

2018/19 Coast Area Integrated Investment Plan

Introduction and Purpose

The Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) has undertaken a Provincial initiative to better coordinate investments across the land base. Investment is focused on carbon sequestration and reducing greenhouse gases, improving timber supply, rehabilitating forests, enhancing habitat (and populations), managing fuel, and providing community benefits. Each region in the Province has an Integrated Investment Specialist who helps articulate the Region’s land management priorities and thereby facilitate better cost/benefits ratios, ideally by leveraging funding and/or addressing multiple purposes in any given project.

The purpose of this plan is to inform funders, stakeholders (e.g. industry, conservation groups, and local governments), First Nations, tenure holders including BC Timber Sales and other proponents about these priorities and affect integrated investment within the Coast Area. The plan specifies the categories for potential investment; the priorities provincially and regionally; potential activities likely to be supported by the land manager (see definitions); and finally, the potential funders that may support those activities.

The plan is meant to provide a high-level overview of information to better inform those wishing to propose projects to funders and to help funders align approvals with the land manager’s priorities. Each funder has a different process for receiving applications and more information can be found in Appendix D. A best practice for project proponents is to seek support from the land manager before submitting a proposal to a funder. Proponents should contact the Integrated Investment Specialist and the relevant FLNRORD District(s) (see Table 2 below and Appendix A).

Integrated Investment Specialists (IIS)

The Coast Area is comprised of two Regions, each with an Integrated Investment Specialist:

South Coast (SC) Region: Tonianne Mynen, 604 586-5624 Tonianne.Mynen@gov.bc.ca

West Coast (WC) Region: Aaron Smeeth, 778-647-2002 Aaron.Smeeth@gov.bc.ca

For the specific process to follow within a different area/ region, please reach out to the local Integrated Investment Specialist (Appendix B).

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Categories for Investment

The scope of resource management activities considered in regional investment plans; align with one or more of the following categories. See Appendix C for category definitions.

Carbon	Community	Fish, Wildlife and Habitat
Recovery of Species	Fibre Recovery	Forest Rehabilitation & Inventory
Wildfire Protection	Water	Miscellaneous

Part 1: Investment Priorities

Provincial Priorities for Investment:

- Restore pest and wildfire impacted areas
- Improve resiliency and prevent future impact from Wildfire
- Improve wildlife habitat and ecosystems
- Improve mid & long term timber supply
- Increase carbon sequestration

Coast Area Priorities for Investment:

Table 3: Forest Investment Priorities

1. Emissions Avoidance/ Fibre Utilization
2. Fish Stream Restoration
3. Incremental Silviculture: Fertilization
4. Incremental Silviculture: Other
5. Low value forest rehabilitation
6. Maintaining Resilient, Healthy Forests
7. Range Improvements
8. Reforestation
9. Resilience to Wildfire: Communities
10. Resilience to Wildfire: Fuel Mgmt
11. Road Rehabilitation
12. Rural Development

Table 4: Fish, Wildlife and Habitat Priorities

Table 5: Conservation Land Management Priorities

Table 6: Selected Research Priorities

Focus on Forest Carbon

The Forest Carbon Initiative (FCI) is a key part of the Province of B.C.'s commitment to take action on climate change. FCI is about forest activities that will reduce greenhouse gas (GHG) emissions or sequester carbon in the provincial forest. FCI supports forest carbon management activities (projects) that grow and store forest carbon to deliver GHG benefits in the medium term (2030), longer term (2050) and beyond.

In the Coast Area, activities that align with the Forest Carbon Initiative funding include:

- Emissions Avoidance/ Fibre Utilization
- Incremental Silviculture: Fertilization
- Reforestation
- Low value forest rehabilitation

If you have a proposal that may reduce emissions or sequester carbon, please contact the Integrated Investment Specialists (IIS) to discuss the project further.

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Part 2: Specific Opportunities for Investment

Table 1: Funding Source Key

For more information on the Funding Sources, see Appendix D. Note that funders may open specific calls for proposals that have special themes and requirements, please check with the funders for alignment between land management purpose/activity and funder mandate.

Acronym	Funding Source
CRI	Community Resiliency Investment Program (previously <i>Strategic Wildfire Prevention Initiative [SWPI]</i>)
FWCP	Fish & Wildlife Compensation Program
FESBC	Forest Enhancement Society of BC
FCI/LCELF	Forest Carbon Initiative / Low Carbon Economy Leadership Fund
FFSBC	Freshwater Fisheries Society of BC
HCTF	Habitat Conservation Trust Foundation
LBIS	Land Base Investment Strategy
RDF	Rural Dividend Fund

Table 2: Coast Area Key

The Coast Area includes: South Coast and West Coast Regions. Investment Opportunities are prioritized within specific areas. Project proponents should refer to the map in Appendix A when submitting their proposals for funding.

Region	Natural Resource District	
South Coast (SC)	Chilliwack	Project proponents must reference the relevant specific management unit(s) (e.g.; Timber Supply Area (TSA), Timber Forest Licence (TFL), Woodlot (WL), Community Forest Licence (CFL), or First Nation Woodland Licence (FNWL)). Other relevant units should be referenced as appropriate to the project (e.g. watershed or wildlife unit).
	Sea-to-Sky	
	Sunshine Coast	
West Coast (WC)	South Island	
	Campbell River	
	North Island - Central Coast	
	Haida Gwaii	

Table 3: Forest Investment Priorities

Purpose & Strategy	Selection Criteria	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
1. Emissions Avoidance/ Fibre Utilization <ul style="list-style-type: none"> Increase forest tenure fibre utilization rate Reduce carbon emissions from waste wood through burning and biological decay Increase employment and access to residual fibre Improve forest resource utilization and optics Decrease health impacts 	<ul style="list-style-type: none"> Seek out economic viable options first <ul style="list-style-type: none"> Harvest sites close to processing sites and potential markets. Target accessible sites without infrastructure needs. Sites with high wood waste levels High potential for quantifiable emissions reductions Developed partnerships with stakeholders, established markets and secondary fibre users 	<ul style="list-style-type: none"> Increase utilization of wood concurrent with primary and/or secondary harvesting operations <ul style="list-style-type: none"> Pilling/sorting for biomass extraction Load and haul roadside wood waste Develop new processes and markets for utilizing marginal logs/wood 	<ul style="list-style-type: none"> Coast Area wide Specific focus areas where known high volumes of wood waste: <ul style="list-style-type: none"> North Island/Central Coast South Island (CPFP) Sunshine Coast 	FCI/LCELF FESBC FFT (potentially)	<ul style="list-style-type: none"> A pilot has been initiated in the South Island District to establish a fibre recovery zone and promote market development and linkages between primary and secondary harvesters. Proponents should contact the IIS to discuss their ideas about initiating an operational pilot or project that would in turn inform future fibre utilization. Consideration may be given to identified sites within high/medium smoke sensitivity zones if applicable. Coast Pulp Fibre Project (CPFP)

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Purpose & Strategy	Selection Criteria	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
from smoke					
<p>2. Fish Stream Restoration</p> <ul style="list-style-type: none"> • Improve fish passage • Address impacts from historic logging • Improve forest structure within riparian management area 	<ul style="list-style-type: none"> • Fish-bearing habitat, and high likelihood of fish passage • Typically larger streams (S1, S2 or S3) • Previously harvested riparian areas 	<ul style="list-style-type: none"> • Riparian management near small streams <ul style="list-style-type: none"> ○ Re-establish natural drainage patterns ○ Restore channel-structure ○ Restore flora (& fauna) diversity • Road deactivation / on-going maintenance • Reduce sediment supply • Riparian Area Regulation effectiveness monitoring • Develop riparian restoration plan: <ul style="list-style-type: none"> ○ Prioritize areas, assign silviculture treatments, implement and monitor 	<p>Coast Area and specific focus areas in:</p> <ul style="list-style-type: none"> • Community & Fisheries Sensitive watersheds • Sensitive Streams (WSA) • Areas where indicator condition does not meet Cumulative Effects benchmarks. • Haida Gwaii – /+ high value fish streams 	<p>HCTF FFSBC FWCP LBIS</p>	<ul style="list-style-type: none"> • Cumulative Effects Reports (and mapping), where available, may inform priorities.
<p>3. Incremental Silviculture: Fertilization</p> <ul style="list-style-type: none"> • Increase fibre growth rate in young forests • Increase carbon sequestration • Improve existing wildlife habitat • Improve stand structure for new wildlife habitat areas (recruitment) • Accelerate old growth characteristics 	<ul style="list-style-type: none"> • Free to grow achieved, (no existing reforestation obligation) • Site with reasonable access opportunities (including consideration for barge transportation) • Sites with minimal forest health hazard • Sites with moderate to high likelihood of responding to treatments <p>Forest Carbon Initiative Criteria:</p> <ul style="list-style-type: none"> • Aiming for a 26.3 tCO₂e/ha and a favourable cost/ton ratio • No Harvesting within 10 years of treatment • Species: 1st Fdc; 2nd Cw; 3rd Ss/ Sx (In the transition zone); 4th Hw • Age: 1st 15-39 (Where trees are >2m above competing vegetation) 2nd 40-59; 3rd 60-80 (where these stands will not be harvested within 10 years of treatment) • Site Index: 1st SI 24-38; 2nd Northern Vancouver Island Cw fertilization SI 17-32 	<ul style="list-style-type: none"> • Fertilize (aerial or hand application) • Operational Trials/Research to assess the effects of fertilization on WHAs • Operational Trials/Research to assess hemlock response and establish stand criteria for fertilization and appropriate fertilizer blend. • Operational Trials/Research to assess the effect of fertilization and carbon sequestration levels in mixed specie stands. • Water sampling and monitoring. 	<p>Coast Area and specific focus areas in:</p> <ul style="list-style-type: none"> • North Coast (e.g. Guilford Island) if access costs acceptable • Arrowsmith, Fraser and Sunshine Coast Integrated Stewardship Strategy (IIS) • Woodlots, Community Forests and First Nation Woodlot Licenses. • As per Management Unit Prioritization Strategy TBD • Recruitment Old Growth Management Areas • Coastal Douglas Fir Land Use Order Parcels • Recruitment UWRs in WC and in conditional harvest zones in SC UWRs • Spotted Owl WHA recruitment habitat areas (stands not meeting SPOW 	<p>FFT FCI FESBC HCTF(potentially)</p>	<ul style="list-style-type: none"> • FLNRORD intention to commission a pilot project to assess the costs of barge accessed and/or a barge run fertilization program. • Mapped locations for WHAs are available from Regional biologists – contact appropriate IIS and/or Region biologist to review fertilization planning. • Timing of treatment in WHAs for Northern Goshawk and other raptor species should restrict fertilizer application to the fall.

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	<p>Forest For Tomorrow Criteria:</p> <ul style="list-style-type: none"> • Within Timber Harvesting Land Base • 2% Return on Investment • Species: 1st Fdc; 2nd Cw; 3rd Ss/ Sx (in transition zone); 4th Hw Only on specific sites as outlined in the Stand Selection guidelines for fertilization and where Hw is the only species that can be treated to address constrained timbers supply • Age: 1st 40-80 years; 2nd 15-39 years <p>Site Index: 1st SI 24-38; 2nd Northern Vancouver Island Cw fertilization SI 17-32</p>		<p>habitat characteristics)</p> <ul style="list-style-type: none"> • Marbled Murrelet recruitment WHAs on East Vancouver Island with a site-by-site assessment. No opportunity South Coast. • Northern Goshawk WHA historic sites abandoned by NOGOs and deemed no longer viable; and in the WHAs with foraging habitat management zones. zones (not in breeding area). • Prioritise areas adjacent to breeding area WHAs • No opportunity for fertilizing in breeding area WHAs 		
<p>4. Incremental Silviculture: Other</p> <ul style="list-style-type: none"> • Reduce rotation length • Increase timber value (economic benefit) • Increase carbon sequestration (where applicable) 	<ul style="list-style-type: none"> • Unconstrained areas within Timber Harvesting Land Base (THLB) • No outstanding (reforestation) obligations • Medium or higher site productivity • Suitable terrain (e.g., suitable for cable or ground based harvesting) • Road access 	<ul style="list-style-type: none"> • Increase planting density (in-fill planting) – ensure use of high genetic gain, and consider large planting stock • Thinning/spacing to enhance stand value and/or reduce rotation length (e.g., alder, cedar / hemlock stand) 	<p>Coast Area and specific focus areas in:</p> <ul style="list-style-type: none"> • North Island • Fraser, Soo, Strathcona, Arrowsmith, Kingcome 	<p>FFT FCI/LCELF FESBC</p>	
<p>5. Low value forest rehabilitation</p> <ul style="list-style-type: none"> • Rehabilitate low value forests • Increase carbon sequestration 	<ul style="list-style-type: none"> • Unconstrained areas within THLB • Sites with moderate to high likelihood of responding to treatments • Unharvested sites with challenging economic opportunity (e.g. high elevation old growth Hemlock/Balsam stands, root disease (Beaver Lodge Lands), off-site species, Kingcome Valley Cottonwood, low value/poorly stocked deciduous, lower density alder stands older than 70 years. • FCI considerations, stands with < 20m² basal area and densities <200 stems/ha. • Economies of scale and minimum polygon size considerations 	<ul style="list-style-type: none"> • Rehabilitation logging • Site preparation/ plant/ fertilize (if required) 	<p>Coast Area and specific focus areas in:</p> <ul style="list-style-type: none"> • Campbell River & Chilliwack • Kingcome Valley (cottonwood) 	<p>FFT FCI/LCELF FESBC</p>	<p>Work with IIS and potential funder. Best approach may be an operational pilot or an assessment of a project undertaken in the past to assess cost and carbon benefits achievable for new projects.</p>

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Purpose & Strategy	Selection Criteria	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
<p>6. Maintaining Resilient Healthy Forests</p> <ul style="list-style-type: none"> • Increase species diversity/ conservation for threatened species (e.g. Western White Pine, white bark pine) • Climate change mitigations • Reduce impact to timber supply • Carbon sequestration (will be increased where forest health is improved) • Eliminate/ reduce risk from exotic species (e.g., gypsy moth,) • Increase stand value 	<ul style="list-style-type: none"> • High risk biogeoclimatic units (e.g., those affected by root disease, drought, spruce weevil, Swiss Needle Cast, Yellow Cedar decline) • Activities incremental to silviculture obligations only eligible. 	<p>Forest Health Surveys (e.g., aerial overview survey, ground surveys)</p> <ul style="list-style-type: none"> • Use resistant or tolerant species (e.g., cedar, western white pine, red alder) to meet free to grow obligations in areas with known root disease. • Establishment of bark beetle traps adjacent to recent wildfires • Use blister rust resistant western white pine or weevil resistant sitka spruce when planting these species. • Stumping to reduce root disease inoculum in high hazard areas being managed for Douglas-fir. • Use of browse protectors, and/or planting alternative species in areas of high elk/deer use 	<p>Coast Area focus on areas with:</p> <ul style="list-style-type: none"> • High productivity site • High ecological value • Susceptible areas adjacent to recent wildfires (e.g., Douglas-fir bark beetle) • Areas with high populations of elk/ deer pressures (e.g., browse protection, alternative species) 	<p>LBIS</p>	
<p>7. Range Improvements</p>	<ul style="list-style-type: none"> • Strong rationale that provides multiple benefits and represents good value for cost 	<ul style="list-style-type: none"> • Range improvement/elk wildlife habitat enhancement • Licensee obligations include maintenance of existing fencing and tree protection structures - required ASAP. 	<p>Sayward Grazing Licence</p>	<p>LBIS FESBC HCTF</p>	<p>District (and Region) support of plan will be required.</p>
<p>8. Reforestation</p> <ul style="list-style-type: none"> • Reforest disturbed areas (e.g. wildfire) Not sufficiently restocked (NSR) with no regeneration obligation. • Increase carbon sequestration 	<ul style="list-style-type: none"> • Unconstrained areas for future harvest • Currently not sufficiently restocked, e.g. fire damage, landslide runout zones, mine tailing, elk damage, brush sites, etc. • No existing reforestation obligation • No economic harvest or salvage opportunity • Constrained areas (long term carbon retention) 	<ul style="list-style-type: none"> • Site preparation • Plant NSR lands • Use high genetic gain, and/or large planting stock. • Fertilize at time of planting 	<p>Wildfire affected crown lands in the Coast Area</p>	<p>FFT FCI/LCELF FESBC(potentially)</p>	<p>Currently FLNRORD undertaking a research project specific to reforestation of burned WHA and OGMAs</p>
<p>9. Resilience to Wildfire: Communities</p>	<ul style="list-style-type: none"> • Funding available to local governments and First Nations communities. • Private land is eligible – must have landowner cooperation • Project selection will weigh wildfire risk, the amount and quality of planning undertaken, and the degree of 	<p>7 FireSmart Disciplines:</p> <ul style="list-style-type: none"> • Education • Fuel & vegetation management • Legislation and planning • Development considerations 	<ul style="list-style-type: none"> • High wildfire risk communities 	<p>CRI – UBCM CRI - FNESS</p>	<p>The local Wildfire Prevention Officer will be a key conduit for information resources in proponent’s proposal development.</p> <p>Assessment tools include the Provincial Strategic Threat Analysis (PSTA) and the Wildland Urban Interface Wildfire Risk</p>

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Purpose & Strategy	Selection Criteria	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
	<ul style="list-style-type: none"> partnerships forged with adjacent jurisdictions and/or First Nations. Administrative criteria may be established by UBCM 	<ul style="list-style-type: none"> Interagency cooperation Emergency planning Cross-training 			Mapping
<p>10. Resilience to Wildfire: Fuel Management</p> <ul style="list-style-type: none"> Modify stand structure to reduce wildfire risk rating. Mitigate wildfire risk from unburnt waste Mitigate and/or reduce carbon emissions 	<ul style="list-style-type: none"> Primarily Crown land only Weighted towards high value asset protection (i.e. human life and safety, critical infrastructure, environmental / cultural values, other resource values). Needs to provide multiple benefits and/or resource values High wildfire threat class and risk – contact local Wildfire Protection Officer. No licensee obligation (i.e. abatement). Incremental activities if it meets multiple objectives (e.g. wildlife objectives) 	<ul style="list-style-type: none"> Commercial thinning, partial harvest, pre-commercial thinning Pruning (reduction of ladder fuels) Fuel reduction (i.e. broadcast burning, onsite chipping) Reduce/mitigate burn piles Development / implementation of modified stocking standards (e.g., management for lower density, planting of fire resistant species) 	<ul style="list-style-type: none"> Critical infrastructure Project aligns with existing Plans: <ul style="list-style-type: none"> Strategically supports approved plans/projects within Wildfire Urban Interface (WUI) Community Wildfire Protection Plan Landscape level fire management plan (e.g., Sea to sky) District Fire Management Plan Fuel Modification Areas in a Forest Stewardship Plan Integrated silviculture/ stewardship strategy 	FESBC FCI/LCELF CRI(potentially)	<p>The local Wildfire Prevention Officer will be a key conduit for information resources in proponent’s proposal development.</p> <p>Some selected areas of private land may be considered where necessary (e.g. southern Vancouver Island)</p> <p>Assessment tools include the Provincial Strategic Threat Analysis (PSTA)</p>
<p>11. Road Rehabilitation</p> <ul style="list-style-type: none"> Increase productive forest land base Increase carbon sequestration Reduce impact on wildlife (access management) Improve wildlife habitat (ecosystem benefit) 	<ul style="list-style-type: none"> Non-status roads, wilderness or other roads with ongoing erosion and sediment production issues Roads with no future use (within next rotation) Non status roads with no outstanding obligations or agreements in place Road not overtopped by adjacent stand Addressing a cumulative impact related to increased access (e.g. roads within a WHA or UWR) 	<ul style="list-style-type: none"> Harvest or knock down uneconomic vegetation Revegetate productive roads, landings and underutilized sites with (fast growing) tree species Site preparation, planting, fertilization Operational Pilot 	<ul style="list-style-type: none"> Coast Area wide applicability Sea-to-Sky Upper Lillooet River Area (Access Management Plan) 	FFT FCI/LCELF FESBC/ HCTF(potentially)	<p>Note to proponents, road rehabilitation requires a primary benefit other than road rehabilitation. Contact Integrated Investment Specialist to discuss road rehabilitation prior to developing project proposal.</p> <p>FLNRORD is seeking a partner to undertake a pilot to gain figures on the additive cost of rehabilitating roads concurrent with harvesting operations.</p>
<p>12. Rural Development</p>	<ul style="list-style-type: none"> Projects that maintain or grow job opportunities 	<ul style="list-style-type: none"> Use of residual fibre for local manufacturing or energy Recreation/Tourism planning and infrastructure management Workforce development in fibre utilization and/or forest management skills 	<p>Coast Area and specific focus areas in:</p> <ul style="list-style-type: none"> North Island, Campbell River Sunshine Coast, Sea-to-Sky 	RDF	

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Purpose & Strategy	Selection Criteria	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
		<ul style="list-style-type: none"> Projects that support First Nation economic opportunities 			
Fish, Wildlife and Habitat Priorities	See Table 4 for Fish, Wildlife and Habitat priorities				
Conservation Land Management Priorities	See Table 5 for Conservation Land Management				
Selected Research Priorities	See Table 6 for Selected Research Priorities				

Table 4: Fish, Wildlife and Habitat Priorities

Target Species	Strategy	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
1. Various: Wildlife Distribution and Abundance	<p>Develop study design and monitoring plan for priority wildlife populations in priority areas.</p> <p>to inform allocation decisions, co-location of habitat protection, and review of major projects</p>	<ul style="list-style-type: none"> Inventory and Monitoring of wildlife populations with remote cameras Development of project charter to identify location of future sites and management applications 	<p>Priority Management Units:</p> <ul style="list-style-type: none"> MU 2-9 MU 2-10 Strathcona Zeballos Maa-nulth Important Harvest Areas 	<p>LBIS</p> <p>HCTF</p>	<p>Linkages to:</p> <ul style="list-style-type: none"> Allocation decisions Habitat management (UWRs) Habitat management: Forage planning (xref: Maa-Nulth ROA and other FNs) First Nations engagement Maa-nulth Reasonable Opportunity Agreement (ROA) Predator-prey dynamics Citizen science <p>At large scale, similar to Alberta's biodiversity monitoring project</p>
2. Bat Species	<p>Population monitoring (distribution and abundance)</p> <p>White-Nose Syndrome monitoring</p> <p>Inform habitat management</p>	<ul style="list-style-type: none"> Bat surveys and roost research in old growth and 2nd growth (HG) Habitat restoration Collaborate to protect habitat on non-Crown land Support provincial initiatives to monitor for White-Nose Syndrome 	<ul style="list-style-type: none"> Vancouver Island Haida Gwaii (Graham & Moresby) 	<p>HCTF</p> <p>LBIS</p> <p>PCAF</p>	<p>Expand on Gwaii Haanas bat monitoring</p>
3. Black Bear	<p>Monitor age class distribution to ensure proper management.</p> <p>Inform black bear den</p>	<ul style="list-style-type: none"> Tooth Aging Assess current black bear den management effectiveness and den supply. 	<p>Priority Areas:</p> <ul style="list-style-type: none"> Vancouver Island Haida Gwaii 	<p>LBIS</p> <p>HCTF</p> <p>FESBC</p>	<p>Develop science-based black bear den management recommendations.</p> <p>Develop black bear den ID material.</p>

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Target Species	Strategy	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
	management.	<ul style="list-style-type: none"> Develop den inventory and identification program. 			
4. Black-tailed Deer	<p>Inform future harvest regulation decisions.</p> <p>Develop Coast Area Management Plan.</p> <p>Inform habitat management.</p> <p>Develop linkages between habitats and populations</p>	<ul style="list-style-type: none"> Population Monitoring (relative abundance) Conduct ungulate winter range effectiveness monitoring Promote Spring Forage Management 2nd growth habitat restoration through silviculture Refine existing habitat models with emerging technology (LIDAR) and validate 	<p>Priority Areas: (SC)</p> <ul style="list-style-type: none"> Sechelt Peninsula Texada Island Pemberton <p>Priority Areas (WC):</p> <ul style="list-style-type: none"> Depends on Activity 	<p>LBIS</p> <p>HCTF</p> <p>FESBC</p>	<p>WC: UWR effectiveness monitoring and UWR Silviculture project highest habitat-related priorities, update previous UWR enhancement research to monitor stand development of previous stands</p> <p>Locate areas of capable 2nd growth to restore UWR where no currently suitable present.</p>
5. Coastal Tailed Frog	Identify occurrences, monitor populations and mitigate threats to improve conservation status.	<ul style="list-style-type: none"> Effectiveness Monitoring of current management WHA establishment as needed eDNA surveys to identify distribution 	<p>Priority Areas (SC):</p> <ul style="list-style-type: none"> Sakwi Creek Hunter Creek Upper Harrison <p>Priority Areas (WC):</p> <ul style="list-style-type: none"> DNI, DCR (GBR) 	<p>FLNRO Research Funds,</p> <p>LBIS</p> <p>HCTF</p>	
6. Cougar	Monitor to ensure proper management and to understand more about population size	<ul style="list-style-type: none"> Genetic collection Mark and recapture surveys 	<p>Priority Areas:</p> <p>Northern Vancouver Island</p>	HCTF	
7. Climate Change - Biodiversity Resiliency	Develop a Climate Change Biodiversity Mitigation/Resilience Strategy	<ul style="list-style-type: none"> Integrate existing tools and predictive maps for WC. Map near future threats (30yr) to biodiversity using climate velocity prediction tools (AdaptWest) Identify Species & Ecosystems (most) At Risk (SEAR) Identify predicted refugia and determine conservation and connectivity objectives Develop and implement mitigation strategy for focal species and ecosystems 	WC: TBD by assessment	<p>FESBC</p> <p>HCTF</p>	Other climate change mitigation funding sources
8. Environmental Flow Needs	Monitor to input into water use potential restrictions and regulation changes	<ul style="list-style-type: none"> Water Flow Monitoring Water Flow Planning (i.e. develop thresholds, priorities) 	Chemainus, Koksilah and other priority Streams will be identified through this work.	<p>HCTF</p> <p>LBIS</p>	Currently funded internally; results may trigger project work supported by external funds.

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Target Species	Strategy	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
		<ul style="list-style-type: none"> • Link fish values to water usage • Develop protocols for increased water storage on critically chronically low-flow streams 			Increased water storage requires external funding – consider other partners
9. Great Blue Heron	<p>Monitor population distribution, abundance and productivity.</p> <p>Inform habitat management</p>	<ul style="list-style-type: none"> • Monitor and inventory heron colonies • Engage and enlist local stewardship groups; develop citizen science program • Collaborate with local governments and land owners to protect habitat on non-Crown land • Explore crown land protection opportunities • Test and assess UAV as potential tool for nest productivity inventory • Identify and assess forage sites 	Eastern Vancouver Island and Gulf islands	LBIS HCTF	Influenced by Wildlife Act and Federal Management Plan
10. Grizzly Bear	<p>Monitor population occupancy and individual movements to inform review of development proposals and recreation management</p> <p>Inform Silviculture strategies to maintain GB forage.</p>	<ul style="list-style-type: none"> • Population Monitoring • Effectiveness Monitoring of Waterpower development • Commercial Viewing Policy development • Assess effectiveness of Grizzly Bear silviculture treatments /stocking standards 	<p>Priority Areas (SC):</p> <ul style="list-style-type: none"> • Mainland Coast • Upper Lillooet • Toba Inlet • Stein-Nahatlatch • Squamish/Elaho <p>Priority Areas (WC):</p> <ul style="list-style-type: none"> • Mid-coast 	Mitigation Funds LBIS HCTF FESBC	WC: Links to Great Bear Rainforest Implementation
11. Hairy Woodpecker	<p>Population monitoring (distribution and abundance)</p> <p>Inform habitat management</p>	<ul style="list-style-type: none"> • Develop habitat model from occurrences • Population monitoring across stand types 	Haida Gwaii (Graham and Moresby)	HCTF LBIS	Important primary cavity nester. Work required to assess habitat management effectiveness.
12. Large Lakes	Monitor to provide input into management and regulations	<ul style="list-style-type: none"> • Wild stock evaluations • Spawning rivers evaluations • Stock composition assessments • Angler Use (Catch and Effort Evaluation) • Invasive species management 	<p>Priority Lakes:</p> <ul style="list-style-type: none"> • Comox Lake • Cowichan Lake • Sproat Lake • Buttle Lake 	FFSBC LBIS HCTF	Management Plans exist for some large lakes.
13. Marbled Murrelet	Provincial management approach	<ul style="list-style-type: none"> • Implement Land Use Objective 	Priority Landscape Units (SC):	Implementation Plan	Priorities identified in Implementation

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Target Species	Strategy	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
	(Actions and Timelines) identified in provincial Implementation Plan.	<ul style="list-style-type: none"> Regulation Order to set Habitat protection objectives by Landscape Unit Map and legalize priority Old Growth Management Areas Establishment of WHAs Map and refine nesting habitat availability with low level aerial surveys Develop and implement population monitoring plan 	<ul style="list-style-type: none"> Powell Daniels Powell Lake Chilliwack NRD Priority Areas (WC): <ul style="list-style-type: none"> Depends on Activity 	(LBIS) Funding, Industry collaboration, Federal (ECCC) partnership	Plan. Contact Provincial Implementation Coordinator and Regional Biologists.
14. Marmot	As outlined in the Recovery Strategy.	<ul style="list-style-type: none"> Monitoring & Inventory Health Assessments Rearing and Introductions 	Priority Populations: <ul style="list-style-type: none"> Green Mountain Mount Washington Strathcona 	Marmot Foundation (HCTF, LBIS, industry)	Recovery Strategy
15. Mature Forests	Planning assessing and managing for multiple values that depend on mature and old forests (Marbled Murrelet, Northern Goshawk, Roosevelt Elk, and Seral Stage Distribution).	<ul style="list-style-type: none"> Clarify objectives for each value (habitat protection) Determine additional protection required Assess co-location opportunities 	Priority Districts in SC Region: <ul style="list-style-type: none"> Sunshine Coast Sea to Sky Chilliwack 	MAMU Funding	
16. Moose	Monitoring to inform regulations and understand dispersal/range.	<ul style="list-style-type: none"> Population Monitoring 	Priority Areas: <ul style="list-style-type: none"> Upper Lillooet Portions of North Island Central Coast District 5-10, 5-11 	LBIS	
17. Mountain Goats	Minimize disturbance. Allocate sustainable harvest to maintain viable populations. Inform habitat management.	<ul style="list-style-type: none"> Population Monitoring & Inventories – including summer surveys Habitat Effectiveness Monitoring (Collaring Studies) Compliance and Monitoring UWR Occupancy Assessments UWR Effectiveness monitoring Wildfire Impact monitoring Identification and mapping of natal areas 	Priority Areas: <ul style="list-style-type: none"> Sea to Sky NRD (for recreation pressure management) MU 2-11 (Mount Meager) Boulder & Elaho Mid-Coast (DCR and NICC Districts) 	LBIS HCTF	
18. Northern Goshawk	Provincial management approach	Population inventory and monitoring	Priority Areas in SC:	Implementation Plan	Priorities identified in Implementation

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Target Species	Strategy	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
	(Actions and Timelines) identified in provincial Implementation Plan.	<ul style="list-style-type: none"> and habitat assessments to inform establishment of WHAs • Work to inform provincial decision on foraging habitat management • Research (telemetry, prey, and/or habitat assessments) to characterize seasonal movement, space use and foraging habitat requirements 	<ul style="list-style-type: none"> • Sunshine Coast NRD • Chilliwack NRD • Sea to Sky NRD Priority Areas in WC: <ul style="list-style-type: none"> • Depends on Activity 	(LBIS) Funding, HCTF, FESBC	Plan. Contact Provincial Implementation Coordinator and Regional Biologists.
19. Oregon Spotted Frog	Restore, maintain and where feasible expand extant Oregon Spotted Frog populations, and establish six or more additional self-sustaining populations in B.C.	<ul style="list-style-type: none"> • Population Monitoring (e.g. egg mass surveys) • Population Translocations (population augmentation) • Head-starting programs • Habitat Mapping • Habitat Restoration • Outreach & Education on mitigating threats • eDNA inventory 	Priority Sites: <ul style="list-style-type: none"> • Mountain Slough • Morris Valley • Maria Slough • Chilliwack and Abbotsford sites 		
20. Peregrine Falcons	Complete survey and contribute to federal government efforts.	<ul style="list-style-type: none"> • Canadian Surveys 	Priority Areas: <ul style="list-style-type: none"> • Lower Mainland • Vancouver Island • Haida Gwaii 	HCTF	5-year cycle
21. Rare Plants and Ecosystems	To maintain representation of rare plants and ecosystems and the species that depend on them.	<ul style="list-style-type: none"> • Coarse Assessment including gap analysis for protection • Ground based inventory • Population Translocations • WHA amendments 	Priority Areas: <ul style="list-style-type: none"> • Fraser Valley • Chapman Landscape Unit • Coastal Douglas Fir Ecosystem • Denman Island 		
22. Rocky Mountain Elk	Work with local First Nations to determine whether this species will be managed for sustainable use or managed for reduction.	<ul style="list-style-type: none"> • Inventory • Regulation change 	Priority Area: <ul style="list-style-type: none"> • Haida Gwaii 	LBIS HCTF	
23. Roosevelt Elk	Maintain self-sustaining populations of Roosevelt elk throughout the Coast Area; Re-establish Roosevelt elk in historic but unoccupied ranges;	<ul style="list-style-type: none"> • Population Inventory to inform allocation to First Nations, B.C. Residents, and Guides • Population Monitoring (e.g. Recruitment assessments) 	Priority Population Units (SC): <ul style="list-style-type: none"> • Upper Pitt • Rainy-Gray • Vancouver Island Core Areas (for annual 	LBIS HCTF Ministry of Transportation and Infrastructure	WC: UWR effectiveness monitoring highest habitat-related priority. Management Plan and <i>draft</i> Cumulative Effects results inform

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Target Species	Strategy	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
	<p>Provide sustainable opportunities for consumptive and non-consumptive use; Mitigate public safety risk of vehicle collisions; Set objectives to maintain sufficient habitat amounts to support population objectives.</p> <p>Roosevelt Elk Management Plan.</p> <p>Inform habitat management.</p> <p>Develop linkages between habitat and populations</p>	<ul style="list-style-type: none"> • Mortality Studies • Compulsory inspections • Population Translocations • Habitat Modelling <ul style="list-style-type: none"> ○ Validate existing model; ○ Develop RSF model using GPS collar data • Update management plan • Habitat objective-setting and determination of UWR protection gaps • UWR effectiveness monitoring at the stand (individual UWR) and landscape level: <ul style="list-style-type: none"> ○ Quantify habitat and population linkages ○ 'Benchmarking' approach for landscape scale sufficiency 	<p>monitoring)</p> <ul style="list-style-type: none"> • Vancouver Island (with model coverage) 		<p>priority EPU.</p>
24. Small Lakes	<p>Monitor subset of the lakes to provide input to Freshwater Fisheries Society to inform stocking practices and to create or maintain fishing opportunities.</p>	<ul style="list-style-type: none"> • Small Lakes Management • Aeration • Fertilization • Monitoring of wild-stocked lakes • Fishing Infrastructure (i.e. boat launch) • Vancouver Island Lakes Questionnaire • Invasive species management 	<p>Priority Areas:</p> <ul style="list-style-type: none"> • South Coast • Vancouver Island 	<p>FWFS HCTF LBIS</p>	
25. Spotted Owl	<p>As per the Spotted Owl Recovery Action Plan and the BC Spotted Owl Management Plan</p>	<ul style="list-style-type: none"> • Habitat Restoration • Captive Breeding • Population Inventory & Monitoring (new / existing territories) • Population Relocation 	<p>Priority Areas:</p> <ul style="list-style-type: none"> • Chilliwack and Sea-to-Sky Districts 	<p>HCTF LBIS</p>	
26. Steelhead	<p>Conserve wild stocks and their habitats; Maintain a diversity of sustainable recreational angling opportunities for steelhead in British Columbia; Maintain, protect and restore the</p>	<ul style="list-style-type: none"> • Population Monitoring • Habitat Restoration and effectiveness monitoring • Hatchery Programs: Stamps, Somas, Stave Lake • Guardian Programs: Chilliwack River 	<p>Priority Rivers :</p> <ul style="list-style-type: none"> • Coquihalla River • Chilliwack River • Alouette River • Squamish River and tributaries 	<p>FFSBC HCTF LBIS</p>	<p>Provincial Steelhead Management Framework</p>

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Target Species	Strategy	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
	productive capacity of the freshwater environment to produce steelhead.	Steelhead, Dean River <ul style="list-style-type: none"> • Regional steelhead management plan • Anadromous hatchery program review 	<ul style="list-style-type: none"> • Chapman Creek • Chehalis River • Little Campbell River • Coquitlam River • Capilano River • Seymour River • Stamp River • Cowichan River • Gold River • Englishman River 		
27. Sturgeon	Reach and maintain a natural population age structure and reach biological targets throughout the species' natural distribution in the Fraser River.	<ul style="list-style-type: none"> • Lower Fraser River Guardian Program • Spawning Monitoring • Population Monitoring (acoustic telemetry implementation) • Sturgeon juvenile indexing study • Sturgeon catch and effort monitoring • Thermal monitoring • Establishment of fisheries management objectives • Consultation, Outreach & Education on use, bycatch and monitoring 	Priority Areas of Lower Fraser River: <ul style="list-style-type: none"> • 10 identified sturgeon spawning areas • Overwintering and rearing areas • High use juvenile rearing areas • Lower Pitt River • Harrison River 		
28. Watershed Planning (SC)	Identification, analysis, and prioritization of south coast watershed condition. <ul style="list-style-type: none"> • Clarify Watershed-based Objectives for Aquatic Ecosystem Values in South Coast • Assess Management of Aquatic Ecosystem Values in the South Coast Implement Integrated Aquatic Resource Management Strategies	<ul style="list-style-type: none"> • Establish quantitative objectives for numerous values • Habitat Assessments • Regional fish inventory activities • Strategies to manage priority watersheds • Field verification of fish distribution model 	<ul style="list-style-type: none"> • Priority watersheds will be identified through this project. 		
29. Watershed Planning (WC)	Mitigate impacts of resource development on high value and hydrologically sensitive fish streams	<ul style="list-style-type: none"> • Fisheries Sensitive Watershed Implementation: <ul style="list-style-type: none"> ○ Identify hydrologically sensitive streams 	<ul style="list-style-type: none"> • NICC District • And priorities TBD by assessment 	LBIS HCTF	Links to steelhead / fisheries management Potential First Nations

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Target Species	Strategy	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
		<ul style="list-style-type: none"> Review knowledge of fish values 			partners/funding.
30. Western Painted Turtle (SC)	Maintain or increase the number of individuals and distribution of Painted Turtle Pacific Coast Population units, and ensure the quality and quantity of habitat remains stable or increases, while improving survivorship and recruitment within its range in B.C.	<ul style="list-style-type: none"> Population Monitoring GIS wetland/riparian habitat assessments Habitat Improvements (nesting beaches and basking features) Removal of Invasive Species Head-starting or growing up hatchlings Conservation of habitat areas Monitoring and assessing habitat <ul style="list-style-type: none"> Develop “Develop with Care” planning document 	Priority Population Units: <ul style="list-style-type: none"> Nicomen Slough Cheam Lake Jerry Suline Westcreek Wetland Brunette River 	OSF Husbandry Partners	Federal Recovery strategy
31. Western Painted Turtle (WC)	Determine geographic distribution, abundance and population sustainability. Inform habitat management	<ul style="list-style-type: none"> Inventory Vancouver Island populations and assess viability; discover new populations and improve distribution knowledge base, confirm use of nesting sites; Test use of UAV as inventory tool; Support eDNA research and implement as field tool; Collaborate with local governments to develop and implement conservation strategies and habitat protection 	<ul style="list-style-type: none"> Nanaimo, Pt. Alberni, Cowichan Valley, Comox Valley CRD 	LBIS HCTF	
32. Western Screech Owl (SC)	Inventory and monitoring to determine key management actions.	<ul style="list-style-type: none"> Habitat Restoration Habitat Effectiveness Monitoring Priority Research Population Monitoring 	Priority Areas: <ul style="list-style-type: none"> Lowland Riparian Areas 	HCTF LBIS FWCP	
33. Western Screech Owl (WC)	Inventory and monitoring to determine key management actions.	<ul style="list-style-type: none"> Population inventory including new areas to identify priority habitats; combine with habitat assessments Refine understanding of current population dynamics on Vancouver Island (relative occupancy, population 	<ul style="list-style-type: none"> North and west Vancouver Island hypermaritime forest types 	LBIS HCTF FWCP HSP	

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Target Species	Strategy	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
		<p>trends)</p> <ul style="list-style-type: none"> • Explore use of passive acoustic monitoring in inventory 			
34. Western Toad	Inform habitat management and population monitoring (distribution and abundance).	<ul style="list-style-type: none"> • Support Research initiative to assess genetic relationships with mainland population • Complete Cowichan Valley project; support publications, BMP and DWC updates; compile distribution records and assess conflict hotspots • Coordinate team response to potential dam removal at Morrell 	<ul style="list-style-type: none"> • Morrell Lake and Nanaimo • Courtenay/Comox • Haida Gwaii 	LBIS HCTF	
35. Wetlands	Identify and take inventory of wetlands within the South and West Coast Regions and determine which wetlands have high fish and aquatic wildlife values and may require special management/prioritization. Restore species at risk habitat.	<ul style="list-style-type: none"> • South Coast wetland mapping and inventory project • Habitat Restoration • Use Terrestrial Ecosystem Mapping (TEM) to update Sensitive Ecosystem Inventory (SEI) mapping and disturbance metrics 	<p>Updated Priority Areas in development</p> <p>Priority Areas:</p> <ul style="list-style-type: none"> • Morris (Harrison-Chehalis WHA) • Chaplin • Gordon's Brook 	FFSBC LBIS HCTF Habitat Stewardship Program (HSP)	
36. Wolverine	Characterize seasonal movement and habitat selection to inform project review and management of recreation tenures and access	<ul style="list-style-type: none"> • Habitat occupancy and density assessments (camera traps) • Seasonal movement and habitat selection (collaring study) • Population genetic analysis (hair snag traps) 	<ul style="list-style-type: none"> • Sea to Sky NRD (Squamish, Lillooet and South Chilcotin) • Chilliwack NRD 		
37. Wolves	Collect and study genetics to understand more about potential sub-species abundance and distribution	<ul style="list-style-type: none"> • Genetics and other data collection 	<p>Priority Areas:</p> <ul style="list-style-type: none"> • Vancouver Island 	HCTF LBIS	

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Table 5: Land Conservation and Management Priorities

Funder Key: Environment and Climate Change Canada (ECCC), Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNR), Ducks Unlimited Canada (DUC), The Nature Trust of British Columbia (TNTBC), and the Habitat Conservation Trust Foundation (HCTF).

Purpose and Strategy	Potential Treatments/Activities	Geographic Priority Area	Potential Funding Sources	Notes
<p>1. Crown Land Securement Partnership Program</p>	<ul style="list-style-type: none"> • Designation of s16/17 <i>Land Act</i> Reserve or Wildlife Management Area • Engagement, 	<ul style="list-style-type: none"> • Priority Areas for crown land securement (WC Region): <ul style="list-style-type: none"> ○ S'amunu WMA (H) ○ South Bentinck Arm (H) ○ Salmon River Estuary (H) ○ Needan Harbour Haida Gwaii (H) ○ Kumdis Slough ○ Yakoun Estuary ○ Boulton Lake ○ Campbell River Estuary ○ Courtenay River (or K'omoks) Estuary ○ Chemainus Estuary Reserve ○ Baynes Sound Reserve ○ Shingle Bay/Spit Point Reserve 	<p>CWS of ECCC, DUC, TNTBC, NCC, HCTF, FLNR and ENV (BC Parks).</p>	
<p>2. Conservation Land Management Program: West Coast Region</p>	<ul style="list-style-type: none"> • Maintenance of properties and infrastructure • Vegetation management and property stewardship. • Inventory of waterfowl and other species using the WCCLMP properties • Restoration and enhancement of properties (e.g. removing historic dykes, treatments to enhance Roosevelt elk habitat, wetland enhancements, invasive species control) • Complete Phase 2 assessment of distributary channel feasibility study • Monitoring of properties (e.g. SET tables for monitoring estuary resiliency, MARS tool to assess impact of climate change) • Management of Species at Risk populations • Management of non-native species • Effectiveness monitoring • Continuing to develop relationships with Indigenous groups in the management of conservation lands 	<ul style="list-style-type: none"> • Priority Areas for restoration & enhancement: <ul style="list-style-type: none"> ○ Englishman River Estuary ○ Salmon River Estuary ○ Nanaimo River Estuary ○ South Winchlesea Island/Somenos Marsh ○ Green Mountain (Marmot) ○ Cobble Hill (Barn Owl) ○ Morrell Lake (Western Toad) 	<p>DU, TNTBC, CWS ECCC, FLNRO, HCTF</p>	

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<p>3. Conservation Land Management Program: South Coast Region</p>	<ul style="list-style-type: none"> • Maintenance of properties and infrastructure • Vegetation management and property stewardship • Monitoring of properties • Restoration and enhancement of properties (e.g., wetland/riparian, fish habitat, and upland forest restoration) • Management of Species at Risk populations (e.g., western painted turtle population augmentation and habitat restoration) • Management and mapping of non-native species (e.g., narrow-leaved cattail in the South Arm Marshes WMA, yellow-flag iris in Cheam Lake Conservation Area) • Ecosystem mapping and inventory of flora and fauna with emphasis on Species at Risk • Continue marsh recession investigation in the Fraser River estuary as part of the Sturgeon Bank Marsh Recession Project • Research to understand ecological effects of overabundant species (e.g., snow geese, Canada geese) • Prioritize and update management plans for the 11 south coast WMAs and other conservation areas • Continue to develop relationships with Indigenous groups in the management of conservation lands • Continue to develop relationships with local stewardship groups in the management of conservation lands • Continue collaborating with local cities, First Nations and other stakeholders to increase the resilience of Fraser River estuary tidal ecosystems to sea-level rise • 	<ul style="list-style-type: none"> • Priority Areas for restoration & enhancement: <ul style="list-style-type: none"> ○ Bert Brink WMA (wetland/riparian) ○ Lhá:lt/Harrison-Chehalis WMA (fish habitat, Oregon spotted frog) ○ Cheam Lake Conservation Area (western painted turtle) ○ Camp Slough Conservation Area (upland forest) ○ Silverhope Creek Conservation Area (upland forest) ○ Forslund-Watson Conservation Area (upland forest/wetlands) • Priority Areas for increasing ecological resilience to sea-level rise: <ul style="list-style-type: none"> ○ Boundary Bay WMA ○ Sturgeon Bank WMA ○ Roberts Bank WMA ○ South Arm Marshes WMA ○ Skwelwil'em Squamish Estuary WMA 	<p>HCTF, FLNRORD, DUC, TNTBC, CWS/ECCC, DFO</p>	
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Table 6: Selected Research Section Project Priorities (Coast Area)

Research Section work is funded through government directly but also relies heavily on partnerships with other funders

Priority Research Area	Research Need and Approach	Specific Focus - Systems or Species	Geographic Priority Area	Outcomes/ Notes
1. Innovative silviculture to address multiple resource values	Testing innovative methodologies and climate informed prescriptions for understanding ecological (wildlife habitat, hydrological function) and economic impacts at the stand level of timber management within sensitive areas that result in improved supply of timber and validation of assumptions about complex stand management.	Montane systems, subarctic transition systems, drier south coast BGC units	Coast Area, particularly drier south coast systems (CWHdm, e.g., Roberts Creek systems); systems impacted by climate change (projected climate or projected disturbance regimes), including montane units, fire impacted systems	Improved resilience of timber and ecological values; enhanced certainty re: multiple (integrated) resource values temporally and spatially
2. Predicting, validating, and quantifying effects of climate change at forest stand and landscape scales	(1) Hazard decline prediction model for yellow cedar (Yc) (2) successional changes after Yc decline (3) species selection to maintain timber and wildlife habitat attributes with climate shift (4) implications of Cw loss with multiyear drought conditions. Specific projects contribute to understanding of stand character, and changes in forest composition and structure, including implications for wood quality, timber volume production, and sustainability of forest ecosystem values with projected climate change	Yc (species) and ecological (plant) communities	Coast Area (coastal Yc range)	Understanding of risks of different strategic and site-level decisions (e.g., planting, trees species selection; harvest methods) and the effects on timber supply, cultural heritage resources and ecosystem values on the whole (e.g., habitat, forage, cultural plants, carbon).
3. Old forest structure, function, and conservation approaches at the stand and landscape scales	Support development of guidance and tools for old forest and red and blue listed communities management under legislative requirements	Drier south coast systems particularly, but provincial priority across systems (cross regional collaboration); riparian systems across Coast Area	Coast Area - drier systems with greater harvest and land use pressure particularly (and more red & blue listed communities, e.g., CDFmm, CWHxm, dm, mm); fire impacted systems; systems vulnerable to climate shift (e.g., rain on snow watersheds to rain systems)	Inform land use planning (e.g. OGMA's), SOPs, LUO implementation, cumulative effects framework, and assist in development in GBR benchmarks, and BMPs for structural retention, post-harvest.
4. Soil fertility and stand productivity	Knowledge to better incorporate site quality into silviculture treatment outcomes, species nutrition and growth, climate change scenarios, and fertilization practices in British Columbia;		Wetter BGC units, units anticipated to be part of the coastal fertilization programme; Phosphorus-limited systems; systems vulnerable to climate change (and more rapid shifts in species selection guidance); areas being restored after disturbance	Improved TSR and certainty of timber supply and silviculture investment (stocking, species selection, survival under new climate regimes with soil nutrient regime shifts); efficient allocation of fertilization resources across Coast Area;

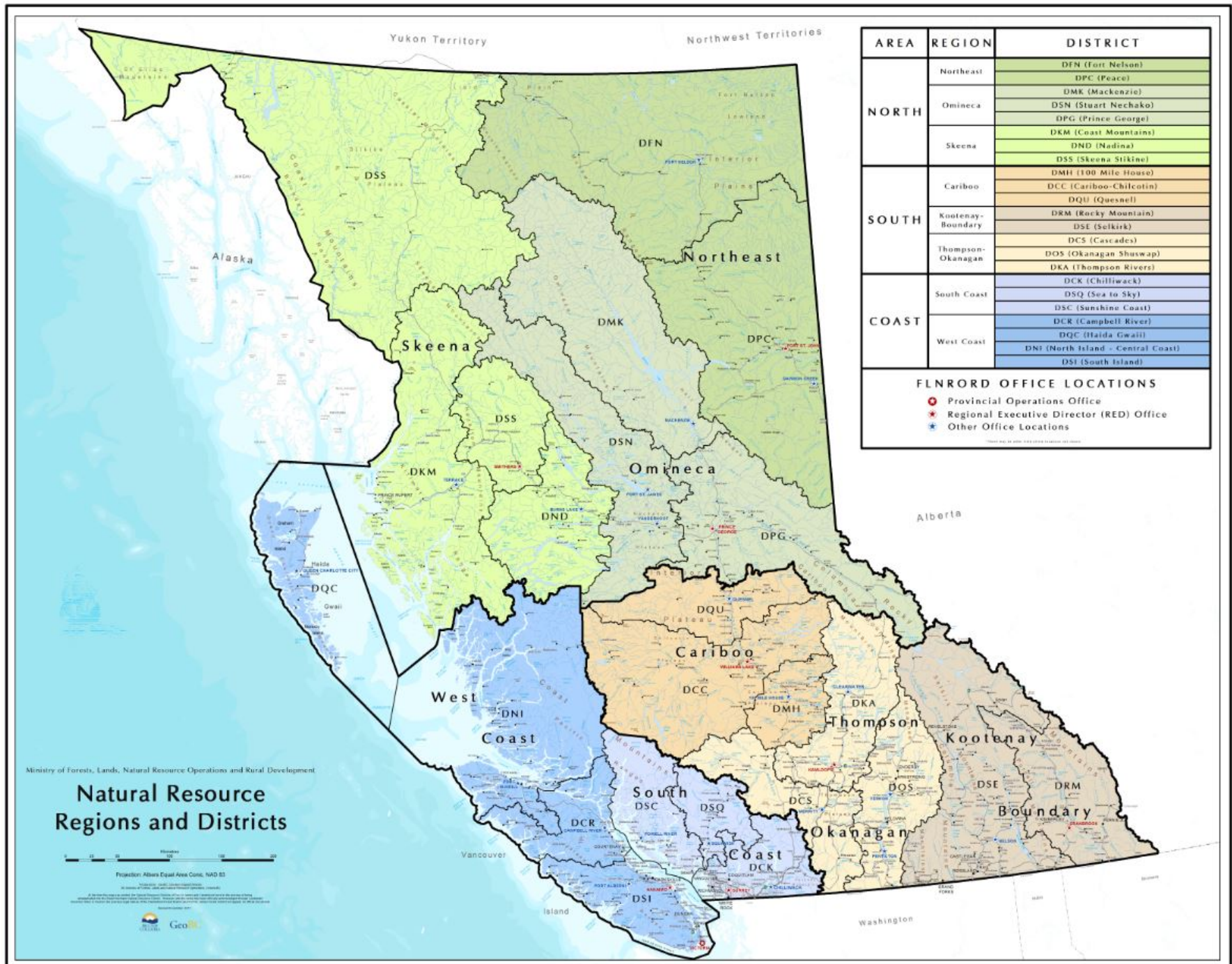
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Priority Research Area	Research Need and Approach	Specific Focus - Systems or Species	Geographic Priority Area	Outcomes/ Notes
5. Community dynamics and responses to management (including cumulative effects) of Species at Risk (SAR)	Research is needed to support development of effective conservation management / recovery plans for SAR, particularly in the context of cumulative effects assessment and projected climate change. Activities in this project will deliver improved scientific-bases for effective SAR management and recovery plans.	Focus species include Northern Spotted Owl (and Barred Owl interactions), Marbled Murrelet, Western Toad, Western Painted Turtle, Western Screech Owl, Northern Goshawk, Northern Saw-whet Owl, Sooty Grouse (Haida Gwaii), Pacific Marten	Coast Area (and into adjacent regions as appropriate for geographic range and autecological or community understanding)	Improved scientific basis for SAR planning (including management and recovery plans) and required scientific support for LUOs (e.g.; amendments for EBM, Haida Gwaii), information for hunting/trapping resource applications.
6. Habitat use and impacts of management on habitat of focal species (legislative requirement or indicator species) and Species at Risk (SAR)	Verification of habitat inventory and use (e.g., MaMu); refinement of habitat models and understanding of population structure (e.g., coastal tailed frog); assessment of habitat shift and prey structure shift among land use practices;	MaMu, coastal tailed frog, anadromous fish (e.g., EBM plan area)	Coast Area (and into adjacent regions as appropriate for geographic range and autecological or community understanding)	Informed habitat/LU planning and implementation for SAR and EBM implementation; improved inventory and monitoring; guidance towards BMPs (e.g., riparian BMP and WHA guidance)
7. Ecosystem vulnerability to resource development and climate change – cumulative effects and outcomes of legislative direction	Active adaptive management and retrospective sampling to understand the cumulative operational and ecological implications of ecological integrity objectives within the Great Bear across resource values; assessment of post fire shifts in successional dynamics of forests and associated structure and resource values.	Great Bear Rainforest (GBR LUO plan area); drier south coast (fire and drought impacted) systems	GBR specifically but applicable across Coast Area	Tools and data to refine the scientific foundations and gain certainty to inform decision making, LUOs, licensees, communities and stakeholders.
8. Implications of drought for wildlife and wildlife habitat	Although anecdotal evidence suggests shifts in wildlife habitat use, and reduced concentrations of some species, the change in relationship among predator and prey populations and for habitat conditions with multiple years of low snow pack and summer drought conditions are poorly understood.	Ungulate and carnivore species; FN focal species.	South coast systems (VI, mainland south coast)	Recommendations for mitigation of impacts; management strategies for UWR, WHA, riparian habitat to support climate change adaptation. Data for integration into long term projections of populations and habitat models for spatial and aspatial planning of resource availability.
9. Hydrological regime characterization: implications of land and resource management and climate change	Installation of components of high elevation weather station network for the central coast of BC to support EBM RONV and natural disturbance studies related to snow accumulation and melt, glacier ablation and extreme weather events; development of models of hydrologic function and classification to support understanding of ECA, safety parameters for communities and operations	Great Bear Rainforest (GBR LUO plan area)	Coast Area (real time data, models within Great Bear)	Data and model support for validation of snow depths, density and hydrological function for safety assessment, water availability for communities, wildlife, forest harvest recovery (hydrological recovery,

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Priority Research Area	Research Need and Approach	Specific Focus - Systems or Species	Geographic Priority Area	Outcomes/ Notes
				quantification of ECA); enhanced wildlife forecasting (data contributions to BC Wildfire Service) and flood forecasting
10. Detection and characterization of geomorphic and hydrologic change, disturbance risk and recovery	Development of surface water models for tools and guidance on cumulative effects and post-disturbance recovery, drought and floods; Evaluation of stream channel morphology and sediment supply with differing land uses;			Data to support community hazard assessment and delineation of zones of geomorphic sensitivity to climate change. Increased ability of decision makers to take action to reduce risk to communities of geomorphic events; improved public safety
11. Integrated disturbance dynamics (hydrology, geomorphology, wind, fire) across spatial scales with projected shifts in climate	Characterization (quantification) of current disturbance regimes is limited for systems on the coast, but these regimes provide the foundation for many management directives and policies (e.g., old forest management and OGMA establishment, GBR LUO). Additionally, we project dominant disturbances to shift with climate change and interact in novel ways. Understanding these cumulative interactions will provide greater certainty regarding additionally imposed management activities.	Watersheds anticipated to shift in hydro regime based on climatic modelling (particularly shifts from snow to rain on snow or hybrid to pluvial dominant); areas of emergent wildlife regime; GBR	Coast Area	

APPENDIX A: Map of FLNRORD Regions and Districts



See Link: <https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/ministry-of-forests-lands-and-natural-resource-operations-region-district-contacts>

APPENDIX B: Integrated Investment Specialists

Area, Region	Integrated Investment Specialist	Contact Number
Coast Area, West Coast	Aaron Smeeth	778 647-2002
Coast Area, South Coast	Tonianne Mynen	604 586-5624
South Area, Kootenay Boundary	Julie Castonguay	250 825-1147
South Area, Cariboo	Christine Unghy	250 991-7260
South Area, Thompson Okanagan	Danya Leduc	250 371-3736
North Area, NorthEast	Nadia Skokun	250 787-3513
North Area, Omenica	Kelly Cook	250 561-3411
North Area, Skeena	Robyn Van Iderstine	250 847-7699

APPENDIX C: Category Definitions

Carbon:	<p>Funds allocated to carbon eligible activities</p> <ul style="list-style-type: none"> • Reforestation • Fertilization • Enhanced Planting Densities • Fibre Utilization
Community:	<ul style="list-style-type: none"> • Environmental projects that benefit living standards through economic, social or environmental development • Activities that develop, and promote environmental education to local communities
Fish, Wildlife and Habitat:	<ul style="list-style-type: none"> • Restoring damaged native open forest and grassland ecosystems • Increasing resilience of community watersheds • Conserve the natural diversity of fish and wildlife species • Monitoring and research of species at risk • Any project focused on: <ul style="list-style-type: none"> ○ Improvement or expansion of land that supports native species ○ Innovation strategies to protect the health and diversity of ecosystems <p>Managing and preventing the impacts on the forest and range from pests and disease</p>
Recovery of Species	<ul style="list-style-type: none"> • Activities associated with the conservation of wildlife species at risk through a value specific recovery program (Caribou, marbled murrelet, northern goshawk)
Fibre Recovery:	<ul style="list-style-type: none"> • Promoting planning and practices that lead to cost-effective removal of low quality residual fibre
Forest Rehabilitation	<ul style="list-style-type: none"> • Reforestation of low value or damaged forests • Any project supporting the development of increased supply <ul style="list-style-type: none"> ○ Fertilization (survey, purchase, application) ○ Spacing
Wildfire Protection:	<p>Any project focused on:</p> <ul style="list-style-type: none"> • Reducing excessive fuel loads and continuity mitigate catastrophic wildfire risks • Removal of MPB killed stands
Water:	<ul style="list-style-type: none"> • Support activities to mitigate risks to water and water related resources <ul style="list-style-type: none"> ○ Erosion control; culverts; mitigating range and recreation impacts in a community watershed; watershed health projects
Miscellaneous:	<ul style="list-style-type: none"> • ****need some sort of definition here****

APPENDIX D: Funder Descriptions

Community Resiliency Investment (Program)

Acronym	Intake Closing Date	Website
CRI	December 7, 2018	https://intranet.gov.bc.ca/bcws/provincial-programs/prevention/crip Contact your local Wildfire Protection Officer to discuss a project proposal: https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/fire-fuel-management/fuel-management (scroll to bottom of page)

Description:

The **Community Resiliency Investment (CRI)** Program is a new provincial program intended to reduce the risk and impact of wildfire to communities in BC through community funding and supports and priority fuel management activities on provincial Crown land. CRI replaces the Strategic Wildfire Prevention Initiative.

The primary purpose of the Community Resiliency Investment Program is to support FireSmart community funding and High Value Asset Protection (HVAP). The Union of BC Municipalities (UBCM), First Nations' Emergency Services Society (FNESS) and the Forest Enhancement Society of BC (FESBC) are working with the Ministry of Forests, Lands, Natural Resource Operations & Rural Development (FLNRORD), represented by the BC Wildfire Service (BCWS), to administer the FireSmart Community Funding & Supports portion of the program for local government and First Nation applicants.

HVAP will be led by FLNRORD and will focus on prioritizing and assessing high value critical infrastructure assets like telecommunications, energy, transportation and utilities, for business continuity and recovery. An additional purpose of CRI is aligning priorities for treatment on public and private assets with existing funders such as FESBC and the owners of the assets.

Parameters / Criteria:

CRI is also intended to fund a broader suite of eligible activities that align with the 7 [FireSmart](#) disciplines, namely:

- Education
- Fuels management
- Legislation and planning
- Development considerations
- Inter-agency cooperation
- Emergency planning
- Cross-training

Fish & Wildlife Compensation Program

Acronym	Intake Closing Date	Website
FWCP	October 26, 2018	http://fwcp.ca/

Description:

The Fish & Wildlife Compensation Program (FWCP) conserves and enhances fish and wildlife in watersheds impacted by BC Hydro dams. The FWCP is funded annually by BC Hydro. The FWCP directs those funds towards priority actions across its three regions to fulfill its mission and work towards its vision of thriving fish and wildlife populations in watersheds that are functioning and sustainable.

By funding projects to support fish and wildlife populations in our Coastal, Columbia and Peace Regions, the FWCP is fulfilling BC Hydro's applicable water licence obligations and voluntary commitments to compensate for fish and wildlife impacts.

BC Hydro is actively engaged in the FWCP and works in equal partnership with the Province of B.C., Fisheries and Oceans Canada, First Nations and Public Stakeholders by participating on FWCP's regional Boards. The FWCP's three independent regional Boards review and approve all project funding decisions and annual operating plans.

Eligible Applicants:

Any group, government agency, First Nation, business, or individual that can meet our mandatory requirements

Funding Categories:

- Seed Grant – to further develop a project idea prior to submitting a large grant application
- Small Grant – have a *total project cost of less than \$20,000
- Large Grant – have a *total project cost of more than \$20,000

**Total project costs include funding from all sources including, but not limited to the FWCP, other funders (if any), the total value of all in-kind contributions (if any), and applicable taxes.*

Criteria:

We fund and support the following types of actions, which are consistent with our mandate:

- Actions to create, restore, or otherwise improve the function of ecosystems that have been impacted by BC Hydro activities
- Actions to create, restore, or otherwise improve the function of alternate ecosystems that provide a better opportunity for investment
- Specific management actions for species of interest, as identified by recovery teams and action/implementation groups
- Baseline inventories that contribute to the development of habitat- or species-based actions within our Action Plans
- Monitoring programs designed to measure the effectiveness of FWCP-funded habitat and species actions
- Actions that contribute to all aspects of managing co-operatively managed conservation lands
- Participation as a team member in species of interest planning

Forest Carbon Initiative/ Low Carbon Economy Leadership Fund:

Acronym	Intake Closing Date	Website
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FCI/LCELF	TBD	LCELF – Funds have been allocated to FCI through Federal-Provincial agreement https://www.canada.ca/en/environment-climate-change/news/2017/12/low_carbon_economyleadershipfund.html
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Program Objectives:

- Avoid/Reduce emissions of Green House Gases (GHG's)
- Growing and Storing More Carbon (GC) / Carbon Sequestration

Strategies / Opportunities:

Stand Rehabilitation

1. Reforestation of afforested areas, site prep followed by reforestation (e.g. roads, pipelines, seismic lines, mines etc.).
2. Overstory removal, salvage of marginal timber, followed by reforestation.
3. Under planting (e.g. fire-killed site in a protected area).

Fibre Utilization and reduction of burning:

1. The use of harvesting authorities or licences which encourage greater utilization (e.g. lump sum/cruise based Timber Sales).
2. The chipping and dispersion of residual slash over cut block areas; while this treatment does not necessarily increase fibre utilization it can provide a significant GHG benefit.
3. Utilization of residual fibre following harvesting operations.

Enhanced Silviculture:

1. Silviculture activities undertaken that are incremental to current legal re-forestation obligations resulting in increasing the number of trees established or diversifying species.
2. Forest Fertilization to enhance tree growth.
3. Requirement of planting seedlings with a higher genetic volume gain.

Parameters / Criteria:

- The FCI program will support the funding of the rehabilitation and reforestation of stands that provide a net GHG benefit and which otherwise would not be reforested. This includes fire and insect impacted stands and other previously deforested area outside of the timber harvesting land base (THLB), and similar areas within the THLB that are not subject to legal requirements for reforestation.
- All rehabilitation projects will include a component of the enhanced silviculture activity in order to maximize the carbon sequestration and storage potential of a given site.
- The FCI can provide incentives to yard uneconomic material to loading areas and transportation of such recovered fibre to pulp mills, pellet manufactures, and bioenergy facilities.
- FCI may partner with FFT related activities

Forest Enhancement Society

Acronym	Intake Closing Date	Website
FESBC	October/November 2018	http://www.fesbc.ca/

Description:

The Forest Enhancement Society of BC was created in February 2016 to advance and advocate for the environmental and resource stewardship of BC's forests. FESBC is considered a Service Delivery Crown Corporation.

The purposes of the Society as laid out in its Constitution are:

- To advance environmental and resource stewardship in B.C.'s forests by:
 - i) Preventing and mitigating the impact of wildfires
 - ii) Improving damaged or low value forests
 - iii) Improving habitat for wildlife
 - iv) Supporting the use of fibre from damaged and low value forests
 - v) Treating forests to improve the management of greenhouse gases
- To advocate for the environmental and resource stewardship of B.C.'s forests.
- Do all such other things as are incidental and ancillary to the attainment of the foregoing purposes and the exercise of the powers of FESBC.

Currently, FESBC is working with the Province to fully implement the transition to operating as a Crown agency during 2017/18. As a Crown agency, FESBC's purposes remain especially relevant to Government and will continue to guide its operating environment going forward. In particular, projects that support the Government's strategic priorities and leadership in achieving its climate change targets are priorities for the Board. As evidenced by the devastating 2017 fire season, climate change will continue to have a significant impact on wildfires in the future and, as such, support for fuel management treatments and FireSmart projects that help to mitigate its negative impact on B.C. communities will also remain priorities for the Board.

Eligible Applicants:

- Local Governments
- First Nation Governments
- Area based tenure holders, including TFLs, Community Forests, and Woodlots
- Business entities performing or providing forestry services on behalf of the Provincial Government and/or industry
- Forest licensees/forest tenure holders operating within a Timber Supply Area
- Conservation organizations
- Provincial Government agencies

Funding Categories:

- Fibre Recovery
- Forest Carbon
- Forest Rehabilitation
- Habitat Improvement
- Reducing Wildfire Risk

Criteria:

- Engagement with land manager
- Alignment with FESBC purposes
- Opportunities to combine FESBC funding with other funding sources
- Community/First Nation government support

- Value-for-money – projects that provide lower funding costs per area treated
- Previous experience delivering/completing successful FESBC funded projects
- Collaborative and partnered funding opportunities are established
- Revenue opportunity to RESBC for reinvestment in FESBC purposes
- Highest combined benefit to society
- Intake specific criteria
- Research projects will be considered if they align directly with the purposes of the Society and provide operationally relevant information to better carry out FESBC projects

Habitat Conservation Trust Foundation

Acronym	Intake Closing Date	Website
HCTF	Various per stream. Enhancement and Restoration Fund: November 2, 2018	https://hctf.ca/

Description:

The Habitat Conservation Trust Foundation is a non-profit charitable foundation acting as Trustee of the Habitat Conservation Trust. HCTF came into existence because its major contributors (hunters, anglers, trappers, and guide-outfitters) were willing to pay for conservation work above and beyond that expected by government for basic management of wildlife and fish resources.

HCTF's largest source of funding comes from a conservation surcharge on freshwater fishing, hunting, trapping and guide outfitting licences sold in BC. HCTF is a proposal-driven organization and we invite grant applications from anyone who has a good idea that benefits fish, wildlife and habitat in British Columbia.

Each year, we receive many more applications than can be funded, so we use a thorough review process to determine which projects will provide the greatest conservation benefits within the context of our Strategic Plan. We get results and value for money by carefully selecting projects with a high likelihood of providing demonstrable, measurable benefits to native species of fish and wildlife.

Since the inception of our work in 1981, the Foundation and its predecessors have invested over \$170 million in more than 2000 projects across BC.

Available Grants under HCTF:

Enhancement and Restoration Fund

Public Conservation Assistance Fund (PCAF) – *for more information, please see website*

GO Grants (Education for K-12) – *for more information, please see website*

Habitat Acquisition Grants – *for more information, please see website*

Land Stewardship Grants – *for more information, please see website*

Invasive Mussel Monitoring – *for more information, please see website*

Enhancement and Restoration Fund:

Eligible Applicants:

HCTF enhancement grants are available to anyone who has who has a good idea that benefits fish, wildlife and habitat in British Columbia. HCTF strongly encourages cost-shared proposals, and project leaders should explore the possibility of partnerships with other organizations.

Criteria:

- focus on freshwater wild fish, native wildlife species and their habitats

- have the potential to achieve a significant conservation outcome
- align with our purposes as laid out in the Wildlife Act

Land Based Investment Strategy

Acronym	Intake Closing Date	Website
LBIS (FFT)	Fall (annually)	https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/land-based-investment https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/land-based-investment/forests-for-tomorrow

Land Based Investment is a funding mechanism, primarily internal to government that supports and guides the investments in activities that manage, conserve, or protect British Columbia's natural resources. Ministry project managers typically contract out specific projects to the resource and environmental consulting community.

Investment Categories:

Presently, there are 18 different investment categories and the annual funding is split between them all, with the bulk of the funds allocated to the FFT Program and the Forest Health category. As noted in their 2015/16 to 2017/18 LBIS Report (available on the website) the investment categories include: *Forest Health, Current Reforestation, Timber Supply Mitigation, Tree Improvement, Inventory (VRI/Site Prod), Visual Quality, Fish Passage, Water, Range, Invasive species, Ecosystem Restoration, Recreation, Fire Management, Wildlife (Habitat), Wildlife (Species at Risk), Fish and Wildlife Inventory, Ecosystem Based Management, Land Based Investment.*

The largest program is Forests For Tomorrow (FFT) which depends on delivery agents (typically Forest Districts and forest tenure holders) who are encouraged to propose projects in line with the program objectives and selection criteria. The Forest For Tomorrow Program is divided into two distinct streams:

- Current reforestation (FFT)
 - Focussed on improving future timber supply and addressing risks to other forest values through the establishment of young forests on land that would otherwise remain un-productive.
 - Focussed on surveying, site prep and planting.
- Timber supply mitigation (FFT)
 - Focussed on mitigating impacts on mid-term timbers supply caused by catastrophic disturbance in the interior or constrained timber on the coast through stand treatments.
 - Activities focussed on spacing (thinning) and fertilization (FFT)

Rural Dividend Fund

Acronym	Intake Closing Date	Website
RDF	Various (last intake was July 2018)	https://www2.gov.bc.ca/gov/content/employment-business/economic-development/support-organizations-community-partners/rural-economic-development/rural-dividend

Description:

The BC Rural Dividend is providing \$25 million a year to assist rural communities with a population of 25,000 or less to reinvigorate and diversify their local economies. It was developed to recognize both the contribution rural communities have made to B.C.'s economy, and the unique challenges they face to diversify beyond natural resources.

The program will contribute to the strength and sustainability of small rural communities, making them more attractive places to live and work. The program is focused on supporting worthy projects that help rural communities navigate changes impacting their economies, such as attracting and retaining youth, using innovation to drive economic growth, and developing new and effective partnerships to support shared prosperity.

Eligible Applicants: Local Government, First Nations and Not-for-profit Organizations

Funding Categories and Criteria:

- Community Capacity Building
 - Projects that build the resources, capabilities and capacities of communities to deal with their key economic challenges and changes.
 - Projects that provide or improve community services to support economic diversity, expand market accessibility and enhance quality of life to attract investment.
- Workforce Development
 - Projects that offer training and skills development opportunities, especially for youth, so they stay in the community or return if they have left.
 - Projects that help ensure resilience in the local workforce by attracting, retaining and training workers.
- Community and Economic Development
 - Projects that help rural communities plan to build a foundation for economic growth or improve community vibrancy.
 - Projects that implement strategies to support economic growth.
- Business Sector Development
 - Projects that increase new business creation, business growth and adaptability in the community.
 - Projects that allow communities to retain existing businesses and encourage their expansion.

APPENDIX E: Definitions

The following definitions have been collaboratively developed and adopted by the Regional Integrated Investment Specialists.

Community wildfire protection plan (CWPP) - A CWPP is a document that defines the risk from wildfires in an identified area, identifies measures necessary to mitigate those risks and outlines a plan of action to implement the measures

Fibre Utilization- The use of timber or wood residue in the manufacturing of forest products or generation of energy

Fuel management - Fuel management is the modification of forest structure to reduce forest fuel accumulations available to burn in a wildfire. The main goal of fuel management is improving public safety through; the reduction of wildfire intensities, the reduction of potential for crown fires, improved wildfire suppression success, improved firefighter safety, and improved forest resilience to wildfires. This may include treatments such as thinning, spacing and pruning trees, and removal of needles and woody debris from the forest floor.

Integrated Investment Plan- Strategic guidance document for land-based investments within Ministry of Forests Lands and Natural Resource Operations and Rural Development Region.

Land Manager- Individuals with the delegated authority to administer legislation related to the management of provincial Crown land and its cultural and natural resources.

Primary Harvest—The harvest of trees that are considered merchantable.

Secondary Harvest—The removal of material that was (and sometimes still is) regarded as waste from primary harvest.

Wildfire - An unplanned, unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out. (*CIFFC Glossary 2003*)

Wildfire management - The activities concerned with the protection of people, property and forest areas from wildfire and the use of prescribed burning for the attainment of forest management and other land use objectives, all conducted in a manner that considers environmental, social and economic criteria. Note: Fire management represents both a land management philosophy and a land management activity. It involves the strategic integration of such factors as knowledge of fire regimes, probable fire effects, values-at-risk, level of forest protection required, cost of fire related activities, and prescribed fire technology into multiple-use planning, decision-making, and day-to-day activities to accomplish stated resource management objectives. Successful fire management depends on effective fire prevention, detection, and pre-suppression, having an adequate fire suppression capability, and consideration of fire ecology relationships.

Wildfire risk - Wildfire risk is a term that combines the probability of fire occurrence with the expected impacts from a fire. Although the impacts of fire can be positive, such as when considering the ecological effects or fuel reduction benefits of a wildfire, this term is generally used to suggest negative consequences of fire.

Wood Residue- Wood chips, slabs, edgings, sawdust, shavings and hog fuel. (*Forest Act*)