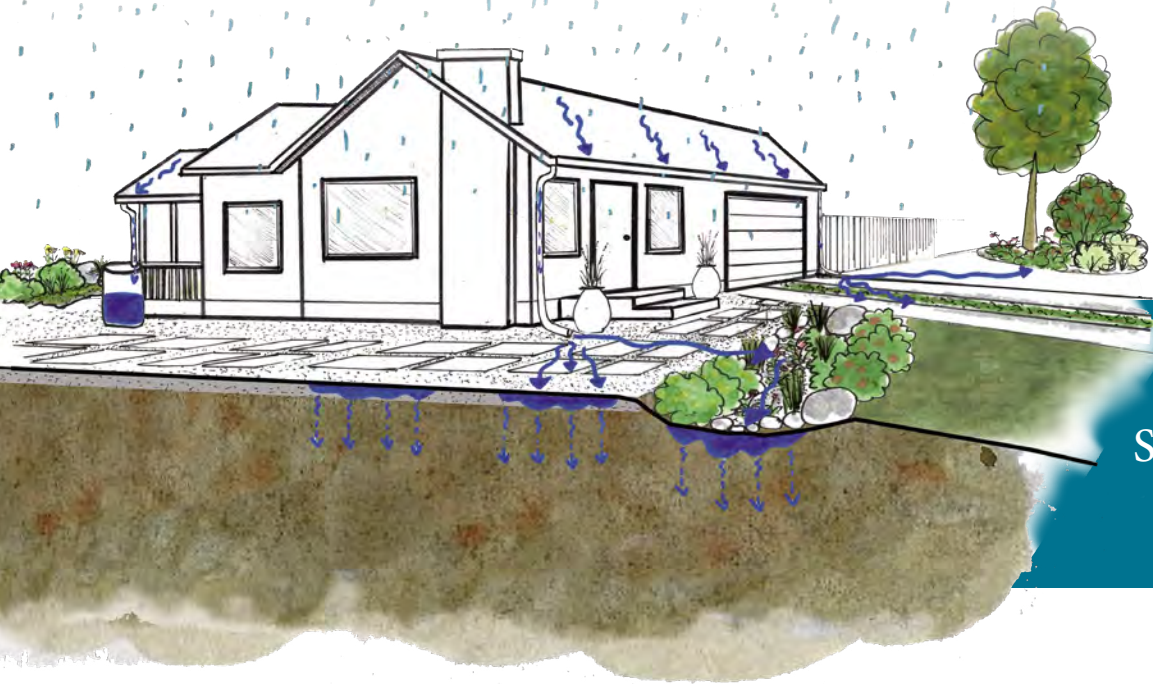
Solutions: Too Much Water

SLOW IT, SPREAD IT, SINK IT!

The concept of “slow-it, spread-it, sink-it” has been developed to maximize rain capture on our properties and reduce runoff. Rain water from roofs can be diverted to garden beds or captured by

rain barrels or cisterns to be used later for watering. Hardscaping with porous pavers or gravel allows rain water to seep through the soil, which filters pollutants and other impurities before water enters

aquifers, streams, rivers and lakes. This makes water work for the homeowner, and reduces the infrastructure cost related to drainage, lowering water costs.



RESOURCES

Slow-it.
Spread-it.
Sink-it!



Strategies to address excess water.

- Capture rain water with rain barrels or cisterns to add capacity for water storage for future use.
- Create rain gardens to help reduce flooding and filter water.
- Install permeable pavers or gravel for “hardscapes” (paths and driveways) instead of impermeable concrete or asphalt.

RAIN GARDENS

A rain garden is a vegetated depression that collects and filters stormwater.

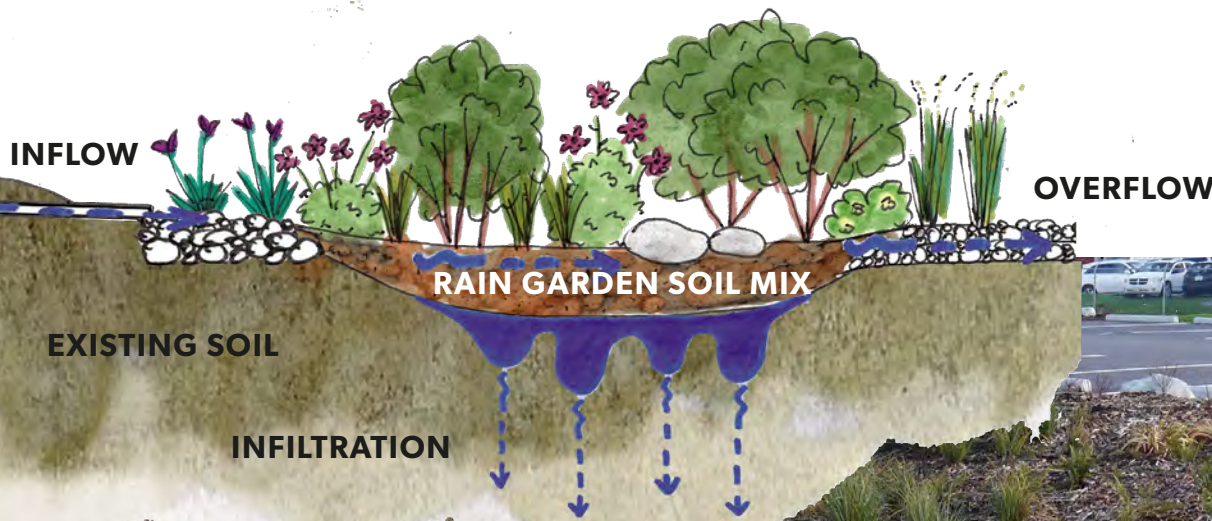
Rain gardens allow water to temporarily pool, then slowly spread and sink into the earth, being cleaned by plants and soil before re-entering the groundwater

system and waterways. Rain gardens in the Okanagan will experience alternating periods of flooding and drought conditions, hence plants need to tolerate both wet and dry conditions. Native plants are best suited to rain

gardens, as they are adapted to local growing conditions. Rain garden plants may require extra watering until they are established, and also during extended drought periods.

RESOURCES

Okanagan-Similkameen Rain Garden Guide





Some residential properties contain wetlands which are vitally important to prevent flood damage to homes.



RETAINING AND RESTORING WETLANDS

Restoring lost wetlands is vitally important to prevent flood damage to homes. If wetlands are already present on private property, the provincial law requires that they must

be retained unless a permit has been legally obtained to remove them.

Local government bylaws may also require a development permit.

RESOURCES

[Okanagan Wetlands](#)

[RDOS Development Services](#)

[Okanagan Wetlands Strategy](#)

PROTECTING NATURAL SHORELINE

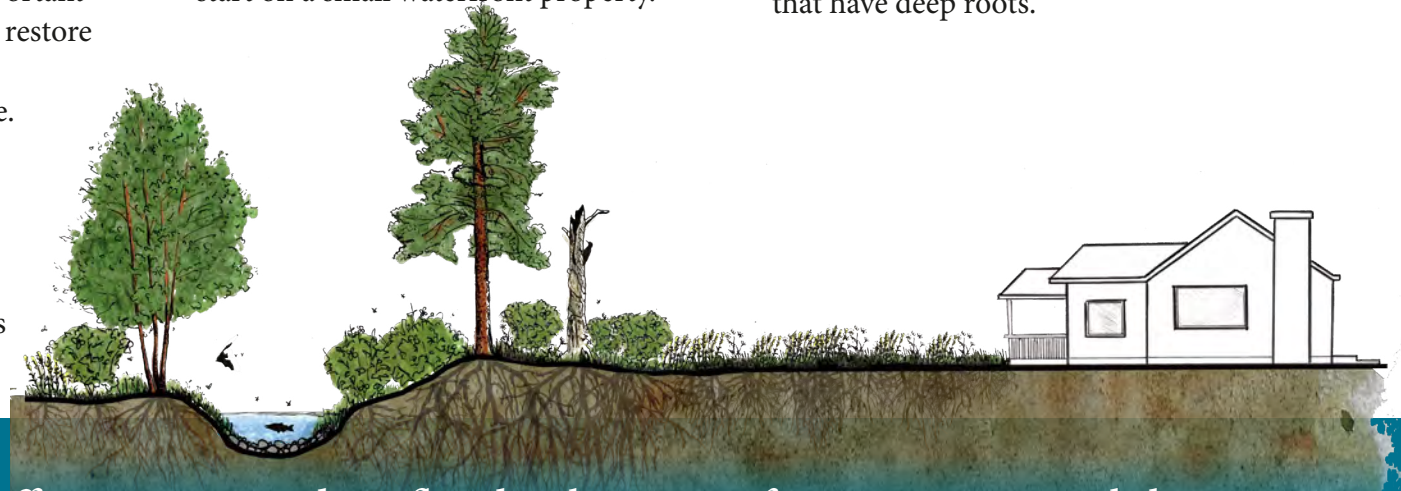
There are very few remaining areas of natural shoreline left along the lakes in the Okanagan. Since waterfront property values depend on clean, healthy lake water, it is very important for landowners to retain and/or restore natural shoreline vegetation to support aquatic and riparian life.

- Do not modify natural areas or remove native vegetation. Natural areas adjacent to shorelines are protected by legislation and development is regulated by government.

- Replacing lawns adjacent to shorelines with a narrow 3-5 metre buffer of flood tolerant native plants (including trees and shrubs) is a good place to start on a small waterfront property.

This will help prevent erosion, and silt/chemicals (e.g. fertilizer) from entering the water.

- Use plants for this green buffer that have deep roots.



A green vegetative buffer serves to reduce flood risk to waterfront properties while also preserving valuable shoreline habitat. Developments located near water need to be assessed by a qualified professional to determine the setback (often 15metres or more).

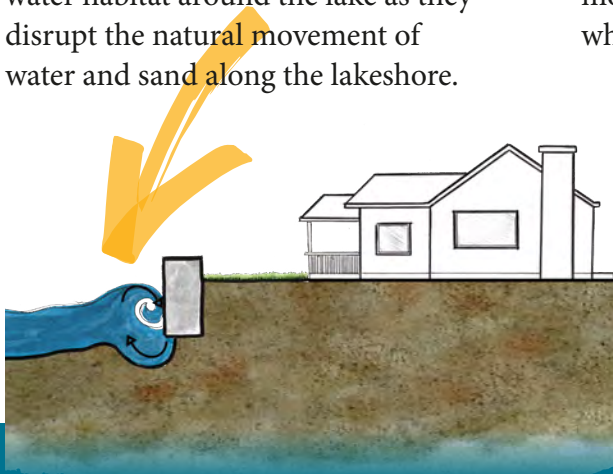


The Okanagan is celebrated for its miles of shoreline and lake recreation. However, this reputation relies on clean water. More than 60% of Okanagan Lake's shorelines have been developed in some way, and many other lakes in the

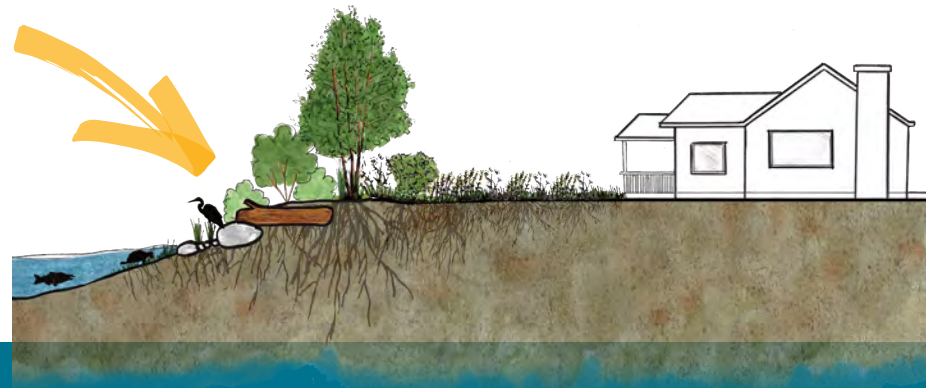
region have highly developed shorelines as well. Whether we experience drought or flood, continued protection of water quality and quantity, and prevention of erosion, depends on healthy shorelines.

RETAINING WALLS VERSUS NATURALIZED SHORELINE

Waves hit retaining walls with force, causing erosion below the water line. Retaining walls have altered or eliminated much of the shallow water habitat around the lake as they disrupt the natural movement of water and sand along the lakeshore.



Soften your shoreline by replacing hard surfaces with boulders, rocks, logs and plants. Removing a retaining wall provides the homeowner with a more attractive shoreline landscape while improving fish and bird habitat.



The roots of native trees and other native plants grow into a fibrous web which anchors the shoreline and helps prevent erosion. Native, locally adapted plants thrive with minimal care and are drought-tolerant.

Building retaining walls disrupts natural ecosystems. Naturalized shorelines with boulders, rocks, trees, and shrubs are more effective at mitigating flooding.



RESOURCES

Protecting Our Natural Assets: Advising Clients on Development in the South Okanagan

A Resource for Okanagan Lakeshore Living

Love Your Lake

Green Shorelines

RIPARIAN AREA PLANTING GUIDE

DID YOU KNOW?

Lakeshore residents can support healthy ecosystems and increase water quality by expanding or enhancing natural buffer zones. Native plants require little additional watering and maintenance after they have been established (usually 2-5 years).

DID YOU KNOW?

Large properties and public lands necessitate a wide natural vegetation buffer of 30-85 metres as the minimum width recommended to

protect waterways from pollution and sediment. To protect plants and wildlife from human disturbance an even broader buffer is needed.

RECOMMENDED NATIVE PLANTS

TREES

- black cottonwood
- ponderosa pine
- trembling aspen
- Douglas fir

SHRUBS

- red osier dogwood
- tall Oregon grape
- snowberry
- Douglas maple

FLOWERS

- yarrow
- blanketflower
- showy aster
- showy milkweed

BLANKETFLOWER



Photo courtesy Tanis Gieselman

SHOWY MILKWEED



Photo courtesy Tanis Gieselman

DOUGLAS FIR



Shutterstock



YARROW

Shutterstock



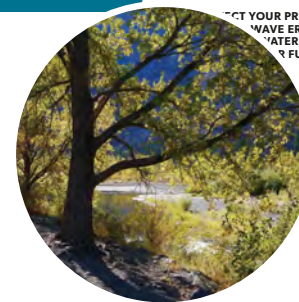
TALL OREGON GRAPE

istock

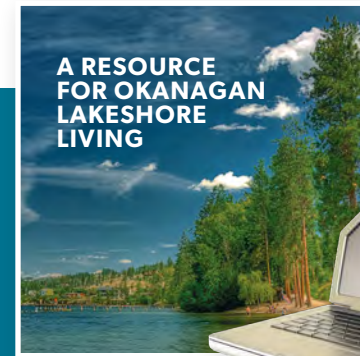


SNOWBERRY

Photo courtesy OCCP



COTTONWOOD



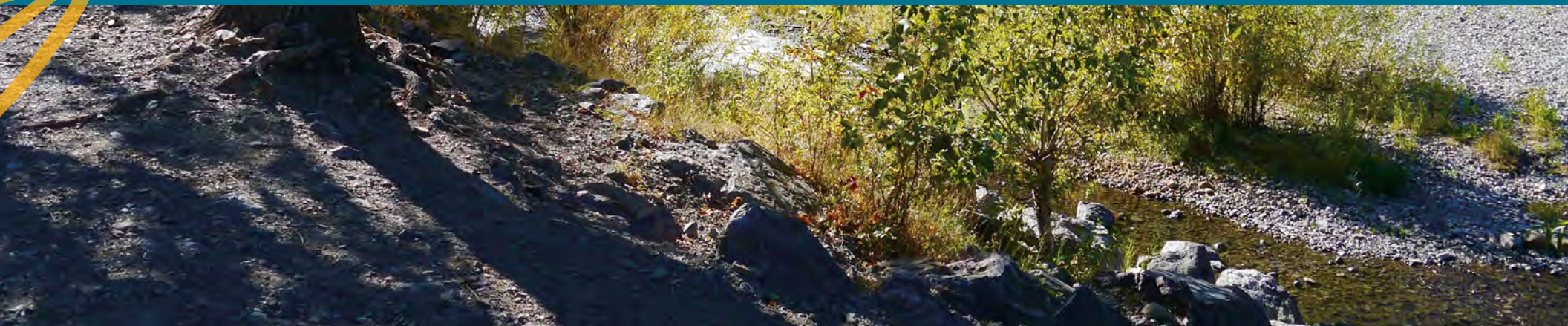
PROTECT YOUR PROPERTY FROM FLOODING, WAVE EROSION, SAFEGUARD WATER, AND PROTECT NATURAL RESOURCES FOR FUTURE GENERATIONS

RESOURCES
Lakeshore Living



“The transpiration rate of a 5-year-old black cottonwood tree varies between 100 and 200 litres of water per day, depending on conditions.”

—R. F. Stettler, College of Forest Resources, University of Washington, Seattle, WA.



Solutions: Lack of Water

WATER EFFICIENT LANDSCAPING AND GARDENING

Water efficient landscaping and gardening is becoming vital to the Okanagan, with our changing weather patterns and longer dry periods in summer. This technique is often referred to as dry-land or xeric gardening.

“Our natural semi-arid landscape is stunningly beautiful and it is the smart gardener, sensitive to surrounding natural features, who mimics and borrows from the larger landscape.”

—Eva Antonijevic, *biologist and gardener*

“Landscape to suit your property and its specific conditions—don’t fight your site.”

—Jennifer Miles, Water Sustainability Coordinator, Regional District of North Okanagan

The outdated traditional gardening example shown here depicts a landscape with a green lawn and cedar hedge, both of which require large amounts of water and ongoing maintenance. In times of drought this landscape won’t be resilient as it cannot be sustained without irrigation and/or chemicals. Furthermore, it doesn’t fit with the natural vegetation and climate in the Okanagan.





OKANAGAN WATER USE

“The closer your garden management style resembles natural conditions, the less the impact of climate change will be.”

—Peter Wohlleben, *The Weather Detective*

RESOURCES

According to the Okanagan Basin Water Board 2010 *Water Supply and Demand Study*, 24% of all water used in the Okanagan is used on household lawns and gardens.



Water-Efficient Landscaping

Xeriscape landscaping is a method of gardening that considers the natural conditions of the environment, creating landscapes that require little to no water.

Xeriscape or WaterWise gardens can be beautiful and versatile. This landscaping approach focuses on planting drought-tolerant, often native species, that require minimal irrigation. **Xeriscape** planting options are highly varied and need not promote sterile landscapes with nothing but rocks and a few yuccas.

Any landscape ideal can be achieved using xeriscape principles. Xeriscape gardening combines the benefits of water conservation with more diverse planting combinations.

Simplified rock and gravel gardens containing a few plants are sometimes mistakenly referred to as “**zeroscape**” gardens, which is a mispronunciation

of the word “xeriscape”. Unfortunately these sparse, lifeless, uninteresting gravel landscapes have given water-wise gardening a bad reputation and are not the same as the lush, biodiverse, pollinator-friendly xeriscape gardening approaches that we are promoting in this guide.

“Using the Seven Principles of Xeriscape Landscaping is the easiest, most cost-effective way to have a vibrant, successful garden.”

—Gwen Steele, gardener and co-founder of the Okanagan Xeriscape Association



LANDSCAPING RESOURCES IN THE VALLEY TO HELP A NEWCOMER TO THE REGION



THE UNH₂O GARDEN
A DEMONSTRATION XERISCAPE GARDEN



INTRODUCING... THE "MAKE WATER WORK IN YOUR YARD" PLANT COLLECTION

SUMMERLAND ORNAMENTAL GARDENS

A 6-hectare public garden that has existed for over 100 years with mature heritage trees, extensive water efficient borders and the largest xeriscape demonstration garden in the Okanagan.

[Summerland Ornamental Gardens](#)

CITY OF PENTICTON XERISCAPE GARDEN Demonstration Garden

[Xeriscape Garden](#)

OKANAGAN XERISCAPE ASSOCIATION Plant Database unH₂O Demonstration Garden

[Okanagan Xeriscape Association](#)

XERINDIPITY GARDEN, VERNON Demonstration Garden

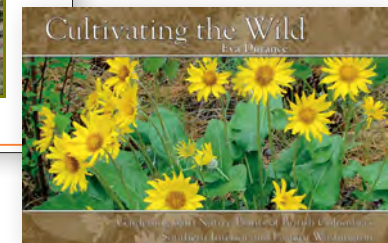
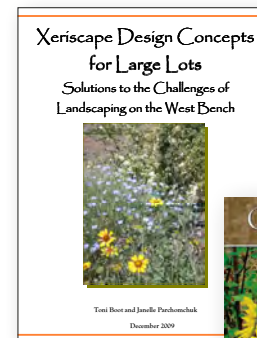
[Xerindipity Garden](#)

MAKE WATER WORK OKANAGAN Plant Collection [Make Water Work](#)

RESOURCES

[Xeriscape Design Concepts for Large Lots](#)

[Cultivating the Wild: Gardening with Native Plants of British Columbia's Southern Interior and Eastern Washington](#) by Eva Durance



EFFICIENT IRRIGATION

“A highly functional irrigation system helps save water, keeps landscapes healthy and can increase the value of your property. A good way to ensure that your system is operating efficiently is to have it assessed by a certified irrigation specialist who can make recommendations that often involve minor inexpensive modifications to achieve stunning water-saving results.”

—Bruce Naka, *Sound Water Advise*

Plants differ in their water needs and those needs change with the seasons or when there is a prolonged dry period. Water only where and when it's needed. All plants require supplemental water for the first year or two as their root systems develop and become established. Once new plants are firmly rooted they should require less frequent watering.

“We should avoid pampering our plants by watering too often. To allow plants to develop deep roots, water them rarely, but when you do, give them a thorough soaking.”

—Peter Wohlleben, *The Weather Detective*

According to the Regional District of Okanagan-Similkameen, drip irrigation uses 30-50% less water than overhead spray irrigation.

If you are considering modifying an existing landscape or creating a new

one, select a certified professional contractor to design and install your irrigation system to the latest industry standards. This approach will be cost-effective in the long term.



To reduce water lost due to evaporation and to target plants accurately, drip line irrigation is by far the best option.

The Irrigation Industry Association of BC has lists of Certified Irrigation Designers and Technicians in your area.

Certified irrigation professionals get it right the first time.

RESOURCES

[RDOS Water Conservation](#)

[Irrigation Industry Association of British Columbia](#)





To conserve water, use “hydrozoning,” a planting approach where plants with similar water needs are grouped together.



HYDROZONING

Plants with similar water needs should be grouped together to ensure they receive the water they

need without overwatering. Lawns, flowerbeds and shrubs all require different amounts of water.

RESOURCES

*Landscape and Irrigation
WaterWise Handbook*

SOIL

Okanagan soils tend to be alkaline rather than acidic (an average pH of 7.6). Natural decomposition is slow in our semi-arid regions resulting in little organic matter in most native soils. Improving soil with organic matter is one key to successful gardening in the Okanagan.

TYPES OF SOILS

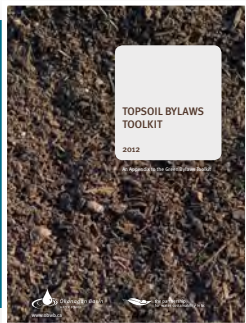
SAND, SILT or CLAY

Combination of all three plus organic matter = **LOAM**

Avoid adding fine sand to clay soil as this creates soil structure like “concrete”. Instead use compost or manure.

The nutrient status of soil depends on its origin and age. Best quality soils have plenty of organic matter, are light and have room for air and water and retain water, minerals and microorganisms.

Nutrients present in the soil are released during decomposition making them available for plants to absorb. As soil’s nutrients are depleted over time they have to be replenished with compost and/or other organic matter to ensure that plants can thrive.



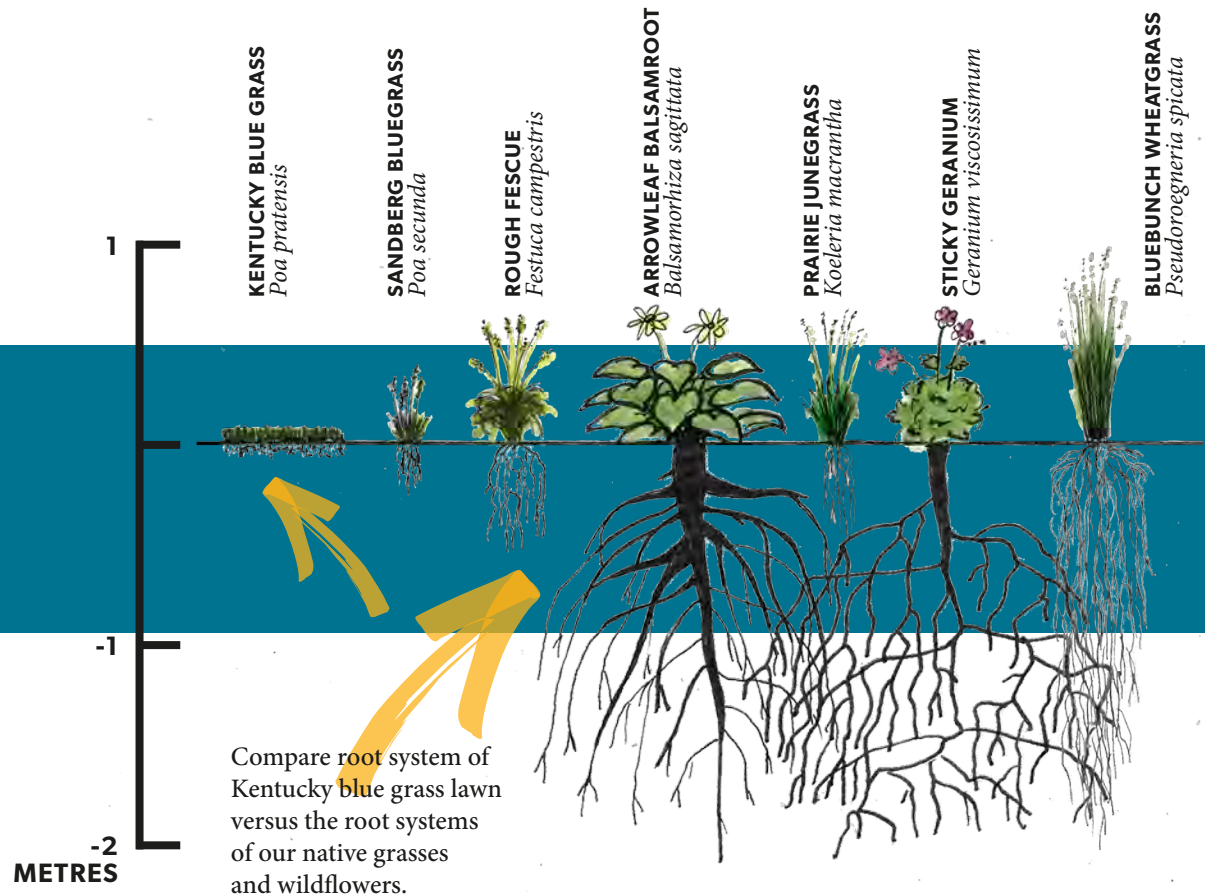
You can never have too much organic matter.

RESOURCES

Healthy soils are teeming with bacteria, protozoa, beneficial nematodes and fungi, insects and worms. Learn more about what lives in soils and why it matters.

[Soil FoodWeb](#)

[Topsoil Bylaws Toolkit](#)



MULCH

Mulch applied to the surface of the soil moderates temperatures and moisture content. It prevents soil from drying out, prevents the formation of a hard crust, reduces weed growth, and keeps soil and plant roots cool in the summer and warm in the winter. Additionally, organic mulch encourages beneficial fungal and bacterial activity to occur in the soil, feeding the soil as it decomposes. Over time, organic mulch adds organic matter to the soil. A layer of five to ten centimetres of organic mulch is

recommended, depending on the material used and the type of application.

Organic mulches include: bark mulch, leaves, grass clippings, coffee grounds or compost.

Rock mulch is sometimes used, however the rocks absorb and then release heat which can stress plants. Such mulch should be used sparingly. The best choice of rock mulch is pea gravel or screened crushed granite. This way when weeds do appear they are easier to remove.

MUNICIPAL COMPOST

The City of Penticton sells compost to the general public at the Campbell Mountain Sanitary Landfill, as do many other municipalities and businesses in the Okanagan.

RESOURCES

- [Penticton Compost](#)
- [Summerland Compost](#)



Refer to the FireSmart Solutions pages to learn about combustible and non-combustible mulches.



RIGHT PLANT, RIGHT PLACE

MICROCLIMATES

Local nurseries can help you determine the plant hardiness zone in your area.

After considering the overall environment in which you live, it is time to consider your actual garden site. Within your garden you may find many different microclimates or

“micro pockets,” that differ significantly from an area’s overall climatic zone. Some examples of these microclimates include areas such as: protected, sheltered spots in the garden, north or south facing slopes, shady or sunny sections, wet or dry spots.

Choosing the right plant for each specific place in the garden will make gardening life a lot easier, reducing maintenance and the need for replacing plants that fail to thrive.



RESOURCES

Looking for drought-tolerant plant suggestions? Visit:

[Okanagan Xeriscape Association](#)



Plants that are well-suited to their site establish quickly, have strong root systems, and are generally healthier and less likely to become diseased.



- Consider the useful life and embodied energy of materials used—plants, stone, gravel and lumber.
- Source material locally to reduce green house gas emissions from transportation.
- Smaller plants in 4-inch pots are less expensive to transport, easier to install, and transplant effectively into native soils. Many plants transplanted from small pots grow rapidly to mature size.

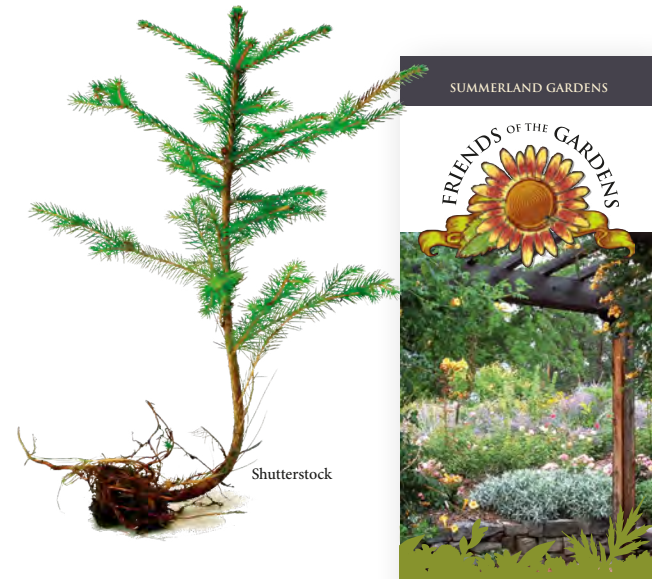
Photo courtesy Friends of Summerland Gardens

TREES MITIGATE CLIMATE CHANGE

Trees are vital to all living things, giving us oxygen. Trees also store large amounts of carbon, stabilize soil, provide shade, clean air, conserve water and cool our homes.

Additionally trees provide canopy and habitat for wildlife, can provide seasonal interest and increase property values.

There are excellent medium size trees for urban properties and yards available from our local nurseries.



“There is an ingenious carbon capture device that is 500 million years old. It’s called a tree.” —a Penticton resident



RESOURCES

To learn more about trees that grow well in the Okanagan visit the [Summerland Ornamental Gardens](#) and treat yourself to a Self-Guided Tree Tour.

[City of Kelowna Urban Tree Guide](#)

[Okanagan Xeriscape Association Plant Database](#)





Self-guided tours

HERITAGE GARDENS TREE TOUR

1. Poinsettia
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XERISCAPE GARDENS TOUR

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LIMITED MOBILITY GARDEN TOUR

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FOR THE ENJOYMENT OF ALL

- Please do not pick, collect or cut plants, unless permitted.
- No alcohol is permitted on site.
- Dogs on leashes are permitted, please clean up after them.
- Tall bins are available throughout the Gardens.

SUMMERLAND ORNAMENTAL GARDENS

The Summerland Ornamental Gardens feature a vast collection of mature trees, shrubs and drought-tolerant flowers, spring bulbs and flowers. The Friends

of the Gardens volunteers conduct regular tours of the Gardens. This is a good way to learn which are the best plants for our semi-arid region.

SENSIBLE LAWNS

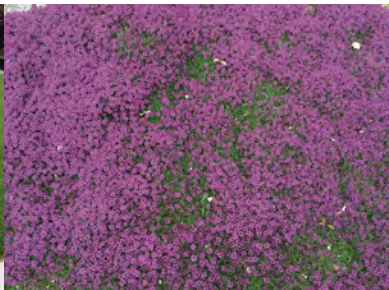
Lawn irrigation is a major drain on the Okanagan Basin's limited water supply. It uses up to three times more water per square metre than agricultural irrigation. Water efficient gardens feature lawn in high traffic or play areas only. A water-smart gardener can use lawn in the right place with the right selection of eco-lawn grasses.

When creating a drought-tolerant lawn:

- Select drought-tolerant lawn grass mixes that require less watering.
- Aerate and prepare soil to a depth of at least 30 centimetres so grasses can develop deep root systems to draw moisture from a larger volume of soil, and minimize the need for irrigation.
- To reduce mowing, minimize or replace lawn with native and low-water variety plants.
- Spread one centimetre of compost on top of your lawn (known as 'top dressing') to enrich soil, reduce the need for water and improve lawn health.
- Consider adding white Dutch clover to the grass seed mix, to provide a natural source of nitrogen.



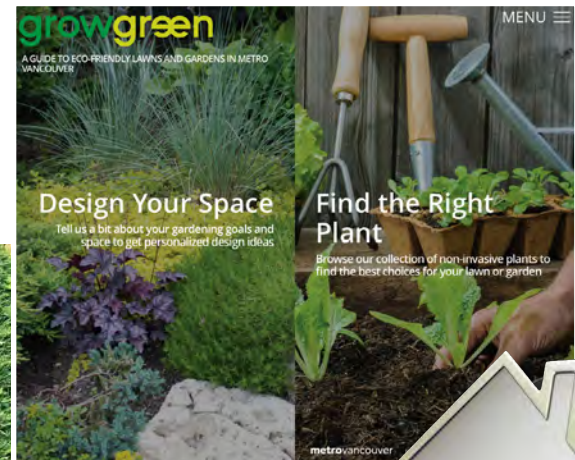
Ecolawn is a drought-tolerant grass seed mix of several fescues (tall fescue, sheep fescue, slender red fescue, creeping red fescue, hard fescue).



Creeping thyme (*Thymus* spp.), once established, requires limited watering in the Okanagan.



Yarrow's fern-like foliage resembles grass from a distance and requires minimum care and water. Early season mowing removes flowering stalks thus making this 'lawn' soft to walk on.



RESOURCES

[GrowGreen Guide](#)

[Lawn Watering and Maintenance Tips](#)





“When we mimic the natural landscape we not only provide four seasons of interest, but we give ourselves the gift of reduced maintenance.”

—Zoe Kirk, Public Works Projects, Regional District Okanagan-Similkameen

APPROPRIATE MAINTENANCE

All gardens, even xeriscape gardens, require maintenance. Every gardener will need to undertake tasks such as spring and fall garden clean-ups along with watering, weeding, pruning and deadheading.



FIRE | ćikilax^wm

Photo: Shutterstock

Understanding Wildfire

KEY FACTS ABOUT FIRE

- Climate change, industrial/residential expansion into forested areas along with changes in forest practices by way of fire suppression have led to changes in the forest structure, including fuel build up and forest health impacts.
- Changes made within 10 metres of your home, including the removal of combustible surface materials, will have the biggest impact on your home's ability to withstand a wildfire.
- **30—30—30 Rule**
Ideal conditions for wildfires are present when temperatures are expected to be above 30 degrees Celsius, the relative humidity below 30% and winds over 30 kilometres per hour.
- Fire is a naturally occurring element and plays an integral role in maintaining a healthy ecosystem within our forests.
- Wildfire can follow a path from a forest or grassland to your home.
- Lightning strikes account for 50% of wildfires. People cause the other 50%.
- Fire intensity and frequency is increasing due to warmer, drier summers.
- Fire risk is the highest from June to October.



In 2018, destructive wildfires displaced thousands of British Columbians and burned more than 1.3 million hectares in BC. Local and provincial agencies work to manage risk, particularly in vulnerable areas adjacent to communities.

Photos: Shutterstock

“The Okanagan’s dry low-elevation forests and grasslands were historically fire-maintained, experiencing frequent, low-intensity fires, which kept fuel loads at a minimum. This historical fire regime was largely due to controlled burns done

by the *Syilx* People. Now, 80 years of successful fire suppression has created over-dense forests and massive fuel loads. These fuels, combined with longer, drier summers, produce severe and damaging wildfires. As residents of the Okanagan

we must come to terms with the fact that fire is a fact of life here, and that frequent controlled burns are far less damaging than infrequent, high-intensity wildfires.”

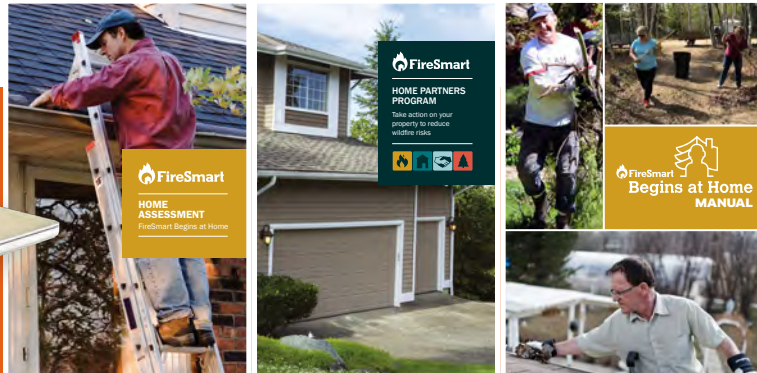
—Don Gayton, Fire Ecologist

Assessing Wildfire Risk

Reducing fire risk requires a team approach and communities need to work together—neighbour to neighbour.

Landowners can design landscapes and take actions around the house to reduce vulnerability to fire. The FireSmart® Canada Program Guide booklets explain how structures and landscapes can be managed

to reduce fire risk by preparing your home and surrounding landscape. Every homeowner should pursue adequate insurance for their home and property.



RESOURCES

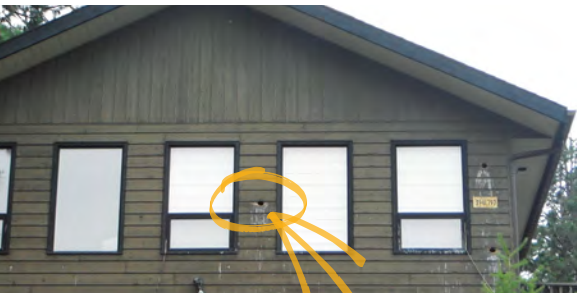
[Firesmart Home Assessment](#)

[Firesmart Home Partners](#)

[Firesmart Begins at Home](#)

SPARKS AND BURNING EMBERS

Burning debris can travel up to 2 kilometres ahead of the wildfire.



Photos courtesy David Spalding

Understanding how wildfires travel onto private property helps homeowners understand how to reduce risks of property damage.

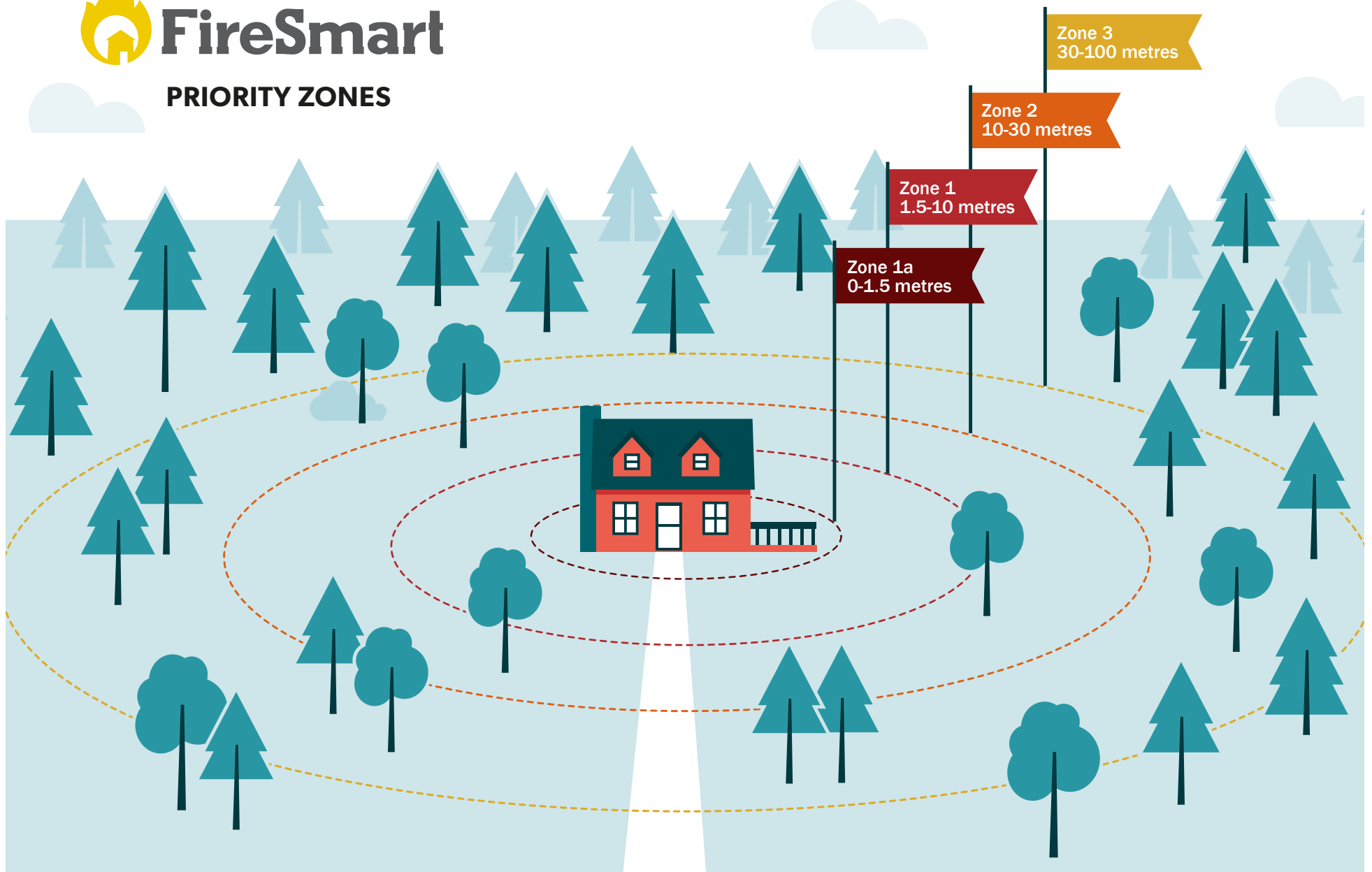
When wildfire is near a residential property, small sparks and burning embers will travel on wind currents ahead of the fire front. Most homes burn as a result of these sparks or embers landing on combustible materials in and

around the home. Embers can ignite dry debris such as needles or dry leaves collected on your roof or gutters. Sparks can also enter into the house through openings such as vents, woodpecker or rodent holes in the siding, roof soffits,

eaves, or other openings. Exposed wood surfaces adjacent to the house such as wooden decks, woodpiles, and wooden fences are also prone to ignition. Cedar hedges, so common around Okanagan residences, are also very combustible.



PRIORITY ZONES



WORK WITH YOUR NEIGHBOURS IN ANY OVERLAPPING PRIORITY ZONES!

ZONE 1A
0-1.5 METRES

Zone 1A is the non-combustible zone. Reduce the chance of wind-blown embers igniting materials near your home. A non-combustible surface should extend around the entire home and any attachments, such as decks. Creating a non-combustible surface can be as easy as clearing vegetation and combustible material down to mineral soil. To add to your landscape design, use non-combustible materials such as gravel, brick, or concrete in this critical area adjacent to your home. Woody shrubs, trees or tree branches should be avoided in this zone. Any that are present should be properly mitigated.

ZONE 1
1.5-10 METRES

Create a landscape that will not easily transmit fire to the home. A FireSmart® yard includes making smart choices for your plants, shrubs, grass and mulch. Selecting fire-resistant plants and materials can increase the likelihood of your home surviving a wildfire. Plant a low density of fire-resistant plants and shrubs. Avoid having any woody debris, including mulch, as it provides potential places for fires to start. Storing items such as firewood piles, construction materials, patio furniture, tools and decorative pieces against or near a house is a major fire hazard. Move firewood piles, trailers/recreational vehicles, storage sheds and other combustible structures out of this zone and into Zone 2. If unable to move, store firewood inside your mitigated garage, shed or other ember-resistant structures, create a non-combustible zone underneath and for 1.5 metres around trailers/vehicles and mitigate sheds and other structures to the same standards as those of your home.

ZONE 2
10-30 METRES

If your property extends out to this zone, thin and prune evergreen trees to reduce hazard in this area. Within 30 metres of your home, selectively remove evergreen trees to create at least 3 metres of horizontal space between the single or grouped tree crowns and remove all branches to a height of 2 metres from the ground on the remaining evergreen trees. If possible, pruning trees up to 100 metres from your home (Zone 3) is recommended. Regularly clean up accumulations of fallen branches, dry grass and needles from on the ground to eliminate potential surface fuels. Consider seeking the guidance of a forest professional with wildland fire knowledge on appropriate management options for this zone.

ZONE 3
30-100 METRES

Taking FireSmart® actions in Zone 3 on your property will influence how a wildfire approaches your home. You can change the dynamics of wildfire behaviour by managing vegetation within this zone. Look for opportunities to create a fire break by creating space between trees and other potentially flammable vegetation. Thinning and pruning is effective here as well. These actions will help reduce the intensity of a wildfire. Consider seeking the guidance of a forest professional with wildland fire knowledge on appropriate management options for this zone.

FIRE HAZARD

Longer term actions home owners can take to reduce wildfire risk:



POTENTIAL IGNITION RISKS

- Screen chimneys to prevent escape of live embers.
- Evaluate the fire risk of branches and trees near your buildings.
- Regularly maintain gutters and roofs to remove buildup of needles, leaves or other organic material.
- Don't stack firewood piles adjacent to the house.
- Design or retrofit buildings with less combustible materials for roof, deck, siding and external stairs (refer to FiresmartBC guide).
- Modify trees to remove overhanging limbs or those adjacent to the house, and those within 2.5 metres off the ground.

FIRESMART HOME



- Create a 1.5 metre strip of non-combustible material such as gravel, brick or concrete pavers surrounding buildings.
- Instead of foundation planting next to the house, plant non-combustible plants in island borders away from house.
- Choose deciduous trees and shrubs, rather than evergreens for planting on your property.
- Remove dead organic material (leaves, pine needles, debris, plants, bark mulch).
- Use metal hardware at all structural connection points (e.g. wooden fences attached to the house).

SLOPE CAN AFFECT WILDFIRE

Fire moves fastest uphill.

The steeper the slope, the faster a wildfire will spread. Homes on hills or at the top of hills face the greatest risk from wildfire.

Owners of existing hillside homes should consider obtaining site-specific firesmart advice from a qualified expert to help manage risk.

If you are planning on building a new home, consider having your home set back at least 10 metres from the crest of any hill or slope.

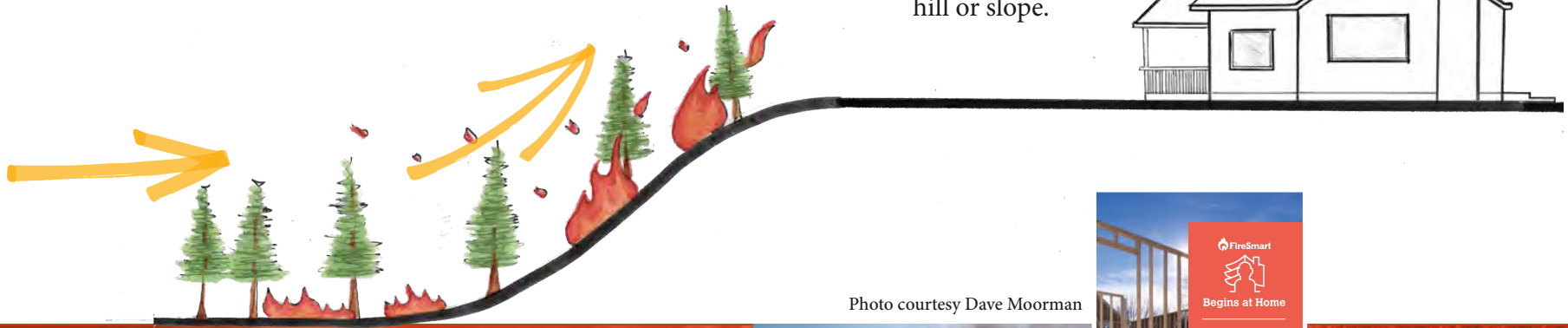
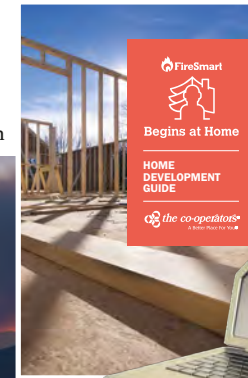


Photo courtesy Dave Moorman

ACTIONS TO TAKE WHEN THERE IS AN IMMEDIATE THREAT

When wildfires are burning, public and firefighter safety is the top priority. In the event of a wildfire, evacuation alerts and orders help inform property owners of surrounding risk and provide direction about when it is time to leave.



RESOURCES

[FireSmart Home Development Guide](#)

[RDOS-Emergency](#)





Wildland/urban interface (WUI) is a term used for developed areas near or in a forest.

WUI areas can extend well into developed areas (Okanagan Mountain Fire; Fort McMurray; Slave Lake; Redding and Paradise, California; Colorado Springs, Colorado).

Homeowners living in WUI areas are the most at risk of wildfire.

Undertaking FireSmart precautions is the best way to protect your home and family against loss, damage or injury.

If unsure whether you are living in a WUI area, check your local Regional or Municipal Community Wildfire Protection Plans.

RESOURCES

[RDOS' Community Wildfire Protection Plan \(RDOS CoWPP\)](#)



WHAT IS FIRESMART LANDSCAPING?

A Firesmart landscape is a lean, clean and green landscape.

Some plants are less combustible than others. If you are designing a new landscape, or looking for ways to reduce wildfire risk in an existing garden, you can make informed choices about the location and types of plants to select, as well as the mulches or materials to use on the ground around the plants.

RIGHT PLANT, RIGHT PLACE— What to remove and what to plant if you want to manage wildfire risk.

FireSmart plant characteristics include moist and supple leaves, water-like sap with little odour, succulent leaves or leathery leaves, plants containing soap and salt (e.g. deciduous plants that lose leaves in fall/winter, sedums, yuccas etc.).

Highly-**combustible plant** characteristics include those with dead material within the plant; volatile terpenes and oils in the plant stem, branch and leaves; and those with aromatic leaves (e.g. evergreen plants such as mugo pine, spruce, cedar, juniper etc.).



FIRESMART MULCHES

pea gravel (far left)

COMBUSTIBLE MULCHES

pine needles (left)



FIRESMART PLANTS

sedums
penstemons
Oregon grape
ice plants
yuccas
soap plant

COMBUSTIBLE PLANTS

cedars
junipers
pine trees
mugo pine
blue spruce

FIRESMART MULCHES

composted mulch
pea gravel
crushed granite
rock mulch

COMBUSTIBLE MULCHES

bark chips
wood chips
pine needles
straw

RESOURCES

[Firesmart Guide to Landscaping](#)

Additional Considerations

When designing, building or renovating a home in a wildfire prone area, comply with laws and regulations related to vegetation management and removal. The Migratory Birds Convention Act (federal law) prohibits destruction of bird nests and eggs. For this reason, tree removal should be completed in the fall and early winter (September-January) when nesting is not occurring. Some local governments provide exemptions



that allow landowners to conduct FireSmart modifications to their properties without permits. However, before you initiate activities to reduce fire risk, contact the local government for more information. Landowners may also wish to, or be required by government, to obtain the services of a qualified professional to assist them in developing a plan for their property and to help them comply with laws and regulations.

RESOURCES

[FireSmart Home Development Guide](#)

To understand wildfire risks and learn more about reducing them:
[Get Prepared](#)



FIRE INSURANCE

- A typical home insurance policy covers damage to your home caused by wildfire regardless of:
 - When you file a claim
 - When you return to your property
 - Whether your insurance representative is with you when you return to your property.
- Most home and tenant insurance policies will cover the cost of alternate accommodations and living expenses (for example, food, laundry, etc.) if you're prohibited from returning to your home as a result of wildfire or mandatory evacuations. Be sure to keep your receipts for the claims process.
- Call your insurer or IBC if you have questions regarding your home or business insurance:
1-844-2ask-IBC (1-844-227-5422).

RESOURCES

[Insurance Bureau of Canada](#)



HOW YOU CAN BE A MORE FIRESMART COMMUNITY

The BC FireSmart Committee was convened in 2017 to ensure greater direction and integration of the seven FireSmart disciplines across the province and is based on the FireSmart® Canada model.

The BC FireSmart Committee consists of the BC Wildfire Service, Office of the Fire Commissioner, Union of BC Municipalities, Fire Chiefs' Association of BC, Emergency Management BC, Forest Enhancement Society of BC and First Nations' Emergency Services Society of BC. They are dedicated to

building a FireSmart BC by assisting communities and homeowners in becoming more resilient to wildfire.

- Coordinate with your community to become recognized nationally by FireSmart through the FireSmart Canada Community Recognition Program.

- Sign up for courses or read articles on www.firesmartbc.ca to further educate yourself on the importance of FireSmart.
- Participate in a community event and spread the word on how to make your property and neighbourhood prepared for a wildfire event.

“If we don’t have the communities helping themselves and helping one another, then we don’t have resilience.”

—Dr. Satyamoorthy Kabilan

Seven FireSmart Disciplines

1. VEGETATION MANAGEMENT
2. DEVELOPMENT
3. PUBLIC EDUCATION
4. LEGISLATION

5. INTER-AGENCY COOPERATION
6. CROSS TRAINING
7. EMERGENCY PLANNING

RESOURCES
Become a Firesmart
Community





Last-Minute Checklist for Protecting Your Home and Property from Wildfire



Evacuation Tips

Monitor conditions and follow the advice of local authorities.
If ordered to evacuate, do so immediately.

	Review your evacuation plan for your family and pets. <ul style="list-style-type: none"> Visit www.getprepared.gc.ca for helpful tips and evacuation plan templates.
	Have your "ready to go kit" (emergency kit) ready and stocked with cash, portable radio, prescription medications, eye glasses, change of clothes, pet food, flashlights and batteries, etc. Make sure your phone numbers, insurance information and other important documents for your go bag are current. <ul style="list-style-type: none"> Visit www.getprepared.gc.ca for a more complete list of emergency supplies.
	Before evacuating: <ul style="list-style-type: none"> Turn off air conditioning. Turn off your home water, electricity and gas. Close all doors, garage doors and windows. If weather seal or doors have gaps, seal with duct tape.



Quickly address outside surroundings

Complete a scan around your home and property and take steps to remove combustibles.

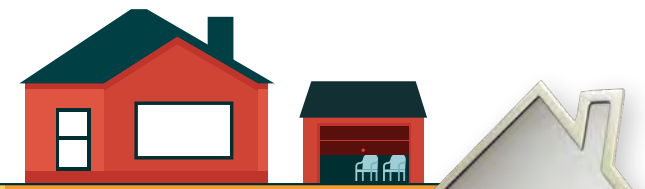
	Remove leaves, pine needles and other debris from your roof and gutters.
	Mow grass and weeds within 10 metres of the house to 10 centimetres in length, or less.
	Clear all dead plants, leaves, and weeds within 10 metres of your home. Maintain a 1.5 metre noncombustible zone around your home and deck by sweeping or raking down to mineral soil, rock or concrete.
	Move combustible items such as toys, patio furniture, cushions, decorative items, firewood, and potted plants, that are on and under your deck and within 10 metres of your home. Move all combustible items into your home or garage.
	If you have a propane tank located on your property: <ul style="list-style-type: none"> Propane tanks should be moved to 10 metres away from structures. Remove weeds and other debris from area around large stationary propane tanks so there is no combustible material near tank.
	If you have a combustible fence that attaches to your home: <ul style="list-style-type: none"> Secure gate in an open position. Clear vegetation and debris along both sides of combustible fence lines.



Check around the house

Check vents on roof, foundation and exterior walls to prevent embers from entering your home.

	Check your attic and foundation (crawl space) vents to see if they are screened and in good repair. Use duct or metal tape to temporarily cover damaged vents and those with 3 millimetres mesh screening.
	If you store cardboard boxes and other easily ignited materials near a vent in your attic or crawl space, move them as far away as possible from vent(s). <ul style="list-style-type: none"> Another option is to place tape over vent(s) at these locations. Be sure to remove tape when you return home.
	Cover dryer vents and wall-mounted make-up air openings for furnaces with a plywood cover, metal tape or duct tape.



RESOURCES

To learn more about fire preparedness see:
Last-Minute Checklist for Protecting Your Home and Property from Wildfire



A SYILX/OKANAGAN PERSPECTIVE

Active fire suppression has led to extreme fuel loading and vegetation ingrowth throughout the territory. Combined with climate change, fire suppression has led to longer, more intense, and more destructive wildfire seasons and a less resilient forest and grassland ecosystem.

A less resilient ecosystem degrades cultural and social values, increases threats to communities and infrastructure and provides fewer natural resources.

tmix^w | ecology, all life forms, water, insects, people, animals, plants and medicines

tmx^wulax^w | the land, the core spirit from which all of creation arises and which unites everything

cikilax^wm | culturally prescribed burns

The *Syilx* have always conducted *cikilax^wm* to rejuvenate and restore the *tmx^wulax^w* and the *tmix^w*. Open forest and grassland ecosystems were maintained through frequent, low-intensity ground fires managed at the right time of the year before new growth had started.

Photo: Shutterstock



“The *Syilx* Okanagan continue to perform prescribed burns for the safety and security of our communities and the people who live on this landscape.” —Okanagan Nation Alliance | 2017

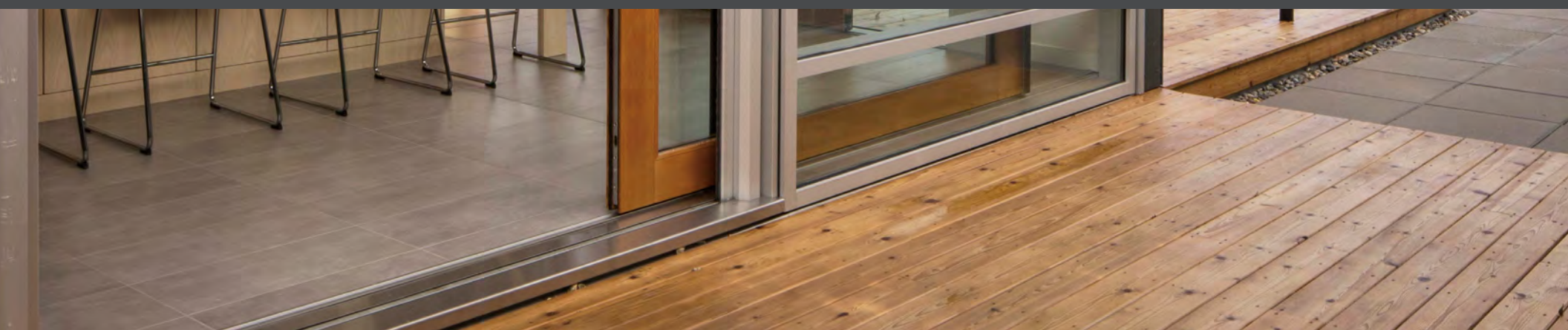
Photos courtesy Okanagan Nation Alliance



“There are people from our Nation who are raised to do burning. They are brought up to study the winds, the effect of the sun on the mountains; it is a real science.” —*caylx* | Richard Armstrong | 2018



ENERGY EFFICIENT BUILDINGS



How to Make an Existing Home More Energy Efficient

How can I make my home more energy-efficient and comfortable to live in?

Whether you are planning small repairs or major renovations to your home, consider making energy efficiency upgrades a part of your plan. It will help lower your energy bills while increasing the comfort and value of your home.

Three of the most effective upgrades to an older home are:

Air sealing. This is the most important aspect for a home's energy efficiency!

Replace the home heating system. A new gas furnace may be 20-30% more efficient than an existing older furnace. Adding a heat pump to an existing electric furnace can slash heating bills by up to 50%.

Increasing attic insulation. This can be a very cost-effective upgrade that helps keep a house warmer in the winter and cooler in the summer.

Think of your home as a system.

All the elements of your house—the building envelope, mechanical systems, indoor and outdoor environment and even the occupants—interact. A change

in one area can affect the others. For example, when sealing up air leaks you may need to make changes to the home's ventilation system.

Educate everyone in the home on how the heating, cooling and high efficiency systems operate.

SMALL CHANGES THAT ADD UP

Save energy and money by making minor changes around your home.

- **Install a programmable thermostat.** Save energy by lowering the temperature in your home by a few degrees at night and when you're not home.
- **Seal air leaks** around front door and windows with weather-stripping and caulking.
- **Change your bulbs.** Buy long-lasting ENERGY STAR® certified compact fluorescent lights (CFLs) or light-emitting diodes (LEDs).
- **Insulate** the first two metres of hot water pipes from the water heater with foam sleeves or insulating wrap to save on water heating costs and reduce water usage. It is also a good idea to insulate the cold water inlet pipes for the first two metres.
- **Hang-dry your clothes.** Hanging four out of eight loads per week could save you \$45 per year.
- **Upgrade your exhaust fans.** Choose ENERGY STAR® certified models for your bathroom and kitchen and vent them outdoors. Add timers to reduce power consumption.
- **Plug into power bars.** Choose models with timers or master plugs that can power-down devices when they're not in use so they don't consume standby power.

A house that uses energy more efficiently is a happy home.

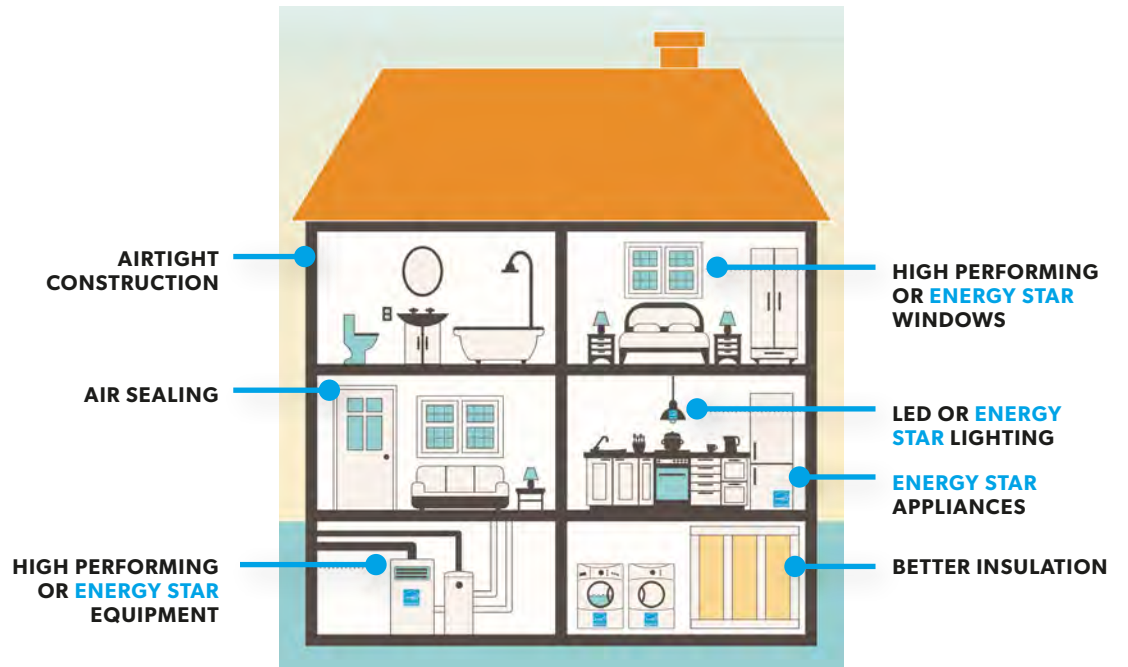
WHAT MAKES A HOME ENERGY-EFFICIENT?



RESOURCES

[Arborday](#)

[Residential Air Conditioning](#)



Reduce standby power consumption and give your devices a holiday

Even in “standby” or “sleep” mode, many electronic devices draw power 24 hours a day to access networks and run clocks, timers and remotes. This low-level use can account for 5-10% of your electricity bill. Pull the plug on the toaster oven, the printer, the guest-room TV and older devices that use AC adapters. Before you leave on vacation, unplug as many appliances and devices as you can. You’ll save energy and money for your next getaway.

Look for the ENERGY STAR®

Devices that have this logo use no more than one watt in standby mode. Ask your cable, satellite or internet provider about ENERGY STAR® certified set-top boxes that can lower your energy consumption without affecting your service.



Get an expert opinion and grant money for your upgrades

Schedule an EnerGuide home evaluation with a local energy advisor. These trained professionals will tell you how well your home is performing from an energy-efficiency point of view. It will include recommendations for both minor and extensive renovation options for your existing home and help identify priority items that will have the best results per dollar spent. They can also assist you in obtaining grant money for your upgrades.



RESOURCES

FortisBC Rebates

BCHydro Residential Savings and Rebates

Natural Resources Canada: Keeping the Heat In



Building a New Home

“People move to the Okanagan to enjoy the climate, so adapting our buildings to reduce both their contribution and their vulnerability to climate change is in everyone’s interest.”

—Chris Allen, Landform Architecture Ltd.



PRESERVE NATIVE LANDSCAPES

We have an arid climate. Let’s enjoy it. The grasslands took thousands of years to get established, so let’s take care of them, and learn from them. We can save our water for vegetables, fruit and wine. Existing trees provide shade, natural contours control stormwater and erosion.

USE LOCAL MATERIALS

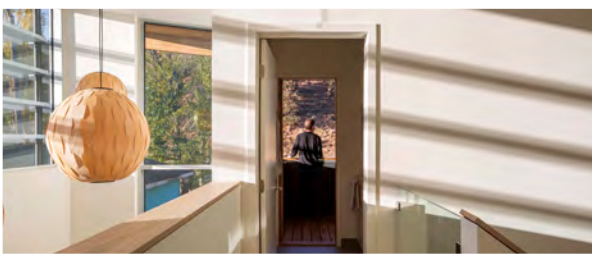
Wood is the renewable building material of the future, and it is all around us. Explore different species: larch grows on the hills above Penticton and can be used unfinished for siding or exterior screens. Douglas fir is being manufactured into glulam beams and wood windows here in the valley. Lodgepole pine is plentiful, and the smallest trees can still be made into structural tongue and groove decking.

EXPRESS OUR CULTURE

Yes, the Okanagan is a cultural landscape, too. Buildings and towns are reflections of the people who live here, and their effect on the landscape. Rather than copying the neighbours and building your plans based on the climate and traditions of the past, be a trend setter and build to suit the changing climate. By adapting to landscape and climate, you can build a resilient legacy.

NATURALLY VENTILATE

The Okanagan is hot, but not for many months of the year, and it’s a dry heat. With proper shading, thermal mass, and good air flow, we don’t need air conditioning. Mount shades outside the windows. Make your windows big, and open them, or better yet, make whole walls slide away. Pay attention to the prevailing breezes, and orient your buildings to use them. Leave existing mature trees to provide shade.



ORIENT TO THE SUN

Let's build our buildings turned to the sun. South is the best direction for windows to face, because the high summer sun is easily blocked, and the low winter sun can penetrate deeply to heat floors and bodies. Planting deciduous trees to the south or southwest of your house will keep it cool in the summer, while letting you enjoy the precious winter sun.

REDUCE ENERGY USE

We have a mild climate and no good excuse for wasting energy. Through proper building orientation, adequate insulation and efficient fixtures, we can reduce our energy use to a minimum. It is then possible to provide all we need at a reasonable cost with integrated solar panels. By designing all electric buildings, we are already 97% carbon free in British Columbia.

RESPECT THE SITE

The Okanagan landscape is challenging and beautiful. Rather than flatten and scrape the site to allow a building to be dropped in the centre, take a different approach and let it fit the contours of the land. Develop relationships between the buildings and the existing landscape. Celebrate the connection of building to ground.

Photos pages 62 – 67 courtesy:
Landform Architecture
Thomas Born
Will Green



INVASIVE SPECIES



Understanding Invasive Species

Invasive species are non-native plants and animals that have been introduced to an area outside of their natural range. Without their controlling natural enemies these species compete with native plants and animals for food and space, resulting in significant environmental, economic and social impacts.

Invasive plants can take over natural and landscaped areas and cause unsightly infestations that reduce property values. They can also “jump the garden fence” and move into the neighbourhood, or local native ecosystems found in local parks or conservation lands. If caught early, an infestation can be relatively inexpensive

to control or possibly eradicate. If left untreated, a small infestation can quickly spread, leaving a degraded piece of land with a lowered property value. Large outbreaks can be very costly to treat, as it often takes multiple years of repeated treatment to be effective.

“Invasive alien species are the second most significant threat to biodiversity after habitat loss.” —World Conservation Union

- The RDOS and most municipalities have **Noxious Weeds and Destructive Insect and Pest Control Bylaws** to help control tree fruit pests, infestations and related pests.
- Complaint and enforcement policies vary by jurisdiction—please

check with your municipality or regional district. Regulations may also vary by electoral area.

- Soil deposition bylaws may regulate the movement of infested soils and local governments may also regulate the safe disposal of invasive species.

- Property owners and land occupiers must comply with the provincial Weed Control Act and follow any relevant local bylaws.

Photo opposite, courtesy Lisa Scott

MANAGING INVASIVE PLANTS

“Many invasive plants are deceptively beautiful. Some are knowingly sold as ornamental species for our gardens. It’s important to choose plants wisely. Generally we encourage gardeners to be wary of plants promoted as fast spreaders or vigorous self-seeders.”

—Lisa Scott, Executive Director, Okanagan and Similkameen Invasive Species Society (OASISS)

Learn to identify invasive plants. The best method for controlling invasive plants depends on their life cycle. For example, annual plants typically have small roots and do not need to be hand pulled, but can instead be cut at ground

level before they have produced seeds. Perennials, however, often have deep or creeping roots and the entire root system must be removed for effective control.

A representative from the Okanagan and Similkameen Invasive Species

Society may be available to conduct a visit of your property and provide specific information and solutions.

RESOURCES

www.oasiss.ca

Some of the more common invasive species in the Okanagan-Similkameen:



**DOWNY BROME
OR CHEAT GRASS**



**DALMATIAN
TOADFLAX**



HOUND'S-TONGUE



**DIFFUSE
KNAPWEED**



**SULPHUR
CINQUEFOIL**



ST. JOHNS-WORT

COMMON INVASIVE TREES OF RESIDENTIAL PROPERTIES

RUSSIAN OLIVE

Russian olive can grow up to 9 metres in height and is often thorny. Its lance-shaped leaves are light green in color. Highly aromatic, small, yellow flowers are borne in the months of June and July, shortly after leaf emergence. An abundance of yellow-red, olive-shaped fruits are produced and readily eaten by many species of birds, facilitating the dispersal of seeds.



RUSSIAN OLIVE

TREE-OF-HEAVEN

Tree-of-heaven reaches an impressive 24 metres in height and 1.8 metres in diameter. It has pinnately compound leaves that are 0.3–1.2 metres in length with 10–41 leaflets. It resembles the sumac and hickories, but is easily recognized by the offensive odour it emits. It blooms in late spring producing small flowers ranging in color from green to orange. The fruit produced is flat, papery and twisted.



TREE-OF-HEAVEN

SIBERIAN ELM

Siberian elm reaches heights of 9-18 metres with an open rounded crown and slender, spreading branches. Its bark is dark gray or brown and rough. Leaves are smooth and dark green above, but paler and nearly hairless beneath. Seeds are produced early in the spring, and spread by the wind, inside fruit that is winged, round, smooth and hanging in clusters.



SIBERIAN ELM

GENERAL TIPS FOR GARDENERS

- Avoid plants promoted as “fast spreaders” or “vigorous self-seeders.”
- Remove plants that are creeping or re-seeding outside of their intended area.
- Bag invasive plants and take to your local landfill.
- Replace invasive species with native and/or less aggressive plants.
- Obtain topsoil, mulch and gravel from clean invasive-free sources.
- Avoid non-native wildflower seed mixes.

Learn to identify
invasive plants.

RESOURCES

[Okanagan Invasive Species Online](#) provides an overview of the multitude of invasive species that pose a threat to the Okanagan-Similkameen

BC's [Weed Control Act](#) applies to all Crown land and private lands in British Columbia and requires land owners or occupiers to control listed noxious weeds. Find the [list](#) here.



Some ornamental escapees that you may find lurking on your property:



MYRTLE SPURGE



BABY'S BREATH



**BACHELOR'S
BUTTONS**



**ORANGE
HAWKWEED**



YELLOW FLAG IRIS



**JAPANESE
KNOTWEED**



“Over 60% of invasive plants are spread by people through our everyday activities including our hobbies such as gardening... We can make ‘plant wise’ choices and ensure that we do not purchase or trade invasive plants.” —Gail Wallin, Executive Director of the Invasive Species Council of BC

BE PLANTWISE

Make your next landscaping project ‘plant wise’ with expert-suggested, non-invasive plants suitable for your growing zone. It is now easier than ever to be invasive-plant free.



RESOURCES

Download the mobile app
or visit the website.

[Be Plantwise](#)

Photos courtesy Lisa Scott

INVASIVE MUSSELS

Invasive zebra and quagga mussels are the most pressing threat to Okanagan lakes and waterways.

These freshwater mussels can infest and congregate on almost any hard surface including rocks, boat hulls, and water intake pipes—even on the shells of our native and endangered Rocky Mountain ridged mussel, increasing their mortality.

Zebra and quagga mussels clog water intake systems (hydro power facilities, agriculture irrigation systems) and

municipal water supplies, causing maintenance costs to skyrocket for hydroelectric, industrial and agricultural facilities. Furthermore, they decrease the recreational experience and impact tourism as their sharp shells litter beaches, can injure swimmers and coat docks, foul boat propellers and potentially harm drinking water.



ZEBRA MUSSELS

Photo courtesy Jacquie Rasmussen

“The potential economic impact of the arrival of these invasive mussels to the Okanagan has been estimated at \$43 million per year.” —Okanagan Basin Water Board

Clean, Drain, Dry

—A PREVENTATIVE PROGRAM WITH WATERCRAFT INSPECTION STATIONS

Zebra and quagga adults mussels can be moved long distances overland because that they can survive for up to 30 days out of water. Their microscopic

free-swimming larvae can also survive in standing water and be transported by watercraft such as boats, kayaks, canoes, paddle boards, and other water equipment that have not been drained and dried after they are used.

Photo courtesy Lisa Scott



If you are travelling in B.C. or elsewhere in the Pacific Northwest, you may come across a highway inspection station. All travellers transporting any type of watercraft are required to stop to answer a series of questions and if directed, drain and dry your watercraft.

Fortunately, the Okanagan is still free from invasive mussels. Governments and conservation organizations in the U.S. and Canada are helping to prevent their introduction and establishment. Fouled recreational boats on trailers and boats destined for B.C. are intercepted coming into our province every year.

**KNOW THE DIFFERENCE:
B.C.'S ENDANGERED ROCKY MOUNTAIN RIDGED MUSSEL**

The Rocky Mountain ridged mussel is protected under the federal Species at Risk Act (SARA). More information about SARA, including how it protects individual species, is available in the *Species at Risk Act: A Guide*.



Photo courtesy Canadian Museum of Nature, Ottawa

12.5cm

ROCKY MOUNTAIN RIDGED MUSSEL

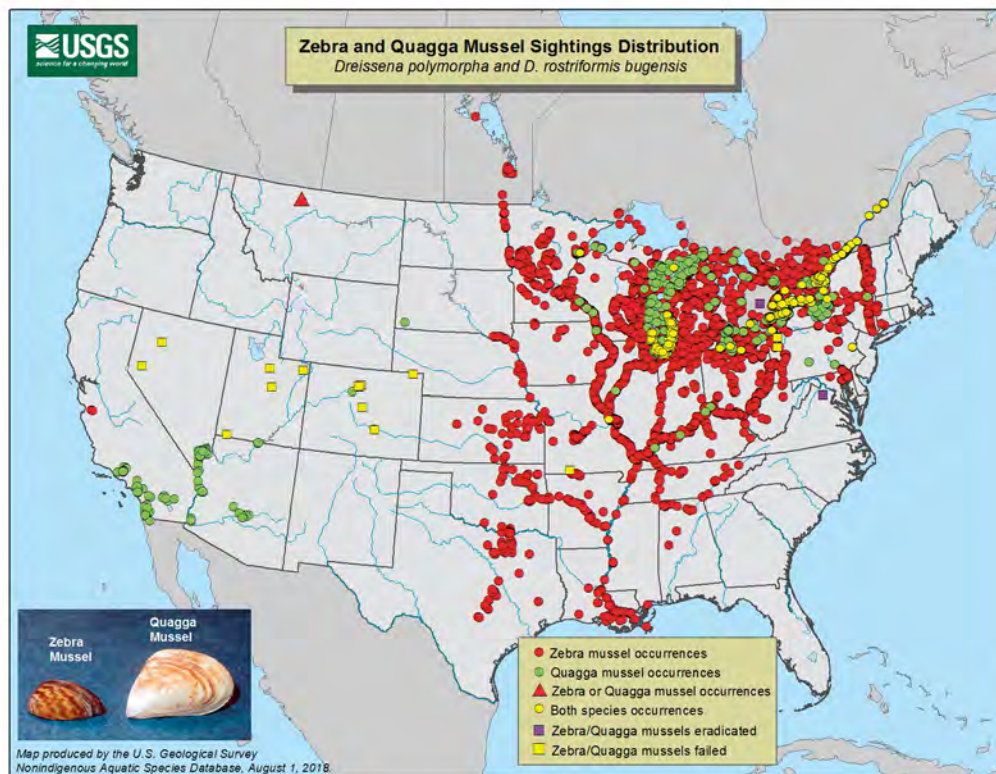
RESOURCES

[Don't Move a Mussel](#)

[Stop the Spread of Invasive Mussels](#)



Photo courtesy Lisa Scott



INVASIVE INSECTS

BROWN MARMORATED STINK BUG

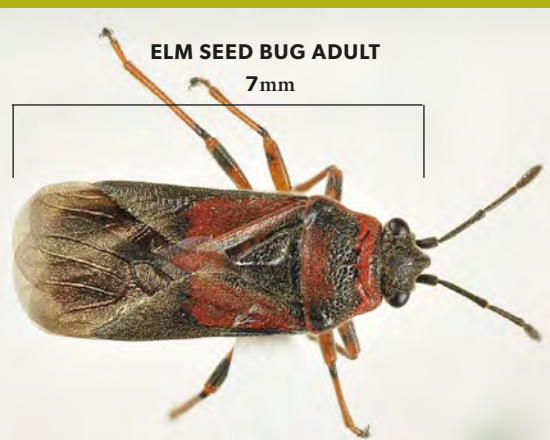
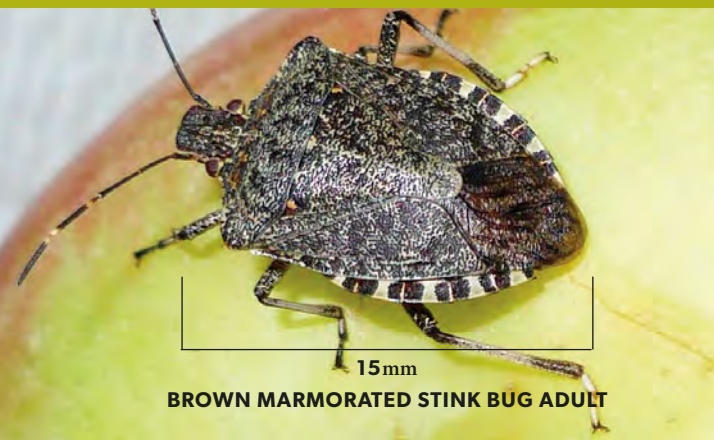
The brown marmorated stink bug is a serious pest of tree fruit, vegetables and ornamental plants. The adult stink bug has distinctive white bands on the antennae. It is a recent arrival to the Okanagan-Similkameen and B.C. Ministry of Agriculture is asking people to report sightings of this pest.

ELM SEED BUG

The elm seed bug was first reported in Canada in Kelowna in 2016, and has since spread throughout the Okanagan Valley with population explosions in 2018. It lives on elm trees in residential areas. The bugs overwinter as adults in and around structures and emerge in the spring to lay eggs on elms. Young bugs feed on elm seeds from

May-June and adults are present in the summer. The brown marmorated stink bug and elm seed bug do not pose a health risk to humans or pets and do not bite. However the bugs are a nuisance when they invade homes and structures in large numbers. These bugs stink when crushed and their fecal droppings on structures are an eyesore.

The brown marmorated stink bug and elm seed bug do not pose a health risk to humans or pets and do not bite.



RESOURCES

For more information on either of these pests or to make a report, contact the B.C. Ministry of Agriculture at: 1.888.332.3352



Photos: brown marmorated stink bug courtesy Dr. Ward, elm seed bug courtesy B.C. Ministry of Agriculture

EUROPEAN FIRE ANT

The European fire ant is an aggressive, swarming ant that can deliver a painful sting when disturbed. While generally thought to be a coastal species, an outbreak has also been confirmed in Naramata, South Okanagan.

European fire ants prefer to nest in warm and moist environments such as irrigated lawns and gardens, as well as under paving stones, wood on the ground, lawn ornaments and clutter. Nests are underground; there are no obvious above-ground mounds.

If you think you have European fire ants on your property the first thing you should do is confirm their identity. Identification services are provided free of charge. Collect a sample and send to Dr. Robert Higgins at Thompson Rivers University, Kamloops, BC.



5 mm

EUROPEAN FIRE ANT ADULT



RESOURCES

For more information visit [European fire ants](#)
Instructions on [shipping ants for identification](#)

Photos courtesy Lisa Scott





BIODIVERSITY The Variety of Life on Earth



Understanding Biodiversity in the Okanagan

“The South Okanagan region is an ecologically important area of Canada, renowned for biological richness, rarity and risk. We have both a unique responsibility and opportunity to protect our biodiversity, and in turn, the beauty and quality of life that makes this place so special.”

—Bryn White, Program Manager, South Okanagan-Similkameen Conservation Program

The Okanagan region is home to many species at risk. Some of these species are found nowhere else in Canada and in some cases, nowhere else in

the world. Large areas of the region contain ecosystems that are sensitive to development and other human land use.

Biodiversity (biological diversity)—the variety of life in all its forms. It includes species and ecosystems and the processes that link them together—essentially, everything that we think of as nature, including humankind.

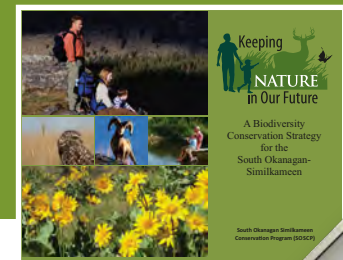
“Nature has the power to make children healthier, happier and smarter. But over the last few generations, childhood has moved indoors, leaving kids disconnected from the natural world. This worldwide trend has profound implications for children’s healthy development—and the future of our planet.” —Children & Nature Network

KEEPING NATURE IN OUR FUTURE

Led by the South Okanagan-Similkameen Conservation Program (SOSCP), a South Okanagan-Similkameen biodiversity strategy has been developed and is being implemented. Entitled, *Keeping Nature in Our Future*, this biodiversity strategy explains why we should conserve and restore natural areas, identifies priority areas needing protection, and highlights

opportunities for people to contribute to conservation. SOSCP is a partnership of 50 organizations that work together to conserve the unique biodiversity and environment of this region. They work with a variety of stakeholders including federal, provincial and local governments, landowners, realtors, developers and others. A key priority of the program

is education and outreach, promoting understanding of the under-appreciated services that nature provides. The protection of nature benefits all South Okanagan residents, ensuring clean air, water, and other values that add to the quality of life in our communities and provides a legacy for future generations.



RESOURCES

Keeping Nature in Our Future, A Biodiversity Conservation Strategy for the Okanagan Region





South Okanagan residents have a unique opportunity to steward rare and unique ecosystems and species in Canada to ensure their future.

Photo courtesy Lisa Scott

UNIQUE ECOSYSTEMS AND RARE SPECIES OF THE OKANAGAN

NATIVE GRASSLANDS

Native grasslands are unique in the Okanagan, but they make up only 1% of British Columbia's land base. Native grasslands support a very

high level of biodiversity, including many species at risk. Over 77% of grasslands have been lost in the last 150 years due to development.

RESOURCES
*Grasslands of the
Southern Interior*



Nature is Important to the Health and Prosperity of the Okanagan

Opportunities to support biodiversity:

- Provide habitat for pollinators and species that depend on nectar sources; choose a variety of plants that will provide nectar and pollen throughout the growing season.
- Provide or retain native trees including ponderosa pine and black cottonwood –many birds use these trees for nesting.
- If you are building in a natural area or have natural areas remaining on your property, retain as much of this as possible.
- Natural landscapes are the simplest to maintain and don't require supplemental watering.
- When purchasing plants at nurseries enquire if systemic pesticides were used during propagation. These chemicals remain active in plants for up to two years and are released through nectar and pollen causing harm to pollinators.

Every home owner can contribute to enriching the Okanagan's biodiversity. Create and protect wildlife habitat. Man-made landscapes and gardens can provide essential habitat for wildlife.

BORDER FREE BEES

is a long term public art initiative consisting of several related projects in partnership with scientists, specialists, community groups, businesses and municipalities. The initiative's mission is to raise awareness of wild pollinators,

empower communities to actively engage in solutions for habitat loss, and transform under-utilized urban sites into aesthetically pleasing and scientifically viable pollinator pastures.

RESOURCES [Border Free Bees](#)



wild about *Pollinators*



Illustration: Astrid Colton Image courtesy



“Environmental heroes in this century will be humble gardeners, gardeners who believe that it is their responsibility or even destiny, to promote richer evolution of life on Earth through a new, ecologically wise landscape art.” —Janet Marinelli, *Stalking the Wild Amaranth*

MEADOWLARK NATURE FESTIVAL

is a popular annual nature celebration event in the South Okanagan. People from across North America come together to enjoy the activities led by prominent naturalists, educators, artists, expert guides and scientists.
www.meadowlarkfestival.ca/

SOUTH OKANAGAN CONSERVATION FUND

is a dedicated source of funding for the specific purpose of undertaking environmental conservation projects. This fund helps communities ensure the sustainability of our environment and protect our quality of life now, and for the future.
www.soconservationfund.ca/

CANADIAN WILDLIFE FEDERATION

[Explore our Pollinators](#)
 (an interactive site)

POLLINATOR PARTNERSHIP

[Pollinator Partnership](#)
 is a non-profit organization dedicated to pollinator health.



RENEWAL, RELATIONSHIPS, RESILIENCY

Black Cottonwood Restoration Project

REALIZING A VISION FOR CONSERVATION THROUGH COLLABORATION

Black cottonwood—*Populus trichocarpa*—“mulx,” in the *Syilx* Okanagan language—is the foundation tree and anchor of the Okanagan’s wetland ecosystems. Their deep root systems allow them to reach the groundwater as well as stabilize floodplains. Cottonwoods have high rates of transpiration, absorbing a large volume of water through their roots and releasing it as vapour into the atmosphere through their leaves.

The black cottonwood ecosystem of the southern interior has been ranked by the BC Conservation Data Centre as one of the rarest plant communities in the province. They need active restoration to survive.

In 2017, the RDOS and partners conducted a ground-breaking conservation where 1500 black cottonwoods were propagated and planted at ten locations.

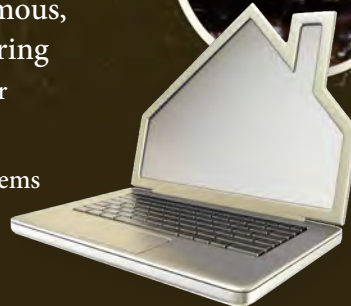
“Narrow strips of riparian habitat that surround lakes and rivers support unique plants and animals that cannot survive elsewhere within our semi-arid landscape...”

Landowners of Okanagan riparian habitat can have an enormous, positive impact on local biodiversity by protecting and restoring foundation species.”—Kasey Moran, PhD candidate, UBC Vancouver

Illustration by Kasey Moran
Photos: Western Screech-Owl, Long-Toed Salamander: courtesy M. Bezner
Bald eagle: istock; Yellow breasted chat p 85, Lewis’s woodpecker, Northern Flicker p85, Salmon: Shutterstock

RESOURCES

Cottonwood Riparian Ecosystems of the Southern Interior



The protection and restoration of *mulx* and their riparian habitats depends on our continued partnership.





Syilx Okanagan People have a deep and ancient connection with *mulx* ecosystems, which has sustained them for countless generations. They have a profound reverence and understanding of how these ecosystems function, their value and their inextricable connection to people and the environment.

Mulx remains a significant ecosystem species used by the indigenous *Syilx* Okanagan People for many uses:

- paint, glue, perfume, salves
- dugout canoes, firewood, saddles and masks
- fishing weirs
- rope



- soap
- food storage containers
- pillow stuffing, blankets and toques.

Mulx also offers vital support to endangered species on land and water by providing nesting habitats, leaf and wood litter, shade, erosion control and many other benefits.

1 pə́lqin | **BALD EAGLE**

2 n'tyxtix | **SALMON**

3 n'p'ikən' | **LONG-TOED SALAMANDER**

4 xwaʔqwiləm' | **YELLOW BREASTED CHAT**

5 ciwcu uʔ iʔ | **LEWIS'S WOODPECKER**

6 qʷəlqʷəlsninaʔ il sckʔxʷalqs iʔ |

WESTERN SCREECH-OWL

7 qʷəlqʷlʂakn' | **NORTHERN FLICKER**

COMMUNITY TO COMMUNITY, GROWING STRONG TOGETHER

This restoration project draws upon the knowledge of traditional ecological science and on western science to boost planting success and survival.

Community volunteers, students and First Nations recognize and celebrate the shared resources of land and water, paving the way forward to a more sustainable future for the South Okanagan.

Enhancing both ecological and social landscapes, this Heritage Canada restoration project is a collaboration between the Regional District of Okanagan-Similkameen, the Okanagan Nation Alliance and the En'owkin Centre.

nyʂayp ʔəks txit'ntim ixiʔ
iʔ tmixʷ caʔkʷ nyʂayp kəts
kn' knxtwixʷmstm



A *Syilx* Okanagan Perspective

tmix^w – the *nsyilxcən* word that most closely translates as “ecology.” *tmix*^w includes everything alive – the land, water, insects, people, animals, plants and medicines.

Underneath all of the *tmix*^w is *tmx*^w*ulax*^w – “the land” – the core spirit from which all of creation arises and which unites everything.

Syilx Okanagan People have a responsibility to care for the *tmx*^w*ulax*^w in order to ensure a healthy and sustainable environment that will

continue to nourish all people for generations to come. Central to this practice, *siwłk*^w – water, grassland, wetland and old-growth forest ecosystems are held up as living relatives that must be respected and protected.

The *Syilx* take a holistic perspective to look after the environment. They

believe everything is connected and needs to be kept in balance. The needs of *tmix*^w and *tmx*^w*ulax*^w can be achieved when we work together to directly participate in protecting and restoring the environment. It is all of our responsibility to act now.

Photo: Shutterstock



Everything is connected and needs to be kept in balance.

stunx | **BEAVER**

While *stunx* are often regarded as a nuisance, *Syilx* Okanagan People have always known them as the architects and protectors of water and wetlands. For climate change adaptation it is critical

to revitalize high mountain *stunx* in the Okanagan because of their key role in building and sustaining headwaters wetland habitat, retaining water storage, improving water quality, and supporting other wildlife and fish to flourish.

Illustration courtesy
Okanagan Nation Alliance



klilix^w (Spotted Lake) and the surrounding area is collectively owned by the Syilx Okanagan Nation. It is known to be a sacred place and must be protected from development and pollution.

Photo courtesy Okanagan Nation Alliance





FOOD SECURITY



Understanding and Evaluating Why Food Security is Important

The global food supply is being disrupted by climate change events. These changes impact pollinators, crops and food distribution, making fresh fruit, grains and vegetables, along with animal protein and dairy products, more expensive.

The Okanagan could see a marked increase in the number of growing degree days, extending our farming

season. This extended growing season, however, will also mean drier summers and reduced snowfall, calling for improved water conservation. Farmers and homeowners alike will need to continue to adopt new approaches, smart irrigation and the management of farmlands and home gardens.

One of our best safeguards is to preserve agricultural land. This will allow us the ability to ensure our own local food supply so we are not reliant on imported food as the main source of our future food supply.

Support local food resources through protection of agricultural lands, community gardens, and individual backyard plots.



RESOURCES

[Young Agrarians](#) is a network for new and young ecological and organic farmers. Since January 2012, their network has grown across Canada—from coast to coast—through farmers organizing events (mixers, farm tours and potlucks, and apprentice meet-ups).



A SYILX OKANAGAN PERSPECTIVE ON FOOD

Syilx Okanagan food systems are deeply rooted in territory, and articulated in *captik^wl* (stories).

Syilx Okanagan People on the land organize themselves with the seasons and how they harvest. The land is used for hunting, fishing, root digging and berry picking. Hunting and gathering these resources requires a localized knowledge that is determined by the seasonal cycles of the land. *Syilx* families have always, and continue to be, united by gathering of food as an act of

on-the-land ceremony, demonstrating honour and respect for the *tmix^w*.

tmix^w is the *Syilx* word that most closely translates as “ecology.” *tmix^w* includes everything alive—the land, water, insects, people, animals, plants, and medicines.

There are a wide range of traditional food initiatives that are carried out by communities, organizations and

individuals throughout the Nation, ensuring that their food systems continue despite ongoing challenges.

The *Syilx* are indigenous stewards of the land. Land and water potentials are optimized so that future generations may harvest from those same places. Life within these communities is built upon respect.



To care for the land is
to care for the People.

SIYA (Saskatoon berry), one of the *Syilx* Okanagan Four Food Chiefs, represents all things that grow above the ground. *siya* embodies creative energy and innovation. Each seed represents the possibility of ongoing growth and

regeneration securing our future. As well, *siya*, teaches us about youth, the seeds of our future, they must be protected and enclosed in sweetness, have a place to land, and have water and sunshine.

Photos courtesy Okanagan Nation Alliance



Photo: Shutterstock

kʔ cp'əlk' stim': “To Cause to Come Back”

n'tyxtix (Chinook Salmon) is a primary food mainstay of the *Syilx* Okanagan People and central to the culture and trade traditions. A myriad of cultural practices demonstrate *sn̓xaʔ'iwləm* (honouring the sacredness of the river) while reinforcing strong cultural-spiritual ties between *Syilx* Okanagan communities and the salmon. As such, these salmon are key to a wide range of connections between generations, communities, humans and non-humans, terrestrial and aquatic species and transboundary watersheds.

Construction of dams, channelization, urban encroachment, industrial agriculture, and ineffective water management practices have all contributed to depletion and extinction of fish stocks within the Okanagan River basin.

“*kʔ cp'əlk' stim'*” translates as “to cause to come back.” The remarkable recovery, particularly of *sc'win* (Sockeye salmon) is a testament to the vision of the Elders, the guidance of *Syilx* teachings, and the determination and

hard work of all Okanagan Nation communities. Over the last 20 years, the *Syilx* Okanagan People have assumed leadership on salmon mitigation and re-introduction work in partnership with governments and many other agencies.

RESOURCES

[Okanagan Nation Alliance, Fishery Department](#)

[Okanagan Nation Alliance Food Sovereignty](#)

Photos courtesy Okanagan Nation Alliance



Restoring, maintaining and protecting our *Syilx* Okanagan food systems are foundational and central to the well-being of our communities and way of life.



Photo: Shutterstock

ACTIONS COMMUNITY MEMBERS CAN TAKE TO SECURE OUR LOCAL FOOD SUPPLY

- Protect farmland from conversion to other uses.
- Raise awareness of the need for Okanagan residents to be able to access healthy and affordable food close to home.
- Grow fruit, vegetables and herbs in home plots that also provide food and shelter for pollinators.
- Ensure and promote our local food supply by recognizing the work of local producers and harvesters, and by supporting farmer's markets.
- Seek out community organizations like 'gleaners' (a voluntary group) to collect tree fruit that you will not use for re-distribution to food banks.
- Reduce the risk of bringing bears and unwanted animals into your neighbourhood by harvesting, or cleaning up all the fruits and vegetables we grow.



Shutterstock

Encourage schoolyard gardens and green houses to introduce and teach students to grow their own food.

Encourage allotment and community garden spaces for vegetable growing.

Share gardens for vegetable growing with others (rent-my-garden-space programs).

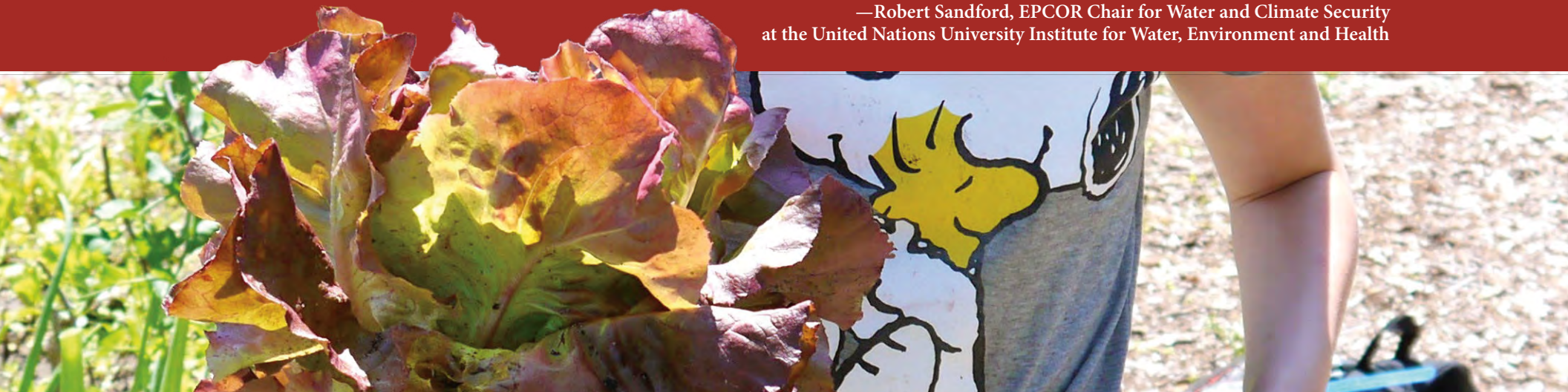


Shutterstock



“B.C., and in particular the Okanagan—because of regional collaboration and Indigenous knowledge examples of ecosystem stewardship—is one of the last places on the planet where it is still possible to transcend the currently divisive climate debate and create a truly better world.”

—Robert Sandford, EPCOR Chair for Water and Climate Security
at the United Nations University Institute for Water, Environment and Health



Resources

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(RDOS ComWPP)
Community Wildfire Protection Plan
Noxious and Destructive Insect and Pest Control Bylaw (2015) to help control tree fruit pests, infestations and related pests.
Okanagan-Similkameen Rain Garden Guide Book
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- continued...*

Resources *continued*

WEBSITES

12,000 Raingardens in Puget Sound

Border Free Bees

Canadian Wildlife Federation–
‘Explore Our Pollinators’
(an interactive CWF site)

Don’t Move A Mussel
(OBWB – OKWaterWise)

Enōwkin Centre

FireSmart Canada

FrontCounterBC

Green Shorelines

Grow Green Guide
–low water lawns

Insurance Bureau of Canada (IBC)

Invasive Species Council of BC

Irrigation Industry Association
of British Columbia

Lakeshore Living

Love Your Lake

Make Water Work
(OBWB–OKWaterWise)

Meadowlark Nature Festival
South Okanagan

Native Plant Society of BC

Okanagan Basin Water Board (OBWB)

Okanagan Similkameen Stewardship

Okanagan and Similkameen
Invasive Species Society

Okanagan Invasive Species Online

Okanagan Nation Alliance

Okanagan WaterWise

Okanagan Wetlands Strategy

Okanagan Xeriscape Association

Pollinator Partnership

Summerland Ornamental Gardens

South Okanagan Conservation Fund

Waterbucket

Xerces Society

Young Agrarians

SOURCES FOR NATIVE PLANTS

Gardenworks Penticton

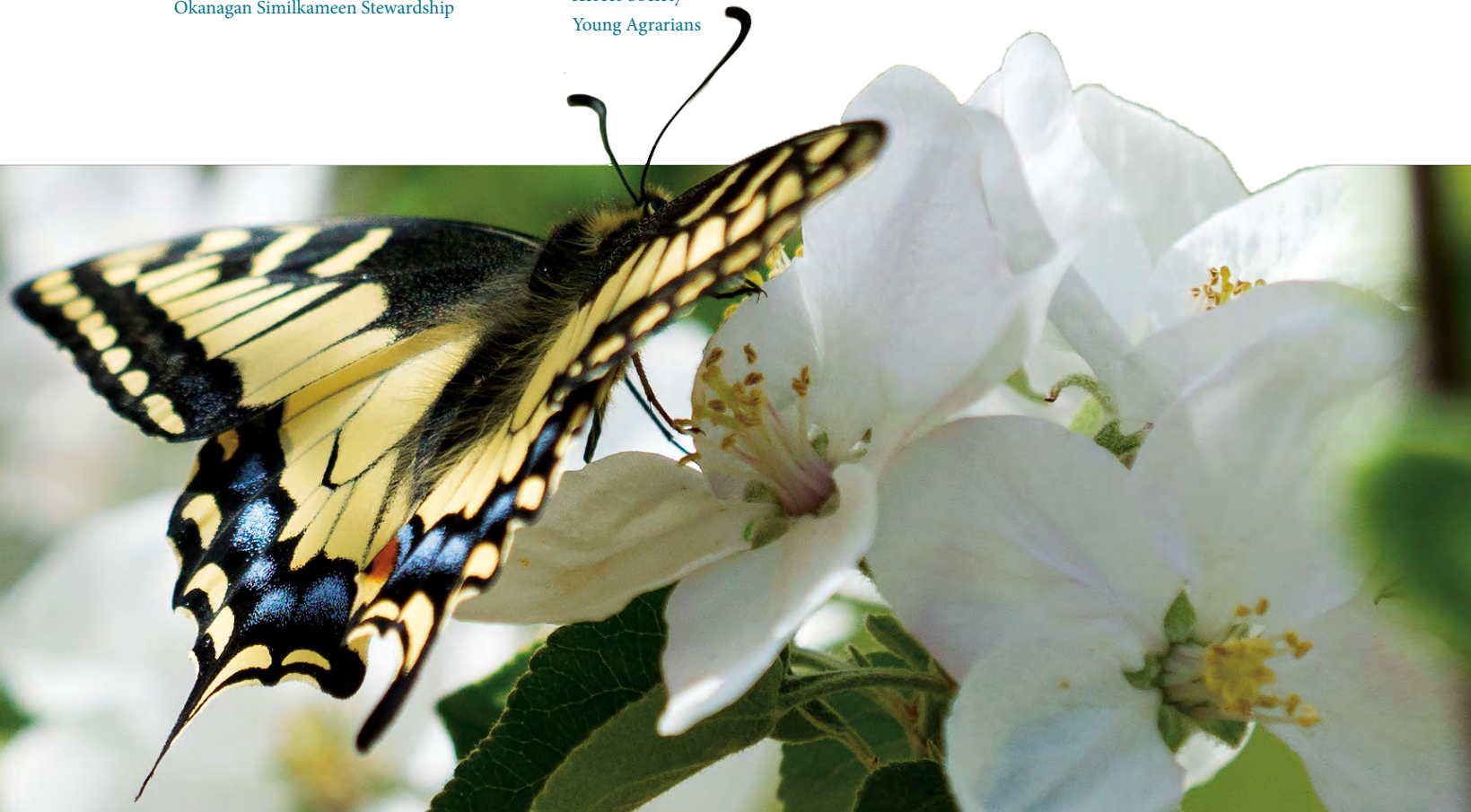
Sagebrush Nursery Oliver

Grasslands Nursery Summerland

Dogwood Nursery West Kelowna

Xeriscape Endemic Nursery
West Kelowna

Photos courtesy RDOS





“This guide can be a resource to help make decisions to manage risks and opportunities, creating unique results for each property and landowner. We hope it will inspire you to make changes on your property to advance climate change resilience.”

—Alison Peatt, Environmental Planner, South Okanagan-Similkameen Conservation Program

WWW.SOREB.ORG

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