Diversity by Design: A multi-species approach to habitat restoration for species at risk on BC's South Coast



SER WC 2018 Restoration for Resilience : Ecological Restoration in the 21<sup>st</sup> Century Butterflies to Bison in Restoration Session February 14



#### SOUTH COAST CONSERVATION PROGRAM

Protecting and Restoring at Risk Species and Ecological Communities on BC's South Coast

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#### **Endangered times in BC:**

X

Birds

3

Fis

2

Species extinct or extirpated in British Columbia.

1

Not

vascila

Plants

Vasou

Plants



The SCCP: A multi-partner conservation program helping facilitate projects and activities to restore and protect species and ecological communities at risk on the South Coast of B.C.

- Established in 2005
- Multi-partner approach (senior agencies, local government, stewardship groups, academia, First Nations)
- Facilitates implementation of sound conservation and management tools









#### The new direction: multi-species & ecosystem-based



South Coast Stats: Extirpated 7 (3) | Threatened & Endangered 141 (32) | Special Concern 52 (23)

### **Diversity by Design: Big Picture Thinking**

On the South Coast, a holistic approach is an integral part of the recovery of species and ecological communities at risk

> Multi-Species Thinking

Single Species Thinking

Why a multi-species approach?

Ecosyste

Thinking

- Maximize project benefits
- Avoid unintentional conflicts
- Financially efficient

Shallow water wetlands	Lowland streams and riparian areas
Oregon Spotted Frog Red-legged Frog Western Toad	Coho Salmon* Salish Sucker Nooksack Dace Pacific Water Shrew Trowbridge's Shrew Red-legged Frog Western Toad
Mountain streams and riparian areas	Mature forests
Coastal Giant Salamander Coastal Tailed Frog	Olive-sided Flycatcher Pacific Water Shrew Red-legged Frog Western Toad Oregon Forestsnail Pacific Sideband
Intertidal and shallow sub-tidal	Grasslands – Old Field
Salmon sp.* Eelgrass* Great Blue Heron <i>, fannini</i> subspecies Peregrine Falcon Olympia Oyster	Barn Owl Short-eared Owl Great Blue Heron <i>, fannini</i> subspecies Townsend's Mole

\*Not species at risk but often a target of restoration



#### **Diversity By Design Toolkit**



WHY ARE FORESTS IMPORTANT TO US?

## A Complementary Resource









### **Target Audiences**

#### Who Should Use the Diversity By Design Toolkit?

•All types of restoration practitioners!

#### •Primary audiences:

- Stewardship organizations and community groups
- Park, environmental, and urban forestry departments
- Municipal planners and engineers
- Private landowners
- First Nations

#### •Secondary audiences:

- Developers
- Consultants





### **Project Planning Framework**



#### Ecosystem Classification Framework for the BC South Coast

Community Type	Ecosystem Types
Forests and Woodlands	Old Forest (OF) Mature Forest (MF) Young (Immature) Forest (YF) Woodland (WD)
Freshwater Ecosystems	Large River (RV) Lowland Stream/River (LS) Mountain Stream (MS) Riparian (RI) Wetland (WN) Lake, Pond, and Reservoir (FW) MODULE 1
Tidal and Marine Ecosystems	Estuarine (ES) Intertidal and Shallow sub-tidal (IT)
Other Natural Ecosystems	Herbaceous (HB) Sparsely Vegetated (SV) Alpine (AP)
Human-modified Ecosystems	Seasonally-flooded Agricultural Field (FS) Old Field (OF) Agricultural Field (AG) Urban/Disturbed (UR)

## 1. Pre-project Considerations

- Initial consultation seek expert advice (e.g., recovery team chairs)
- Choosing your site does it have longterm protection?
- Know your organizational capacity what can you take on?
- Partnerships who can we collaborate with and learn from?



## 2. Ecological Inventory

- Gather existing information CDC data, SARnet, critical habitat maps, air photos, etc.
- Make a list of potential species
- Conduct a field inventory
- Habitat suitability/capability mapping
- Understand the role of ecosystem processes
- Identifying multi-species
- restoration opportunities



# **Example - Using Historical Air Photos**

#### **Como Creek Watershed**



1948

1979

2017

# 3. Assessing Opportunities, Constraints, and Risks

- Is restoration best? Is "doing nothing" better?
- Understand the capacity of your site
- Avoid inter-species restoration conflicts
- Picking a reference site
- Conduct a risk assessment
- Consider cumulative effects



## 4. Project Planning and Consultation

- Do you have a plan? (goals and objectives, work plan, maps or design drawings, schedule, budget)
- Do you have the necessary permits and approvals?
- Do you have permission from the landowner?
- Do you need insurance?
- Do you need funding?
- Have you consulted with all of the stakeholders?
- Are there opportunities for public education and outreach?



### 5. Project Implementation

- Pre-construction monitoring collect preproject baseline data
- Implementation
  - Notify stakeholders that work is commencing
  - Begin environmental monitoring
  - Implement mitigation measures (e.g., erosion & sediment control)
  - Prepare the site



### 6. Monitoring and Adaptive Management

#### • What to monitor:

- Species at risk populations?
- Ecological processes (e.g., vegetation succession)?
- Flow and water quality?
- Photo-point monitoring?
- Monitoring plan = pre, during, and postconstruction
- Manage adaptively a good way to deal with uncertainty!



# **Some Guiding Principles**

- 1. Put protection over restoration
- 2. Take a long-term view
- 3. Design for diversity
- 4. Adopt a socio-ecological approach
- 5. Apply the best available knowledge
- 6. Set clear objectives
- 7. Apply adaptive management
- 8. Document your results

enhancement conservation mitigation restoration compensation recovery stewardship reclamation The South Coast supports an incredible level of biodiversity. BC is home to the largest number of species at risk in Canada. Neglecting to consider a multi-species, ecosystem-based approach to mitigation and restoring habitat will only result in costly projects likely to miss the mark when it comes to species at risk recovery.

## Thank You ! Questions?





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