Annotated Bibliography: Wildfire Risk Reduction and Ecological Restoration Techniques, Best Practices, and Education in Coastal Douglas-fir Ecosystems

Salt Spring Island Water Preservation Society (WPS)
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Executive Summary

Wildfire is a topic of great concern for many Salt Spring Island residents. While there is a wealth of valuable information about wildfire preparedness and risk reduction, these resources are often either tailored to the most fire-prone regions, or are very generalized. Fire risk and behaviour are very geographically variable, which means that the techniques used to manage fire risk should also be regionally specific.

Salt Spring Island is located in the Coastal Douglas-fir (CDF) biogeoclimatic zone, which has a unique climate and forest type. The CDF zone is characterized by mild, moist winters and warm, dry summers, with frequent seasonal droughts. While wildfires in this region are typically less frequent than in other parts of BC, CDF forests have been heavily modified by human development and clearcut logging, causing changes to the fire regime. Most of the CDF zone is also situated in the wildland-urban interface (WUI) - where people, buildings, and forests are closely interwoven. All of these factors mean that specialized, regionally-specific wildfire risk management guidance is needed for the CDF zone. It is crucial that residents and landowners in this region have an understanding of wildfire risk, because 80% of land in the CDF zone is privately owned. This annotated bibliography aims to fill these gaps, by providing a knowledge base of evidence-informed current thinking on wildfire risk reduction techniques and ecological restoration best practices for residents of CDF ecosystems.

Each entry in this annotated bibliography includes an APA-style citation and a short summary of the resource and its importance. A searchable database version of this annotated bibliography, including PDFs wherever possible, is available at this link, hosted on the WPS sync drive. While peer-reviewed journal articles specific to the CDF zone are limited, there is an abundance of other types of resources, including environmental NGO reports, government reports, videos, and other types of "gray" literature. The resources provided in this annotated bibliography are grouped into nine major themes:

1. Fire History and Natural Fire Regimes
2. Current and Future Fire Risk
3. Fuel Management and Fire Risk Reduction Treatments
4. Soil Moisture, Fuel Moisture, and Forest Hydrology
5. Ecological Restoration
6. Farmland and Agricultural Wildfire Planning
7. Private Landowners and Property Level Action
8. Community Engagement, Education, and Behaviour Change
9. Governance, Policy, and Multi-Level Coordination

This annotated bibliography will be valuable for TSS as a source of locally relevant information on wildfire risk reduction and ecological restoration. This information can be used to guide the development of targeted and effective public communications. It also provides a catalogue of regional experts and thought leaders who TSS may wish to connect with. Overall, these resources synthesize important messages to assist Salt Spring Island residents in reducing wildfire risk while supporting broader ecological integrity in the CDF zone.

Abbreviations

BC: British Columbia
CARL: Climate Adaptation Research Lab
CDF: Coastal Douglas-fir
CRD: Capital Regional District
NGO: Non-governmental organization
TSS: Transition Salt Spring
US: United States
WPS: Water Preservation Society
WUI: Wildland-Urban Interface

Link to searchable database version

https://ln5.sync.com/dl/1acfcb430#vnmgrxmr-3xuypyve-s96msstd-9325mzk4

Fire History and Natural Fire Regimes

Hall, E. (2010). *Maintaining Fire in British Columbia's Ecosystems: An Ecological Perspective* [Report]. BC Ministry of Forests. https://resources.sipexchangebc.com/dataset/747c0d1d-ef51-4712-bc25-020d1886bd81/resource/3cee8f61-b014-41e8-a02b-cd5205d49da4/download/maintaining_fire_in_bc_ecosystems_bc_2010.pdf

This provincial report outlines fire's ecological role across BC's diverse ecosystems, describing historical fire regimes by ecosystem type and emphasizing fire's importance for biodiversity, nutrient cycling, and ecosystem complexity. It argues for maintaining fire as a natural process rather than suppressing it universally. A useful reference for building background knowledge on the ecological role of fire, especially when communicating why some degree of managed fire is a healthy and necessary part of BC's forest ecosystems.

Merschel, A. G., Krawchuk, M. A., Johnston, J. D., & Spies, T. A. (2024). Historical pyrodiversity in Douglas-fir forests of the southern Cascades of Oregon, USA. *Forest Ecology and Management*, 563. https://doi.org/10.1016/j.foreco.2024.122306

This study reconstructs historical fire return intervals in moist Douglas-fir forests, finding frequent to moderately frequent fire cycles of fewer than 50 years. The research provides evidence that humans, including Indigenous peoples, were a key driver of fire occurrence in these forests, shaping old-growth forest structure over centuries. While focused on the US Pacific Northwest, the findings are ecologically comparable to BC's CDF zone and support the scientific case for incorporating cultural burning into contemporary forest management.

Northern Colorado Fireshed Collaborative. (2021). *Living in a Wildfire Prone Landscape: A Healthy Forest Needs Fire* [Website]. https://nocofireshed.org/healthy-forest-needs-fire/

This accessible website explains why fire has always been an essential part of healthy forest ecosystems, focusing on ponderosa pine and Douglas-fir forests. It discusses how low-intensity surface fires maintained forest structure and why mechanical treatments alone cannot replace fire's ecological role. While US-focused, the ecological principles apply to BC's CDF zone. A useful communication resource for explaining to community members why prescribed fire and natural fire management are necessary components of forest health.

Pellatt, M. G., & Gedalof, Z. (2014). Environmental change in Garry Oak (*Quercus garryana*) ecosystems: The evolution of an eco-cultural landscape. *Biodiversity and Conservation*, 23(8). https://doi.org/10.1007/s10531-014-0703-9

This peer-reviewed study examines the role of eco-cultural practices, including Indigenous prescribed burning, in shaping Garry oak ecosystems prior to European colonization. The research shows that these landscapes were actively maintained through regular low-intensity fire, which supported open, biodiverse conditions. European settlement and fire suppression radically changed this dynamic. This article provides important historical context for understanding why current CDF forests look so different from pre-contact conditions, and why Indigenous fire knowledge is scientifically relevant.

Piikila, E., & Michaelsen, I. (2023). *Why Healthy Forests Matter in Reducing Fire and Drought Risk* [Webinar recording]. Transition Salt Spring. https://transitionsaltspring.com/why-healthy-forests-matter-video/

This interactive Q&A webinar with Erik Piikkila explores what a healthy CDF forest looks like—multi-layered, biodiverse, with abundant dead wood—and how these qualities reduce fire and drought risk. Topics include carbon storage, wildlife habitat, watershed cooling, and community water supply. Piikkila addresses common misconceptions about forest management and fire risk. A practical, locally grounded resource of accessible, science-informed content to share with community members.

Raincoast Conservation Foundation. (2022). *The Story of Coastal Douglas-fir Forests: The Return of Fire to the Landscape*. https://www.raincoast.org/2022/06/the-story-of-coastal-douglas-fir-forests-the-return-of-fire-to-the-landscape/

This report documents how fire shaped the CDF zone prior to settler contact, with fire return intervals of 26–41 years in forests and more frequently in meadows, sustained by Indigenous land management practices. The systematic suppression of these practices following colonization disrupted the fire cycle and allowed fuel loads to accumulate. The report makes a compelling, evidence-based case for reintroducing fire to CDF landscapes as part of ecological restoration. Important information for understanding the historical roots of current wildfire risk.

Current and Future Fire Risk

Canadian Climate Institute. (2025). *Climate Change and Wildfires* [Fact sheet]. https://climateinstitute.ca/news/fact-sheet-wildfires/

This accessible fact sheet summarizes how climate change is intensifying wildfire risk across Canada, covering impacts on health, infrastructure, and ecosystems. It makes the case that both defensive and proactive measures are needed, protecting communities while accelerating the shift away from fossil fuels. Authored by a credible national research institute, this resource is well-suited for communicating the broader climate context of wildfire risk to community members or decision-makers on Salt Spring Island.

Diamond Head Consulting. (2023). *Community Wildfire Resiliency Plan: Salt Spring Island Electoral Area*. https://saltspringfire.com/wp-content/uploads/Community-Wildfire-Resiliency-Plan-for-Salt-Spring-Island-Electoral-Area-Capital-Regional-District.pdf

This is one of the most important planning documents for TSS. Commissioned for the CRD, this report characterizes Salt Spring Island's wildfire risk landscape—predominantly coniferous forest in a wildland-urban intermix—and identifies areas of moderate to high wildfire threat. Most public lands can support low to moderate intensity fires, but the intermix condition puts homes at heightened risk. The report provides a foundation for local wildfire resiliency planning and is essential reading for understanding Salt Spring's specific vulnerabilities and priority action areas.

Pacific Institute for Climate Solutions. (2025). *From Ember to Inferno: Wildfires in B.C. Explained* [Fact sheet]. https://climatesolutions.ca/wp-content/uploads/2025/07/Wildfire-factsheet_FINAL_July-15-2025.pdf

A concise, evidence-based overview of the factors driving worsening wildfires in British Columbia, including earlier snowmelt, warmer springs and falls, drought, and insect outbreaks. Written for a general audience, this resource explains how climate change lengthens fire seasons and dries out fuels. It is a useful reference for explaining current fire trends and is accessible enough to share directly with community members or use in public-facing communications.

Perrakis, D. D. B., Brown, K. J., Morrisson, K., Horrelt, D. R., & Taylor, S. W. (2025). Assessing wildfire potential in a coastal forest watershed, British Columbia, Canada. *Forest Ecology and Management*. https://doi.org/10.1016/j.foreco.2025.122796

This study examines the fire regime of conifer forests on southern Vancouver Island, finding that wildfire is constrained primarily by ignition frequency and fuel structure rather than fire weather. The region has a low-frequency but high-impact fire regime, which historically favoured aggressive suppression, a strategy that has compounded risk over time. The findings are directly relevant to Salt Spring Island and support the case for proactive fuel management and restoration. This article provides credible, regionally specific evidence that the status quo approach to fire management carries growing risk.

Waldick, R. & Courtier, N. Transition Salt Spring. (2021). *Salt Spring Island Climate Risk Assessment Maps and Data* [Technical report]. https://transitionsaltspring.com/wp-content/uploads/2021/02/2.-CAP-2.0-CLIMATE-RISKS-MAPS-AND-DATA.pdf

This TSS report presents climate projection maps and data for Salt Spring Island, including decreasing frost days, increasing consecutive dry days, and more intense precipitation events. These projections frame the climate backdrop against which wildfire and drought risks are increasing. A key local resource, this document contextualizes Salt Spring Island's specific vulnerabilities and provides data to support public education and planning work.

Fuel Management and Fire Risk Reduction Treatments

BC Wildfire Service. (n.d.). *Coastal Fire Weather Zone Best Management Practice Guide for Fuel Treatment* [Government report]. https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/fire-fuel-management/fuels-management/coastal_fire_weather_zone__for_review.pdf

This provincial guidance document outlines recommended fuel treatment approaches for BC's coastal fire weather zone, which includes Salt Spring Island. It notes that the temperate rainforest character of the coast results in lower understory flammability than other BC regions, due to high precipitation and relatively closed canopy conditions. The document is a technical reference for practitioners planning fuel treatments, and is useful for understanding the provincial regulatory and management context for fuel management activities.

Capital Regional District. (2023). *CRD Electoral Area Wildfire Exposure Maps Show Risk* [Technical report]. https://www.crd.ca/news/crd-electoral-area-wildfire-exposure-maps-show-risk

This CRD report presents wildfire exposure maps that identify where fires are most likely to impact developed areas within the electoral region, including Salt Spring Island. Exposure is defined as the percentage of land cover within 500 metres classified as hazardous fuel. Southern areas of Salt Spring Island show the greatest overall exposure. These maps are a practical planning tool for prioritizing outreach and fuel management activities in the highest-risk areas.

Cultural Burning & Prescribed Fire. (n.d.). *What Is Prescribed Fire?* [Website]. https://prescribedfire.ca/what-is-prescribed-fire/

This BC-focused website explains prescribed fire as the planned and controlled application of fire to achieve specific land management objectives, from habitat enhancement to fire risk reduction. It distinguishes prescribed fire from wildfire and outlines the conditions under which it is applied. A concise and accessible reference for explaining prescribed burning to community members or decision-makers unfamiliar with the concept.

Curran, T. J., Perry, G. L. W., Wyse, S. V., & Alam, M. A. (2017). Managing fire and biodiversity in the wildland-urban interface: A role for green firebreaks. *Fire*, 1(1). https://doi.org/10.3390/fire1010003

This peer-reviewed article proposes green firebreaks—plantings of fire-resistant native species at strategic locations—as a tool for reducing fire spread in the WUI while also

supporting biodiversity. In the WUI context, the imperative is to protect lives and property without sacrificing ecological values. The authors argue that green firebreaks can contribute to both goals. Useful background for property-scale or landscape-scale vegetation management strategies that balance fire risk and ecological integrity.

Doll, S., Waldick, R., Tolsma, K., Kelly, C., & Mineau, P. (2023). *Fire Risk Reduction in the Coastal Douglas-fir Biogeoclimatic Zone: A Practitioner's Report*. Raincoast Conservation Foundation. https://www.raincoast.org/reports/fire-risk/

This is the written companion to the practitioner workshop debrief listed later in this section, expanding on fuel treatment methods, desired forest conditions, and key challenges in the CDF zone. Table 2 is particularly valuable, outlining desired forest conditions and proposed treatments for fire-resistant forests. Appendices address specific challenges and solutions. An essential technical reference for planning or overseeing restoration and fuel management work on Salt Spring Island.

Islands Trust. (2024). *Living with Fire Webinar* [Webinar recording]. https://www.youtube.com/watch?v=oS5PonJdixI

This Islands Trust webinar covers the diversity of fire regimes across coastal BC, how climate change is intensifying fire risk, and the roles of fuel management, prescribed fire, and Indigenous fire stewardship in building resilience. It is intended for an audience of Gulf Islands residents and land managers, making it directly relevant to Salt Spring Island. A broad and accessible overview for those seeking a current, regionally focused summary of key wildfire issues and management approaches. Hosted by TSS-CARL Lead Scientist, Dr. Ruth Waldick.

Prichard, S. J., Hessburg, P. F., Hagmann, R. K., Povak, N. A., Dobrowski, S. Z., Hurteau, M. D.,
… Khatri-Chhetri, P. (2021). Adapting western North American forests to climate change and wildfires: 10 common questions. *Ecological Applications*, 31(8). https://doi.org/10.1002/eap.2433

This peer-reviewed paper addresses ten frequently debated questions about forest management and wildfire risk, synthesizing evidence across disciplines. Key findings include: the effects of fire exclusion are real and significant; thinning alone is insufficient without addressing fire weather; and treatment effectiveness depends heavily on placement and scale. This is a rigorous, accessible resource for science-grounded answers to common questions about whether and how fuel management and forest thinning reduce wildfire risk.

Smith, J. D., Putz, F. E., & Van Holsbeeck, S. (2025). Green firebreaks: Potential to proactively

complement wildfire management. *Fire*, 8(9). https://doi.org/10.3390/fire8090352

This peer-reviewed literature review examines green firebreaks, strategic plantings of low-flammability species, as a proactive tool for reducing wildfire spread and intensity. In addition to fire risk reduction, green firebreaks can support biodiversity and carbon storage. The review identifies conditions under which they are most effective. A useful reference for exploring nature-based approaches to reducing wildfire risk at landscape and property scales on Salt Spring Island.

Transition Salt Spring. CARL. (2021). *How Do Healthy Forests Prevent Wildfire Risk?* [Infographic]. https://transitionsaltspring.com/infographic-how-do-healthy-forests-prevent-wildfire-risk/

This infographic distinguishes between forests that increase fire risk and those that reduce it, making the key point that clearing trees to prevent fire often backfires. Exposed roots and limbed-out forests can dry out and increase risk. By contrast, healthy forests with moisture-retaining soils act as natural firebreaks. A concise, visually accessible resource for countering common misconceptions and communicating nuanced messages about forest management and fire to a general audience.

Transition Salt Spring, Oloriz, C., Waldick, R., Olsen, A., Elder Robert George (Qwiahultuhw), Vaisus, D., … Reimer, J. (2023). *Fire Risk Reduction in the Coastal Douglas-fir Biogeoclimatic Zone* [Webinar recording]. https://transitionsaltspring.com/fire-risk-video/

This comprehensive webinar brings together Indigenous knowledge holders, fire scientists, foresters, and community members to discuss fire risk in the CDF zone and what landowners can do. It covers the unique fire behaviour of the CDF, current fire risk data for Salt Spring Island, and the role of private land in driving overall landscape resilience. A notably inclusive and locally grounded resource, relevant for the full spectrum of the island's landowner community on wildfire risk.

Wilkinson, J. (2019). *Environmentally Friendly Ways to Deal with Woody Debris*. Salt Spring Island Conservancy. https://saltspringconservancy.ca/environmentally-friendly-ways-to-deal-with-woody-debris/

This Salt Spring Conservancy article offers locally relevant, practical guidance on managing woody debris with minimal ecological harm. It recommends clearing small dry twigs and deadfall within 10 metres of homes before fire season, while explaining that large diameter, moist wood in ground contact stores moisture rather than posing a hazard. The resource helps community members understand the nuances of what actually poses fire risk versus what

contributes to healthy soil and habitat. Useful for guiding landowners toward ecologically informed property maintenance.

Soil Moisture, Fuel Moisture, and Forest Hydrology

Annschild, R., Cowan, S., Young, B., Pisani, J., & Patrick, L. (2021). *Freshwater Stewardship for Challenging Times* [Webinar recording]. Transition Salt Spring. https://transitionsaltspring.com/freshwater-what-we-can-do/

This webinar addresses the interlinked challenges of drought, flooding, and fire risk in the context of Salt Spring Island's changing climate. Priorities discussed include locally adapted FireSmart training and restoring wetlands and forests to improve water and soil retention, especially at higher elevations. A useful resource for communicating how freshwater stewardship and wildfire resilience are deeply connected goals on Salt Spring Island, and for introducing water-focused community members to the wildfire dimension of ecosystem health.

British Columbia Wildfire Service. (2018). *Coastal Fire Centre: Hot Topics in Wildfire on the Coast* [Report]. https://saltspringfire.com/wp-content/uploads/2018/06/Issue-4-June-22-Wildfire-News.pdf

This BC Wildfire Service bulletin explains how fine fuels—surface litter, dried grass, and shallow organic material—are the most significant drivers of ignition in coastal forests, given their rapid response to drying conditions. Larger fuels dry much more slowly. Understanding this distinction is important for property-level and landscape-scale fuel management decisions. A concise technical reference, useful to explain to landowners and community members which types of fuels actually drive fire risk.

Hankins, D. (2020). *Water Talks Podcast: Indigenous Water and Fire Expertise in California* [Podcast]. https://water-talk.squarespace.com/episodes/episode-08

In this podcast episode, Don Hankins discusses ancient Miwok land management practices, including the use of logs and woody debris on steep slopes to slow water movement, improve infiltration, and create moist microhabitats, all of which also reduce fire risk. These practices illustrate how Indigenous ecological knowledge integrates water and fire management. A thought-provoking resource for those interested in the intersection of Indigenous knowledge and contemporary watershed and fire resilience approaches.

Ryba, D. (2025). *Understanding the Role of Soil Moisture in Fire Risk* [Article]. Smoked System. https://smokedsystem.com/understanding-the-role-of-soil-moisture-in-fire-risk/

This article explains how soil moisture regulates whether landscapes are fire-resistant or fire-prone. When soils are wet, vegetation stays lush and green, resisting ignition; when dry,

soils and plants become combustible. Soil moisture is sourced from rainfall, snowmelt, and irrigation, and is depleted by evaporation, plant uptake, and drainage. An accessible introduction to the science of soil moisture and fire risk, useful for explaining to community members how drought and soil health directly affect wildfire danger.

Transition Salt Spring. Ecological Research Network (2021). *How Do Forests Support Our Drinking Water?* [Infographic]. https://transitionsaltspring.com/infographic-how-do-forests-support-our-drinking-water/

This infographic explains how healthy watersheds capture, store, and filter water—reducing risks from drought, flooding, and fire. Multi-layered forest canopies shade soils and understorey plants, stabilize slopes, and capture fog and precipitation. Trees and dead wood act as natural sponges. A clear, locally relevant public education tool that helps community members understand why forest health is directly connected to Salt Spring Island's drinking water security. Well-suited for pairing with wildfire messaging.

Transition Salt Spring. CARL (2023). *A Time Lapse Showing the Assembly of a Nurse Log* [YouTube video]. https://www.youtube.com/watch?v=NCstFDZeGEY

This short video documents high school and university students participating in a forest restoration project on Hwmet'utsum (Mt. Maxwell) Creek Watershed, assembling nurse logs as part of TSS's CARL initiative. Nurse logs store moisture, create wildlife habitat, and decompose more slowly when assembled. A compelling example of community-based ecological restoration in action. Useful for communicating the youth engagement and restoration dimensions of TSS's work, and an accessible explanation of the benefits of assembled nurse logs.

Transition Salt Spring. CARL (2023). *Karlis Hawkins, a Restoration Ecologist, Walks Us Through the Benefits of an Assembled Nurse Log* [YouTube video]. https://www.youtube.com/watch?v=LMHE9kvUKFI

Restoration ecologist Karlis Hawkins explains how assembled nurse logs—constructed from large woody debris after thinning—store more moisture and decompose more quickly than individual logs. They also create habitat for amphibians, salamanders, and other species. The video illustrates a practical restoration technique being used in the Maxwell Creek watershed. Useful for communicating the specific methods and ecological rationale behind TSS's restoration work.

Transition Salt Spring. CARL (2025). *Not All Wood on the Forest Floor Is a Fire Hazard* [YouTube video]. https://www.youtube.com/watch?v=nuLV15soPfI

In this short video, Ruth Waldick clarifies a common misconception: wet, large-diameter woody debris on the forest floor is not a fire hazard. In fact, it stores moisture and can actually mitigate fire risk. This message counters the instinct to remove all fallen wood, which can inadvertently dry out the forest floor and increase fine fuel loads. A concise, useful resource for educating landowners about ecologically informed property management.

USDA Climate Hubs. (n.d.). *Maintain and Enhance Infiltration and Water Storage Capacity of Forest Soils* [Government website]. https://www.climatehubs.usda.gov/approach/maintain-and-enhance-infiltration-and-water-storage-capacity-forest-soils

This USDA resource explains how undisturbed forest floors with porous soils absorb and slowly release water to groundwater and downstream sources—and how climate change and soil disturbance compromise this function. It highlights the importance of minimizing soil exposure and protecting organic matter. While US-focused, the hydrological principles are directly applicable to BC's coastal forests. A useful background reference for explaining the links between forest soil health, water retention, and fire risk.

Ecological Restoration

Clark, D. (2023). *Forests, Fires, and Our Future: Dr. Ruth Waldick Speaks on Climate Resilience* [Radio broadcast]. Cortes Currents. https://cortescurrents.ca/forests-fires-and-our-future-dr-ruth-waldick-speaks-on-climate-resilience/

In this radio interview, Ruth Waldick discusses rising wildfire risk resulting from decades of logging across the CDF zone, and outlines restoration approaches for both private and Crown land. Drought and wildfire are identified as top risks for Salt Spring and the broader Salish Sea region. The conversation emphasizes building ecosystem and community resilience in the face of worsening climate conditions. This is an approachable, regionally focused resource for communicating wildfire risks and solutions to a general audience.

DellaSala, D. A., Buma, B., Leverkus, A. B., Lindenmayer, D. B., Müller, J., Price, K., Six, D. L., Zylstra, P., & Burton, P. J. (2025). Removing dead trees will not save us from fast-moving wildfires. *Proceedings of the National Academy of Sciences*, 122. https://doi.org/10.1073/pnas.2510922122

This peer-reviewed paper challenges the widespread assumption that removing dead trees reduces wildfire risk. The authors argue that dead trees serve as important biological legacies in forest ecosystems, and that their removal can actually increase fine fuels, which are the material most responsible for spreading fast-moving fires. This finding has practical implications for fuel management decisions on Salt Spring Island and is useful for navigating conversations about dead wood management in restoration contexts.

Doll, S. (2023). *Maxwell Creek Watershed Project Field Files Part 4: Managing Fire in a Climatically Uncertain Future*. Raincoast Conservation Foundation. https://www.raincoast.org/2023/02/maxwell-creek-watershed-project-field-files-part-4-managing-fire-in-a-climatically-uncertain-future/

This field report from Raincoast's work on Salt Spring Island examines how extensive logging since settler arrival has left CDF forests simplified, biodiversity-poor, and at higher risk of catastrophic fire. Some forest areas have begun natural self-thinning, a process that restoration can support and accelerate. The report grounds restoration decision-making in ecological realities specific to this watershed.

Doll, S. (2023). *Maxwell Creek Watershed Project Field Files Part 5: Experimental Forest Restoration Methodologies*. Raincoast Conservation Foundation. https://www.raincoast.org/2023/03/maxwell-creek-watershed-project-field-files-part-5-experimental-forest-restoration-methodologies/

This report describes experimental restoration methods being applied in the Maxwell Creek watershed, focused on improving structural complexity and hydrological function in dense second- and third-growth forests. Approaches are nature-informed and draw on post-disturbance ecology. The document discusses the reduction of coarse woody material through past disturbance and how restoration can address fuel loads while improving ecosystem health. Directly relevant for communicating about TSS's restoration work.

Doll, S., & Rogers, J. (2025). *Beaver-Based Restoration*. Raincoast Conservation Foundation. https://www.raincoast.org/2025/07/beaver-based-restoration/

This article explores beaver reintroduction as an ecologically grounded strategy for improving landscape moisture and reducing wildfire risk. Beavers were removed from many landscapes for agricultural and development reasons, but their absence has had unintended consequences for wetland function and water retention. The piece makes a compelling case for nature-based approaches to restoration that work with ecological processes rather than against them. A useful, accessible resource for communicating the value of rewilding and hydrological restoration.

Doll, S., & Waldick, R. (2021). *Coastal Douglas-fir Forests: Present, Past, and Future*. Raincoast Conservation Foundation. https://www.raincoast.org/2021/11/coastal-douglas-fir-forests-present-past-and-future/

This report provides an overview of the CDF zone's current state, historical extent, and future trajectory under continued pressure. Only 37–40% of the CDF's historic forested extent remains, with just 17 km² classified as old growth. The CDF supports rare ecosystems including Garry oak meadows, among the most threatened in Canada. This is essential background reading for understanding why forest conservation and restoration in this zone, including on Salt Spring Island, is both ecologically urgent and scientifically grounded.

Douglas, T., & McIntosh, T. (2021). *Ecological Restoration Guidelines for British Columbia*. BC Ministry of Environment. https://www.env.gov.bc.ca/fia/documents/TERP_eco_rest_guidelines/intro/index.html

A comprehensive provincial guide for planning and implementing ecological restoration projects in BC. Organized as a practical workbook, it walks practitioners through developing restoration goals, project planning, and implementation. Applicable to a wide range of forest ecosystems, including the CDF zone. TSS staff involved in planning or supporting restoration projects would benefit from this resource, which provides a structured framework grounded in provincial best practices and ecological science.

Henderson, B., Hannon, S., Sherrin, M., & Whittear, M. (2021). *Forest, Water and Fire: How to Prevent Wildfires & Conserve Water* [Webinar recording]. CARL Transition Salt Spring. https://www.youtube.com/watch?v=SJybr0SJ4_A

This recorded webinar explores the connections between forests, water, and fire risk on Salt Spring Island. Presenters discuss how intact forests slow runoff, store moisture, support biodiversity, and reduce wildfire risk. Most Salt Spring forests are second growth from past clearcutting, making restoration critical. The session provides accessible, locally contextualized science and is useful for communicating why forest health is inseparable from water security and fire resilience in the island's context.

Piikkila, E. (2023). *Reduce Fire and Drought Risk: A Field Trip with Forest Ecologist Erik Piikkila* [YouTube video]. https://www.youtube.com/watch?v=CN_ZgW7Ij3M

Forest ecologist Erik Piikkila leads a video field trip illustrating how multi-layered, structurally diverse forests reduce fire and drought risk. He discusses how thinning and pruning can be done thoughtfully to reduce risk while maintaining ecological function, and cautions against wholesale removal of deadwood and litter. A visually engaging, locally relevant resource for staff or community members wanting a practical introduction to the connections between forest health and fire risk on Salt Spring Island.

Piikkila, E., Sherrin, M., Nickels, M., & Lombard, M. (2021). *Collaborative Forestry Solutions to Climate Change* [Webinar recording]. CARL Transition Salt Spring. https://transitionsaltspring.com/collaborative-forestry-solutions-to-climate-change-on-salt-spring-island/

This webinar brings together forestry practitioners to discuss fire risk and restoration approaches in Salt Spring Island's CDF forests. Presenters note that fire is a natural part of the CDF ecosystem with roughly an 80-year cycle, and that most native CDF species are fire-resistant. Escaped open burning is identified as the leading local ignition source. The discussion covers the role of dense monoculture forests and drought in increasing risk, and how collaborative, community-based forestry can support more fire-resilient landscapes. Highly relevant for forest stewardship work on Salt Spring Island.

Scholz, O., Gaylor, N., & Erickson, K. (2005). *A Monitoring Baseline for a Forest Restoration*

Project on Galiano Island. Galiano Conservancy Association. https://galianoconservancy.ca/wp-content/uploads/2024/09/A-monitoring-baseline-for-a-forest-restoration-project-on-Galiano-Island-2005.pdf

This technical report documents the Galiano Conservancy Association's restoration of a 25-year-old Douglas-fir plantation, with the goal of diversifying the forest's genetic, species, and structural composition. The accompanying monitoring strategy offers a model for assessing restoration outcomes over time. Though focused on Galiano Island, the methods and lessons are directly transferable to Salt Spring Island. Useful for restoration monitoring design or in connecting with restoration work happening across the Gulf Islands.

Transition Salt Spring. Ecological Research Network (2021). *How Do Forests Mitigate Climate Change?* [Infographic]. https://transitionsaltspring.com/infographic-how-do-forests-mitigate-climate-change/

This infographic explains how forests absorb and store carbon dioxide, and how clearing them releases that carbon back into the atmosphere, compounding climate risks like drought, flooding, and fire. It notes that Salt Spring Island's 14,000 hectares of forest currently store 5.6 million tonnes of carbon. A clear and shareable public education resource, useful for connecting forest conservation to climate action in community outreach.

Transition Salt Spring. Ecological Research Network (2021). *Why is Forest Biodiversity Important?* [Infographic]. https://transitionsaltspring.com/infographic-why-is-forest-biodiversity-important/

This infographic explains the ecological importance of CDF forest biodiversity, spanning species, age, structure, and genetics, and the cumulative pressures reducing it, including climate change, invasive species, and loss of native understory. It makes the connection between biodiversity loss and increased fire and drought risk. A clear, visually accessible public education resource for communicating why protecting diverse forest ecosystems is foundational to community resilience.

Transition Salt Spring. CARL (2022). *Learning from Nature: Nature-Based Approaches to Restoration in the Maxwell Creek Watershed* [Web article]. https://transitionsaltspring.com/learning-from-nature-nature-based-approaches-to-restoration-in-the-maxwell-creek-watershed/

This article describes the ecological history of the Maxwell Creek watershed on Salt Spring Island and the rationale for nature-based restoration approaches. Before logging and hydrological modification, the watershed supported diverse wildlife and intact Douglas-fir forest. The piece makes the case that restoring these systems is both ecologically sound and essential

for long-term water security and fire resilience. A highly locally relevant resource for communicating the value of the Maxwell Creek watershed restoration work.

Transition Salt Spring. Native Plant Stewardship Working Group (2023). *Native Plant Stewardship Resources* [Web article]. https://transitionsaltspring.com/native-plant-stewardship-resources/

This TSS resource page compiles links and guidance for residents interested in growing native plants and removing invasive species. It highlights how native plants support habitat for local birds, animals, and pollinators. While brief, this page serves as a useful entry point for community members wanting to take action on their own properties. It represents a low-barrier, property-level action that can be promoted alongside broader forest and fire resilience messaging.

Transition Salt Spring. CARL (2023). *Role of Native Plants in Wildfire Protection* [YouTube video]. https://www.youtube.com/watch?v=lQ3YtjdgrU0

This video documents a TSS experiment comparing forest regeneration in fenced and unfenced plots, testing whether deer browsing is limiting native plant recovery. Early results suggest both deer pressure and limited canopy light are affecting regeneration. The video illustrates the complexity of ecological restoration and the role of native plants in supporting forest understory health. Useful for communicating the challenges and methods involved in local restoration work.

Transition Salt Spring/Ecological Research Network & Islands Trust. (2021). *Coastal Douglas-fir Forests: Reducing Risk in Our Communities* [Infographic]. Transition Salt Spring. https://forests.transitionsaltspring.com/resources/

This infographic illustrates how protecting forest cover and native plants reduces fire risk through improved soil health and moisture retention. Healthy, living forest soils store and filter water, nourish root structures, and support mosses and organic material that buffer against drought and fire. A visually accessible resource for public outreach, it provides a clear, science-informed message about why maintaining healthy forest ecosystems is a practical fire risk reduction strategy for Salt Spring Island residents.

Transition Salt Spring. Ecological Research Network (n.d.). *How Do Healthy Forests Prevent Wildfires?* [Brochure]. https://transitionsaltspring.com/how-do-healthy-forests-reduce-the-risk-of-wildfires/

This TSS brochure explains the mechanisms by which healthy forests store water and act as natural firebreaks. Trees, native understory, fallen wood, and organic debris all absorb and retain moisture. The resource articulates the key message that a healthy, water-retaining forest is a fire-resistant forest, countering the common misconception that vegetation is simply a fuel hazard. A practical public-facing document well-suited for community education work.

Waldick, R. (2022). *Beyond Climate Change: A Case Study on Our Vulnerable Forests* [Seminar recording]. CARL. Transition Salt Spring. https://transitionsaltspring.com/beyond-climate-change-a-case-study-looking-at-our-vulnerable-forests/

In this recorded seminar, Ruth Waldick examines how the CDF zone, which covers less than 0.5% of BC's land but is home to roughly half the province's population, faces compounding risks from land-use decisions, not just climate change. She argues that wildfire and other disasters are often framed too narrowly as climate impacts when engineering and planning choices play an equally important role. This locally grounded presentation is an excellent resource for communicating why forest stewardship is central to community resilience on Salt Spring Island.

Waldick, R., & Seaton, R. (2022). *Reducing Climate Risks in the Mt. Maxwell Creek Watershed* [Webinar recording]. CARL. Transition Salt Spring. https://www.youtube.com/watch?v=HzmGYrMJYMg

This webinar addresses the intersecting risks of legacy logging, fire suppression, and hydrological modification in the Maxwell Creek watershed, and makes the case for collaborative, nature-based solutions. With most forests privately owned on Salt Spring Island, the presenters argue that cross-sector collaboration and pilot restoration projects are essential. Maxwell Lake's role as a major drinking water source is highlighted, adding urgency to watershed stewardship. Useful for framing restoration work in terms of both ecological and community water security.

Waldick, R., Barnett, A., Stewart, C., Brandes, O. M., & Robinne, F.-N. (2025). *When Fire Meets Water: Healthy Watersheds as a Solution for the 21st Century* [Webinar recording]. CARL, Transition Salt Spring. https://transitionsaltspring.com/fire-meets-water-webinar/

This webinar brings together watershed scientists and practitioners to explore the relationship between fire and water. Key themes include wildfire as a natural watershed process affecting water flow, sediment, and quality; the value of Indigenous fire stewardship; and the finding that overly dense forests can actually impair watershed health. The conversation affirms that some fire is beneficial and that managing for watershed health and fire resilience are deeply linked goals.

Farmland and Agricultural Wildfire Planning

Climate Change Adaptation Program. (2020). *BC Farm & Ranch Wildfire Preparedness: Wildfire Mitigation* [YouTube video]. https://youtu.be/N3xT2-ZApf8

This video covers the three pathways through which wildfire can ignite farms and ranches: embers (which can travel 5–6 km), radiant heat, and direct flame. Embers are identified as the primary threat. Practical mitigation strategies for agricultural operations are outlined. While developed for a broader BC audience, the content is applicable to Salt Spring Island's farming community. A useful resource for Salt Spring landowners and farmers on wildfire preparedness.

Climate Change Adaptation Program. (2021). *Wildfire Preparedness for Producers: Webinars* [Webinar recording]. https://www.bcclimatechangeadaptation.ca/library/wildfire-preparedness-for-producers-webinars/

A two-part workshop series tailored to farmers and ranchers in BC, covering potential wildfire risks to agricultural operations and practical steps for mitigation and preparedness. The sessions build on the farm/ranch wildfire guide content and are structured to be accessible to non-specialists. For Salt Spring's agricultural community, this resource offers a strong foundation for facilitating conversations about farm-scale wildfire risk management.

Private Landowners and Property Level Action

Bennett, M., Fitzgerald, S., Parker, R., Main, M., Perleberg, A., Schnepf, C. C., & Mahoney, R. (2010). *Reducing Fire Risk on Your Forest Property* [Technical report]. Oregon State University Extension. https://extension.oregonstate.edu/catalog/pub/pnw-618-reducing-fire-risk-your-forest-property

This technical guide supports private forest property owners in assessing and reducing wildfire risk beyond the immediately adjacent home zone. It covers fuel treatment approaches, risk identification, and strategies for improving overall forest health. Though developed in Oregon, the ecological context is comparable to BC's coastal Douglas-fir forests. A useful resource for landowners managing forested properties, particularly larger parcels where property-level decisions meaningfully affect landscape-scale fire risk.

FireSmart British Columbia. (2023). *FireSmart BC Begins at Home Guide* [Government planning guide]. https://firesmartbc.ca/wp-content/uploads/2020/04/05.30.23_BeginsatHomeGuide_Web.pdf

This practical guide helps BC property owners understand and implement FireSmart strategies to reduce ignition risk at the home and property level. It covers vegetation management, building materials, and structural vulnerabilities in clear, accessible language. One of the most widely used and recognized resources for property-level wildfire preparedness in BC. This guide can support community members in taking concrete steps to protect their properties from wildfire risk.

Community Engagement, Education, and Behaviour Change

Capital Regional District. (n.d.). *Salt Spring Island Emergency Program* [Government website]. https://www.crd.ca/programs-services/fire-emergency/electoral-area-emergency-management/salt-spring-island-emergency-program

This CRD webpage serves as a hub for emergency preparedness resources specific to Salt Spring Island. It links to tools including PrepareYourself.ca, the CRD Emergency Dashboard, and the Alertable public notification system. This is a practical go-to reference when directing community members to local emergency preparedness resources. Keeping these links current and sharing them broadly supports the island's overall resilience to wildfire and other emergencies.

Salt Spring Island Emergency Program. (2015). *Salt Spring Island Wildfire Evacuation Checklist* [Planning guide]. https://saltspringfire.com/wp-content/uploads/2018/06/SSI_WILDFIRE_EVACUATION_CHECKLIST_June_2015.pdf

A practical, locally tailored checklist for Salt Spring Island residents to prepare for wildfire evacuation. It covers what to include in a grab-and-go bag, steps for readying people, vehicles, and the home before leaving, and signals for neighbours that a home has been evacuated. While brief, this document translates emergency preparedness principles into clear, actionable steps. It is an excellent resource for community members as part of any wildfire readiness communications.

Transition Salt Spring. CARL. (2023). *Nature's Classroom: Wild Haven Kids Learn How Forests Can Defend Against Wildfires* [YouTube video]. https://www.youtube.com/watch?v=3N3UjSy4vwQ

This short video documents a school field trip to a forest on Salt Spring Island, introducing children to how forests store water and reduce fire risk. Key messages include the role of mountains in collecting water, forests in holding moisture in the soil, and the value of returning trees to degraded land. An accessible and locally grounded example of community education in action, this resource is particularly useful for developing outreach materials or youth programming around forest stewardship and wildfire resilience.

Tutsch, M. (2009). *People are the problem and the solution: Characterizing wildfire risk and risk mitigation in a wildland-urban intermix area in the southern Gulf Islands* [Master's thesis, Simon Fraser University]. https://rem-main.rem.sfu.ca/theses/TutschMatthew_2009_MRM481.pdf

This thesis developed a wildfire risk assessment model for the southern Gulf Islands, evaluating four risk mitigation strategies on North Pender Island. Reducing ignitions was found to be the most effective strategy overall. The study highlights that in the WUI, where homes sit amid trees, human behaviour is both a major driver of fire risk and a key lever for reducing it. Directly applicable to Salt Spring Island's landscape context, this is a valuable resource for understanding the science behind community-level wildfire risk communication and behaviour change campaigns.

Tutsch, M., Haider, W., Beardmore, B., Lertzman, K., Cooper, A. B., & Walker, R. C. (2010). Estimating the consequences of wildfire for wildfire risk assessment, a case study in the southern Gulf Islands, British Columbia, Canada. *Canadian Journal of Forest Research*, 40(12). https://doi.org/10.1139/X10-159

This peer-reviewed study developed a method to measure wildfire consequences based on expert perceptions in the southern Gulf Islands. The research found that fire risk models should weight life safety above property loss. The work also examined how local expert knowledge can be integrated into formal risk assessment, offering a useful evidence base for community wildfire planning. This study reinforces that community engagement and local knowledge are not just nice to have, they are scientifically grounded components of effective wildfire risk management.

Governance, Policy, and Multi-level Coordination

BC Wildfire Service. (n.d.). *Community Resiliency Investment Program* [Government website]. https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/funding-for-wildfire-prevention/crip

The Community Resiliency Investment (CRI) program, introduced in 2018, provides provincial funding to support wildfire risk reduction activities in BC communities. The BC Wildfire Service administers the program in partnership with Indigenous and non-Indigenous communities, the forest industry, and natural resource managers. This resource identifies a key funding mechanism for community-scale wildfire preparedness and fuel management work on Salt Spring Island and warrants monitoring for funding opportunities.

Capital Regional District. (2023). *Southern Gulf Islands Community Wildfire Resiliency Plan At-a-Glance* [Government report]. https://www.crd.ca/media/file/southerngulfislands-wildfire-ataglance

This summary document from the CRD outlines key findings from the Southern Gulf Islands wildfire resiliency planning process, including the finding that lightning accounts for only a small share of ignitions. Most public lands carry moderate wildfire risk, and aggressive suppression over the past century has increased fuel density. Cross-jurisdictional coordination is identified as a central challenge. A concise, accessible planning reference for working with local government partners on wildfire resilience.

Donaldson, D., Barnett, A., Brandes, O. M., Kriese, K., & O'Riordan, J. (2024). *Learning to Live with Fire: State of Wildfire in B.C.* [Technical report]. POLIS Project on Ecological Governance. https://poliswildfireproject.org/wp-content/uploads/2024/03/State-of-Play_WebCopy.pdf

This policy-oriented report evaluates BC's current approach to wildfire management, finding that a century of aggressive suppression has exacerbated the conditions for catastrophic fire. It calls for a fundamental shift toward landscape-level resilience, integration of Indigenous fire stewardship, and coordination across all levels of government. The report is highly relevant to all policy advocacy or intergovernmental dialogue about wildfire risk and forest management in the southern Gulf Islands.