

# **Ecosystem Classification in BC: Coastal Douglas-fir Ecosystems**



Description  
Conservation Status  
Stewardship

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# Ecosystem Classification in BC

- Several systems exist
- The BC Conservation Data Centre (CDC) assigns conservation status ranks to ecosystems given the label “**ecological communities**”
- Ecological communities are “units” of conservation
- Corresponds to international classification system (Natureserve)
- In Canada, no national equivalent (species-centric)

# STATUS: BC Red and Blue lists: Ecological Communities and Species

Red-listed: Extirpated,  
Endangered, or Threatened

Blue-listed: Special Concern

## Rank Factors:

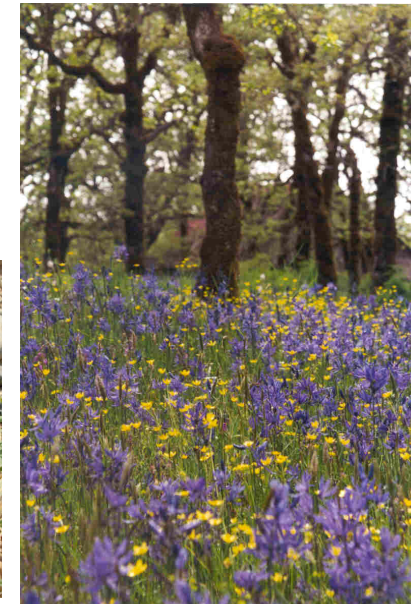
- range extent and area of occupancy
- short- and long-term trends
- threats
- intrinsic vulnerability
- environmental specificity



Min. of Environment  
yellow sand verbena



Credit: J. Heron  
Taylor's checkerspot



Garry oak ecosystems  
Sensitive Ecosystem Inventory



# Why Maintain Ecosystems?



- Provide the goods and services that benefit society
- Good 'coarse filter' approach to conserve biodiversity

# Biodiversity Conservation

- Canada and BC are parties to national and international agreements to conserve biodiversity
  - United Nations Biodiversity Convention (<http://www.cbd.int/> )
  - Canadian Biodiversity Strategy (<http://www.biodivcanada.ca/default.asp?lang=en&n=560ED58E-1>)



# How are ecological communities mapped?

- **Terrestrial Ecosystem Mapping (TEM)**
  - combines air photo interpretation and field sampling
  - Produces maps at different scales and accuracies
  - Complicated and difficult to interpret
  - Useful for creating simpler maps
    - Sensitive Ecosystem Inventory (SEI) maps
    - Element Occurrence maps

# What do Ecological Communities look like?

## **Matrix** communities

- Extensive contiguous cover / wide tolerances





# What do Ecological Communities look like?

## **Large Patch** communities

- Cover large areas, interrupted cover, site influenced

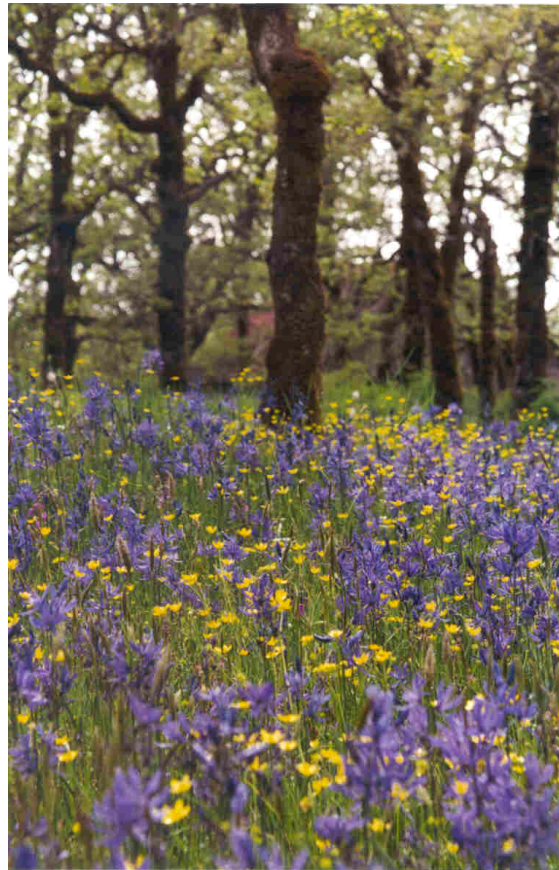




# What do Ecological Communities look like?

## **Small Patch** communities

- Small, discrete areas, narrow tolerances



# What do Ecological Communities look like?

## **Linear** communities

- Often terrestrial / aquatic gradients (riparian)





# Current Management of Coastal Ecological Communities

- **Red** and **blue** lists provide **no legal protection**
- Forest and Range Practices Act (FRPA)
  - IWMS (85 species, 15 ECs)
- Land Use Plans – some provide legal protection
  - Haida Gwaii
  - Clayoquot Sound
  - ‘South Central’ and ‘Central and North’ Coast

# Some tools for managing Ecological Communities

- **Descriptions**
  - BC Conservation Data Centre <http://www.env.gov.bc.ca/cdc/>
  - Conservation Framework <http://www.env.gov.bc.ca/conservationframework/>
  - SCCP website <http://www.sccp.ca/>
- **Element Occurrence maps**
  - CDC BC Species and Ecosystems Explorer
- **Status reports**
  - Provincially led (no national equivalent)
  - One prepared and one in DRAFT
- **Recovery Plans (multi-species)**
  - Garry Oak Ecosystems
  - Coastal Sand Dune Ecosystems



**Biogeoclimatic Zones of British Columbia**

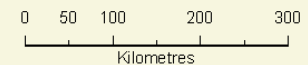
- Alpine Tundra
- Spruce -- Willow -- Birch
- Boreal White and Black Spruce
- Sub-Boreal Pine -- Spruce
- Sub-Boreal Spruce
- Mountain Hemlock
- Engelmann Spruce -- Subalpine Fir
- Montane Spruce
- Bunchgrass
- Ponderosa Pine
- Interior Douglas-fir
- Coastal Douglas-fir
- Interior Cedar -- Hemlock
- Coastal Western Hemlock

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For further information contact the Research Branch:  
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Victoria, BC V8W 9C2

A more detailed version of this map at a 1:2 000 000 scale can be obtained from:  
<ftp://for.gov.bc.ca/HRE/external/lpublish/becmaps/papermaps>

**BRITISH COLUMBIA** Ministry of Forests and Range  
Forest Science Program



# Coastal Biogeoclimatic Zones

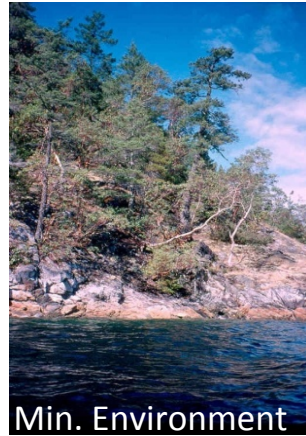


## Coastal Douglas-fir Zone:

- Ocean temperatures modify air temperatures
- Influence of surrounding mountain ranges
- Smallest zone in BC
- Very minor occurrence in San Juan Islands, Washington



# Ecosystem groups of the CDF



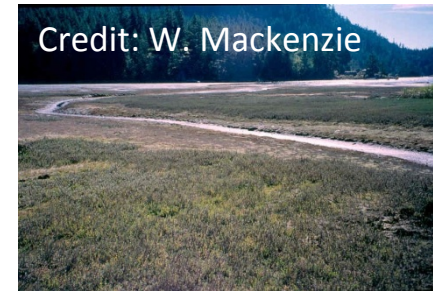
## Forests & Woodlands (90%)



Min. Environment

## Herbaceous

## Wetlands & Riparian



# Threats to CDF: Ecosystems & Species

Potentially Recoverable Land Use:  
Forest Harvesting, some Agriculture,  
Recreation, Hydrological (human  
water use).



Irreversible Land Conversion:  
Urban, Residential rural,  
Industrial, Mining



- Contains the highest number of species at risk in BC
- Half is permanently converted
- Many ecosystems and species are found only in the CDF
- Vast majority of CDF ecosystems are at-risk (many globally)

# How do we conserve biodiversity?

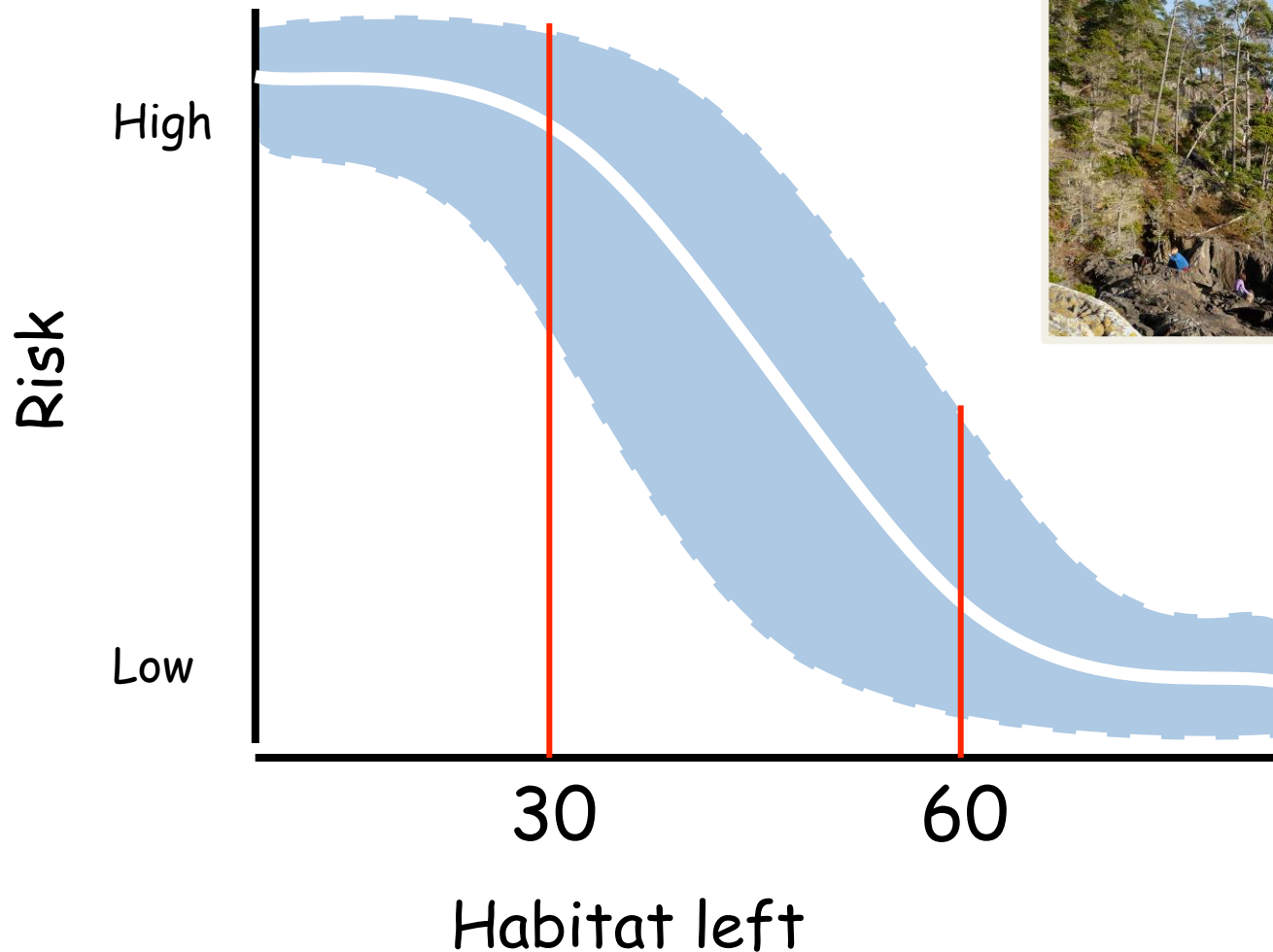
- Start with a broad goal:  
    Maintain Ecological Integrity
  - Recognize uncertainty—choose acceptable level of risk
  - Social choice— **based on values not science**
- Move to specific objectives:  
    e.g.) Ecosystem representation
  - Retain ***sufficient area*** of *each natural ecosystem* to maintain ecologically viable populations of organisms across their ranges and to maintain ecosystem function

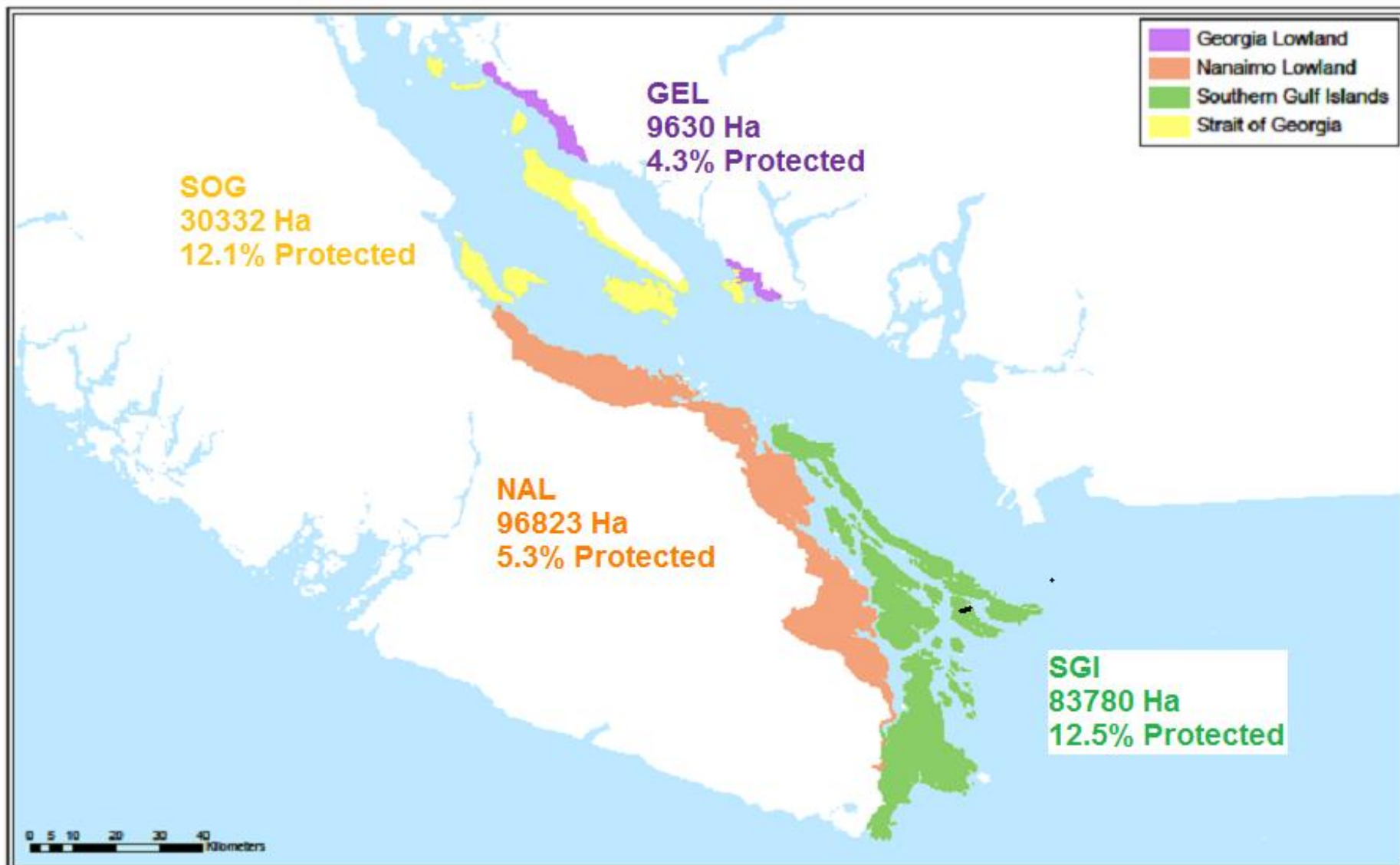


# Ecosystem Representation: How Much of Each?

- Science review suggests that
  - Maintaining  $> 60\%$  of each ecosystem = low risk to ecological integrity
  - $< 60\%$ , uncertainty about risk increases
  - Maintaining  $< 30\%$  likely poses high risk to ecological integrity
- 60% is consistent with modeling studies, studies of individual organisms and community studies

# Risk to ecological integrity

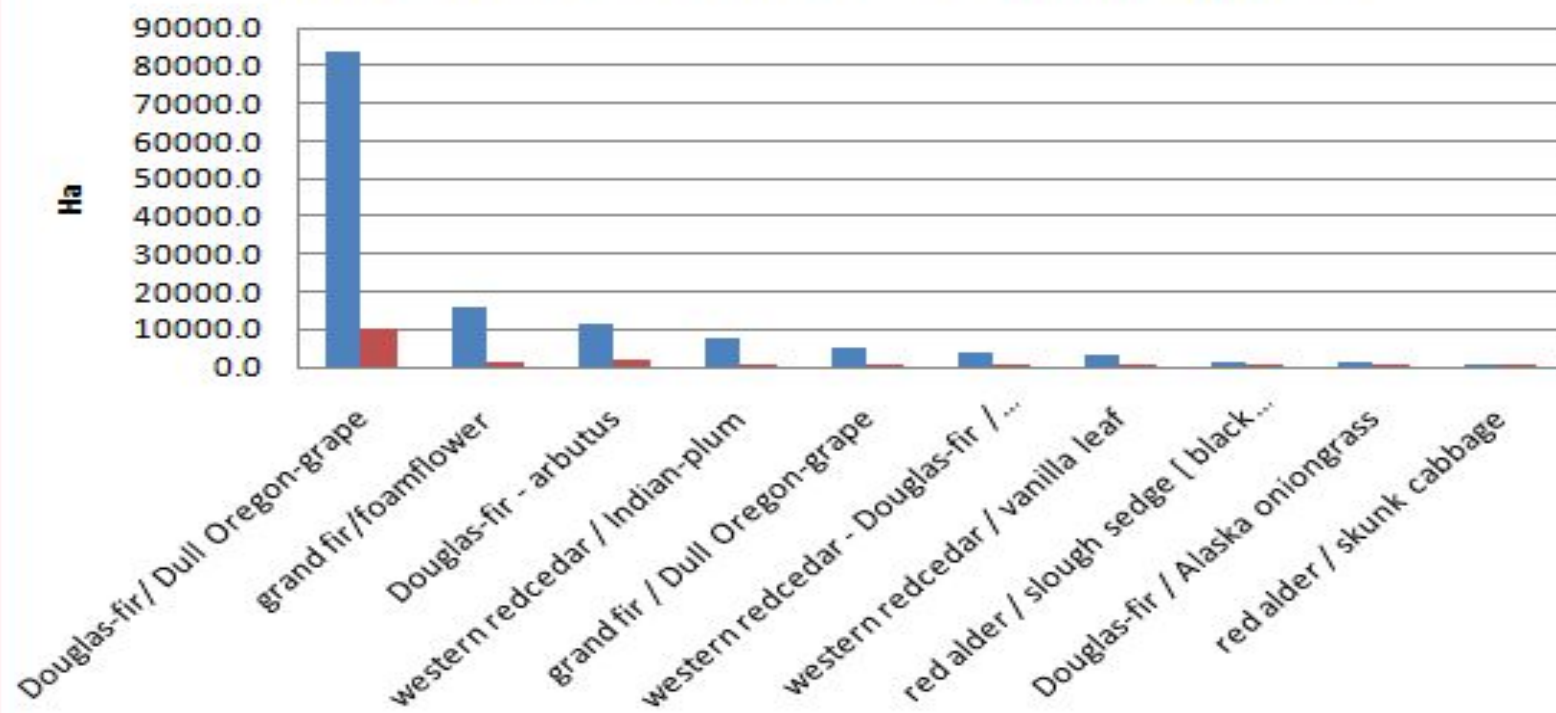






Ecological Community	Total Ha	Protected Ha	% Protected
Douglas-fir/ Dull Oregon-grape	83473.0	10314.1	12.4%
grand fir/foamflower	15927.8	1364.8	8.6%
Douglas-fir - arbutus	11635.2	2083.2	17.9%
western redcedar / Indian-plum	7861.8	719.6	9.2%
grand fir / Dull Oregon-grape	5136.9	738.9	14.4%
western redcedar - Douglas-fir / Oregon beaked-moss	3941.1	306.3	7.8%
western redcedar / vanilla leaf	3108.7	227.5	7.3%
red alder / slough sedge [ black cottonwood ]	1527.2	234.7	15.4%
Douglas-fir / Alaska oniongrass	1463.2	264.2	18.1%
red alder / skunk cabbage	942.9	50.8	5.4%

### CDF Forested Ecological Communities







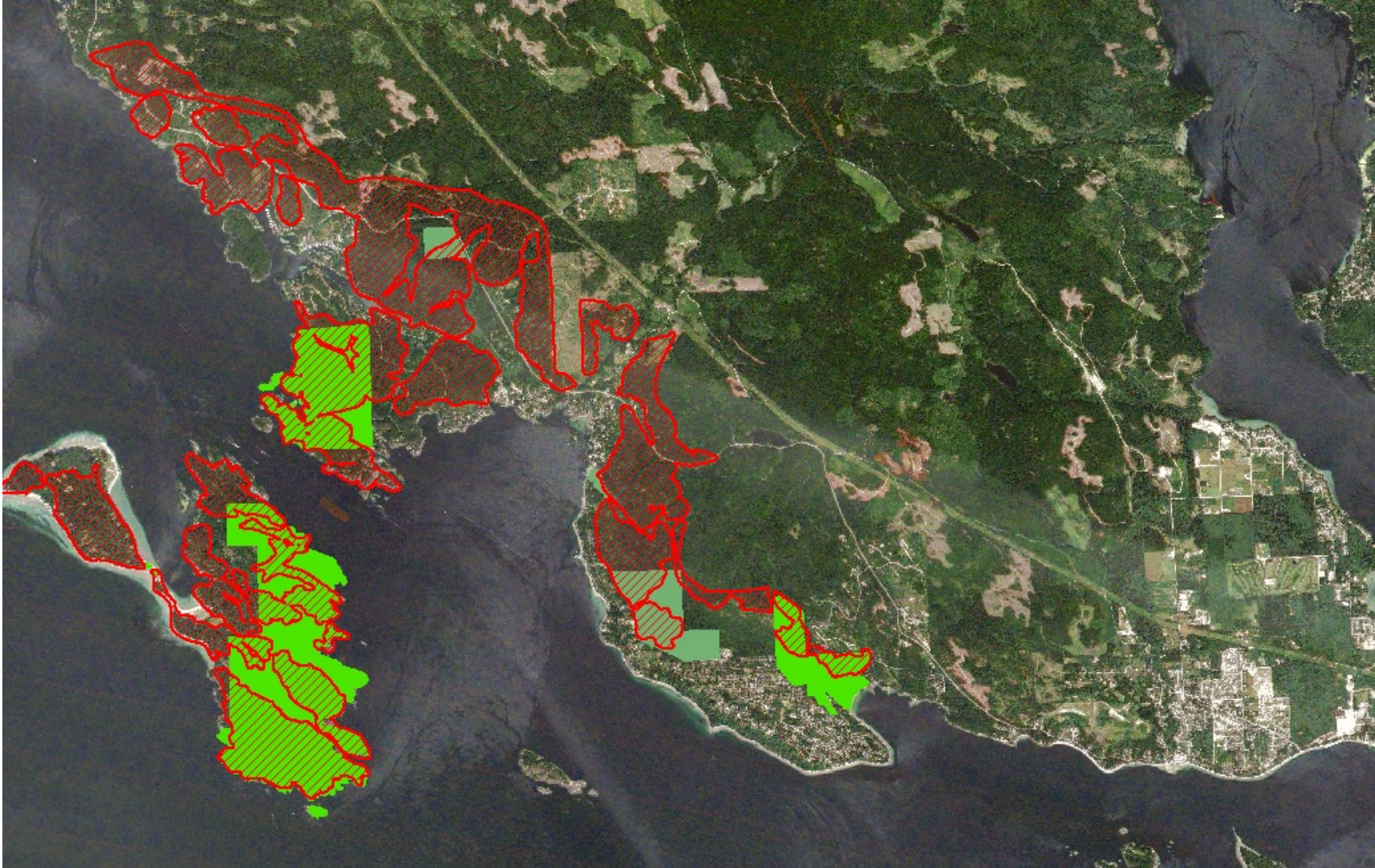




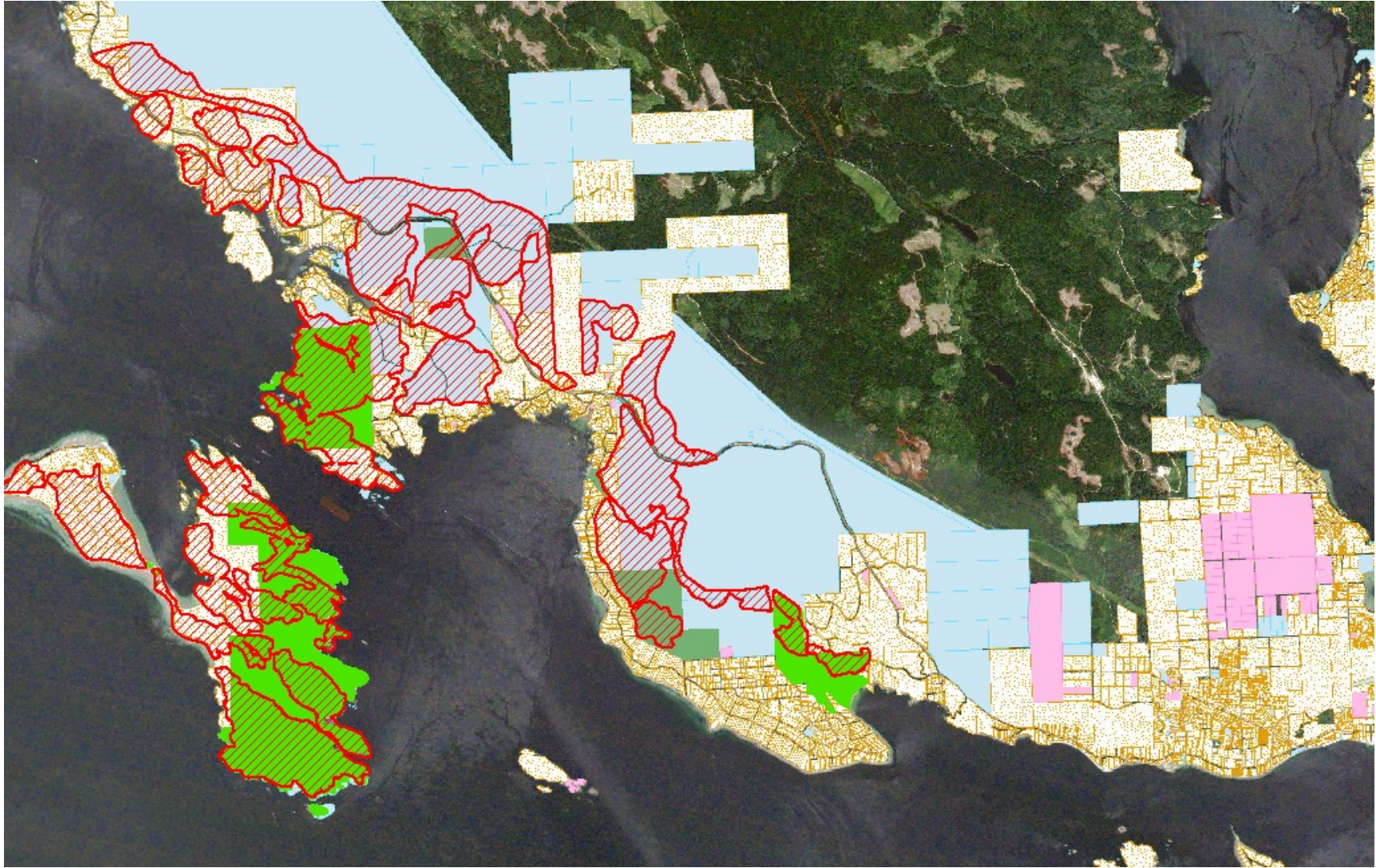














# Summary: CDF

- Smallest, rarest, globally unique zone
- Highest number of species at risk
- Permanently converted area ~ half
- Privately owned area ~ 80%
- Natural area highly threatened and fragmented
- Two decades of conservation action:
  - increasing interest in stewardship
  - ~ 8% protected \*

# Challenges to Action

- Limited opportunities on Crown Lands due to existing obligations
- 80% Private Land = Private Land Stewardship is key
- Ecosystems as units of conservation
- Multi-stakeholder and limited resources = need for a strategic / coordinated approach
- Introducing the CDFCP

# The Coastal Douglas-fir and Associated Ecosystems Conservation Partnership



[www.cdfcp.ca](http://www.cdfcp.ca)



An aerial photograph of a coastal area, likely in the Pacific Northwest, showing a mix of green forested land, brown agricultural fields, and a large body of water on the right. A large, irregular area is outlined in red, covering much of the central and right portions of the image. A smaller, more complex area is outlined in blue, primarily along the coastline and around some inland water features. The text is overlaid on the map.

# Thanks!

Carmen Cadrin – CDC ecologist

Dr. Karen Price

Laurie Kremsater