Mapping Solutions:
Setting the Context

Framework for Nature-based Solutions in South-west BC

Photo by Tom Whitford – Brown Property Preservation Society

CDFCP

UBC Botanical Garden

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NATURE TRUST BRITISH COLUMBIA

Problem Statement

1. BC's Georgia Basin ecosystems and the important services they provide are **under mounting pressure** from development, timber harvesting, and **climate change.**
2. Land base governed by a **complex suite** of federal, provincial and municipal policies, bylaws, and regulations.
3. Lowland & Vancouver I. areas are **mostly private land** (PMFL)
4. Local Governments, First Nations and ENGOS need **improved coordination**, policy and **science-based decision support** to:
   - Overcome the **barriers to conserving biodiversity** and natural assets.
   - Undertake and incentivize **nature-based climate change adaptation**

Study Area

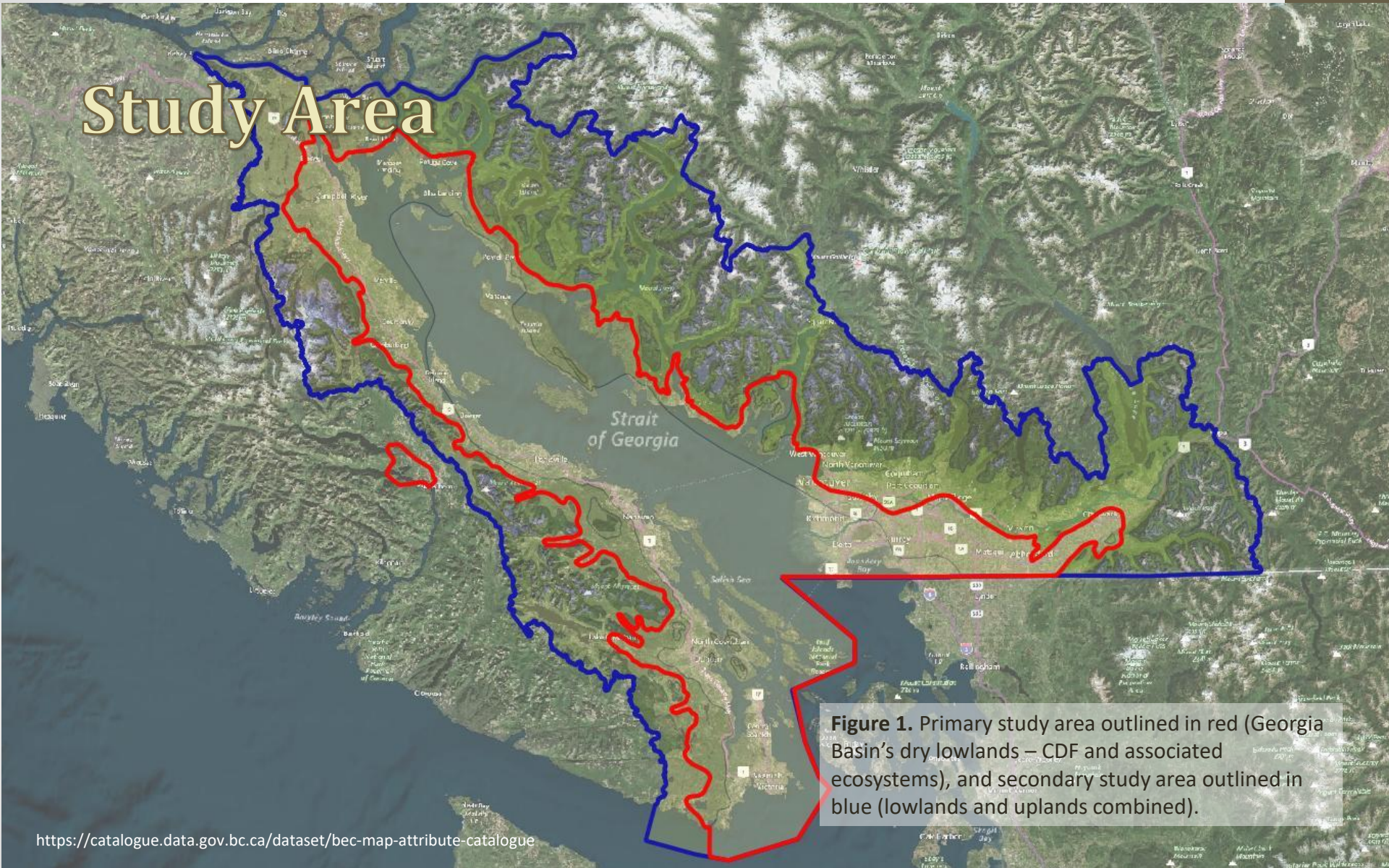


Figure 1. Primary study area outlined in red (Georgia Basin's dry lowlands – CDF and associated ecosystems), and secondary study area outlined in blue (lowlands and uplands combined).

https://catalogue.data.gov.bc.ca/dataset/bec-map-attribute-catalogue

Local Government & First Nations

Figure 2. Local Government boundaries and First Nations Reserves

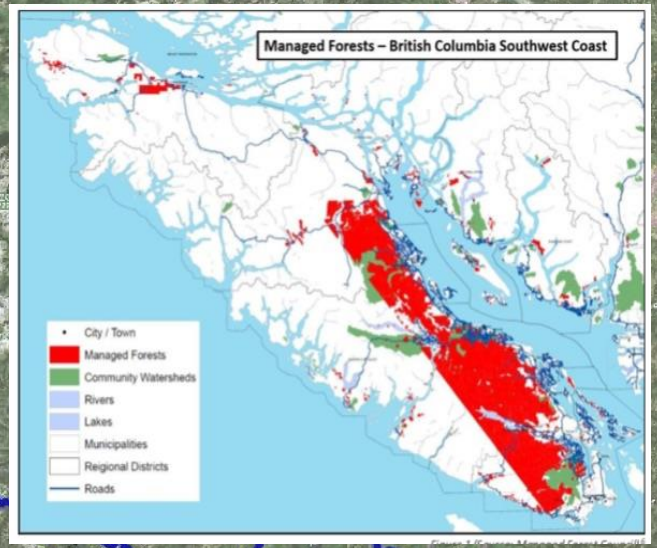
https://catalogue.data.gov.bc.ca/dataset/legally-defined-administrative-areas-of-bc-boundary-locations

Private Land

Figure 3. Private land parcels (in brown) and municipal land (in yellow)

https://catalogue.data.gov.bc.ca/dataset/parcelmap-bc-parcel-fabric

Private Land



Strait of Georgia

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https://catalogue.data.gov.bc.ca/dataset/parcelmap-bc-parcel-fabric

Community Watersheds & Salmon

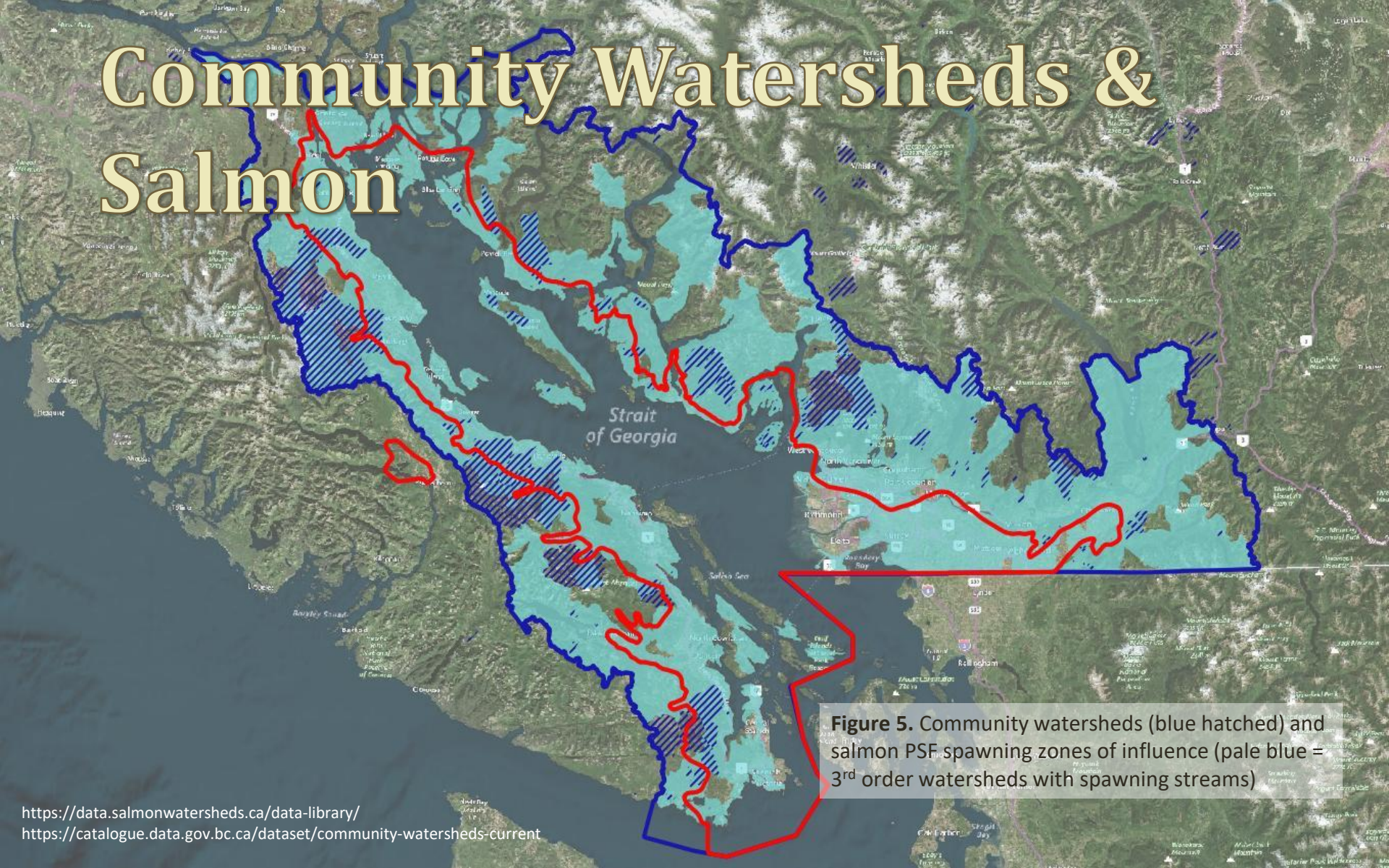

Figure 5. Community watersheds (blue hatched) and salmon PSF spawning zones of influence (pale blue = 3rd order watersheds with spawning streams)

https://data.salmonwatersheds.ca/data-library/
https://catalogue.data.gov.bc.ca/dataset/community-watersheds-current

Partnership

- **Partnership between:**
  - **Coastal Douglas-fir Conservation Partnership's (CDFCP)** *Regional Framework for Nature Based Solutions in Southwest BC*
  - **UBC Botanical Gardens'** Sustainable Communities Field School's *Biodiversity Atlas* project.
  - Consultants: Kelly Chapman & Tamsin Baker
  - *All those who have participated in interviews and workshops* ***(you!)***
  - ***Open to further collaborations***

Project Objectives

- **Align efforts** of various groups and agencies working in the Georgia Basin area:
  - Identifying preferred set of existing **spatial layers** for planning
  - Pooling resources to **improve, update or amalgamate** existing spatial layers
  - Developing new **region-wide spatial layers** (land cover change, forest cover & structure, connectivity, carbon, topography)
  - Identifying best practices for mapping **standards and application**
  - Assembling and developing supporting **policy and guidance**
  - Assembling into a user friendly interface: **Biodiversity Atlas**
    - Will include **guidance** on how to use the data to guide policy development

Preferred Spatial Layers: Themes

- **Land cover & change**
- **Biodiversity**
  - Ecosystem mapping (SEI, TEM, VRI)
  - Ecological connectivity & climate shifts (region-wide)
  - Species & ecological communities at risk (CDC element occurrence mapping, CDC species range maps)
- **Carbon storage** (above and below ground)
- **Watershed resilience** (wetlands, water courses, riparian areas, fish, groundwater, unstable terrain, karst, flood plains)
- **Wildfire resilience** (WUI mapping, fuels mapping)

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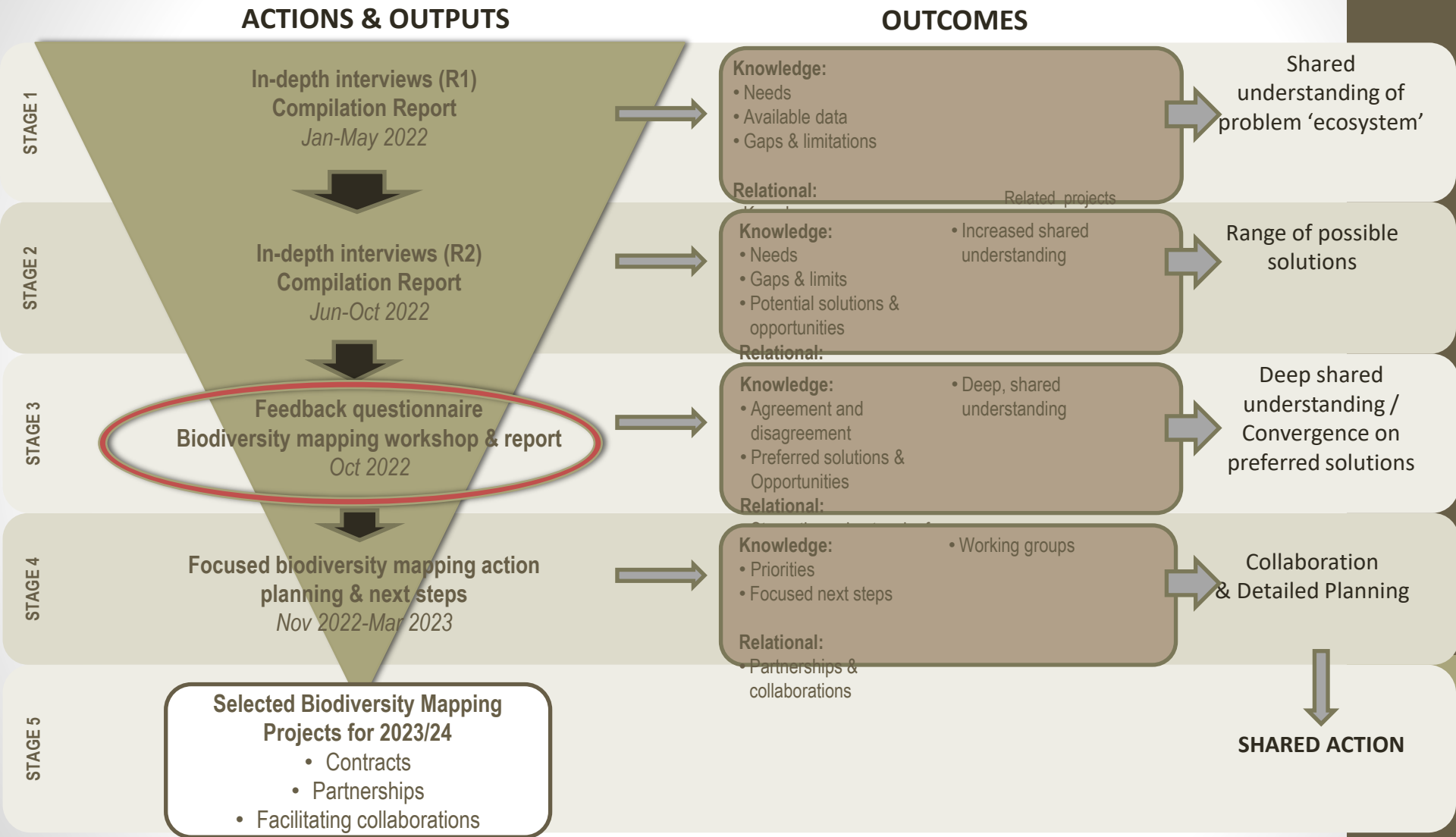
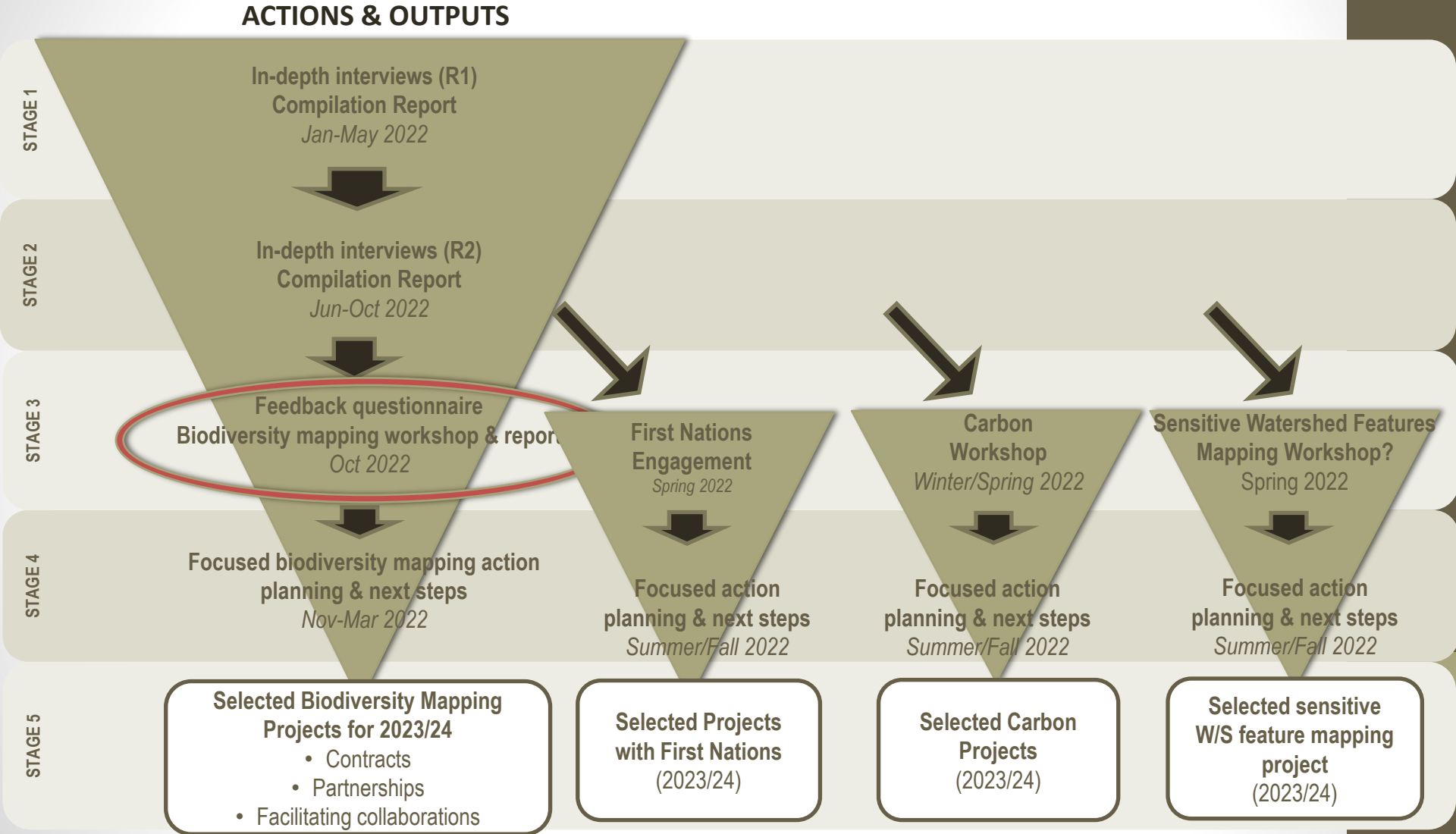
Emergent & Convergent Approach



Additional Projects



What We've Heard So Far: *Challenges*

- **Derived from in-depth Interviews with:** (January – September 2022)
- Local Government
- First Nations
- Provincial Government
- Federal Government
- ENGOS
- Scientists

Challenges: General

1. **Updating mapping** is challenging and expensive
2. **Inconsistent** resolution, vintage, accuracy and methodology.
3. **Resolution** often too coarse for local (1:5,000 min).
4. Can't **capture everything** (flagging tool: ground verification always needed)
5. Ineffective without persuasive and credible **supporting information and policy.**
6. Lack of **capacity**: what data layers are important, where to access them, and how to use them
7. Lack of consistency in **standards, guidance and best practice** (mapping and its application)
8. Not tracking **cumulative impacts**

Challenges: Ecosystem Mapping

1. **Gaps** in coverage
2. **SEI** favoured by local government
3. Often **out of date**: *Old and mature forest not captured*
4. Ecosystem conversion **not being tracked**
5. **Small ecosystem** features not captured
6. TEM is **difficult to understand** and use. (misunderstood, misrepresented, under used)
7. **Optimization tools:** when & how to use, keeping up to date
8. Lack of linkage to **marine** ecosystems.

Terrestrial Ecosystem Mapping

https://catalogue.data.gov.bc.ca/dataset/terrestrial-ecosystem-mapping-tem-project-boundaries

Sensitive Ecosystem Inventories

https://catalogue.data.gov.bc.ca/dataset/sensitive-ecosystems-inventory-sei-project-boundaries

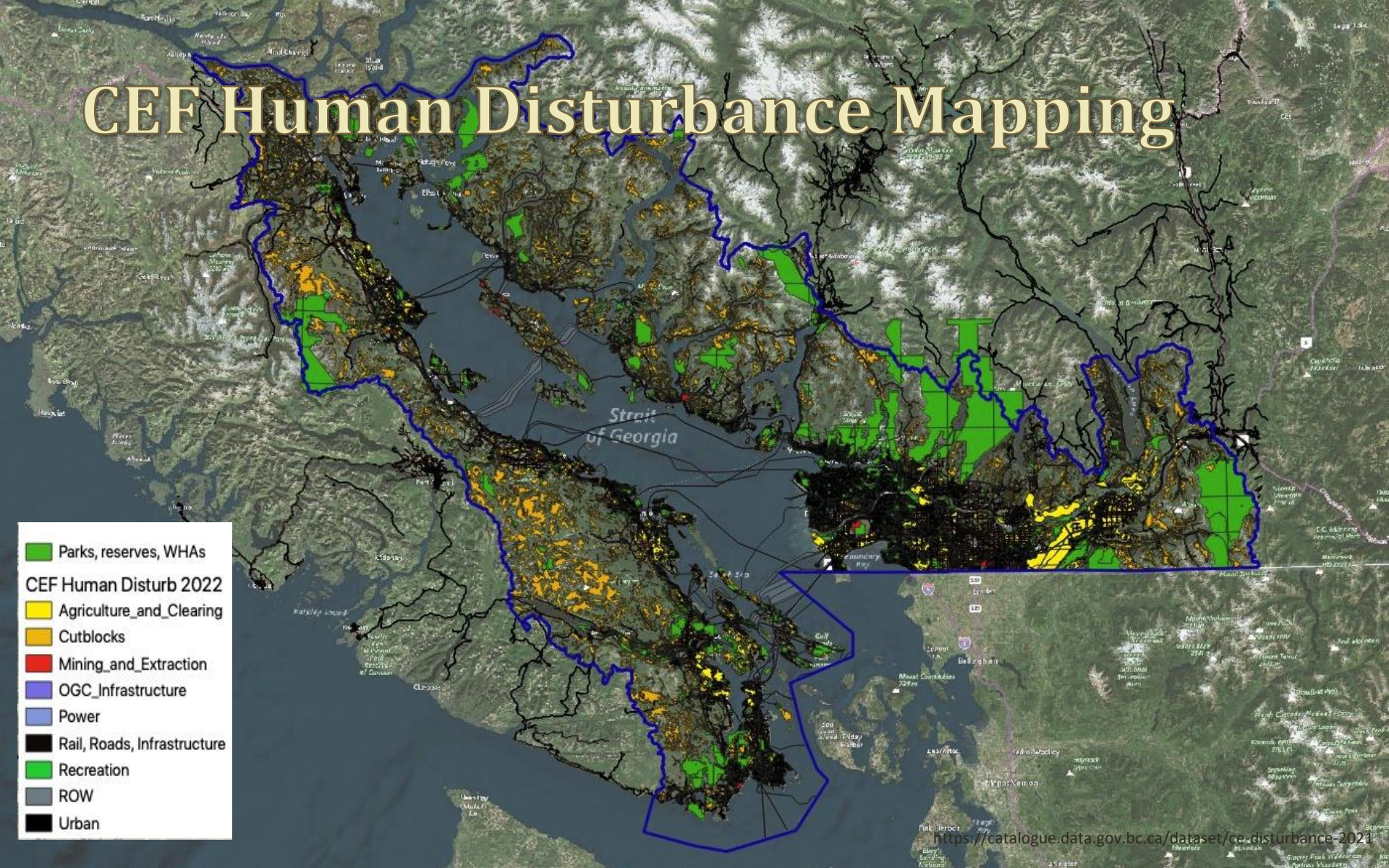
Challenges: Ecological Connectivity

1. Lack of **region-wide** connectivity mapping.
2. Corridor & connectivity mapping impaired by **lack of coordination**
3. Lack of mapping and models showing **climate shifts.**

Canopy Height (lidar & Landsat)

https://glad.earthengine.app/view/global-forest-canopy-height-2019

CEF Human Disturbance Mapping

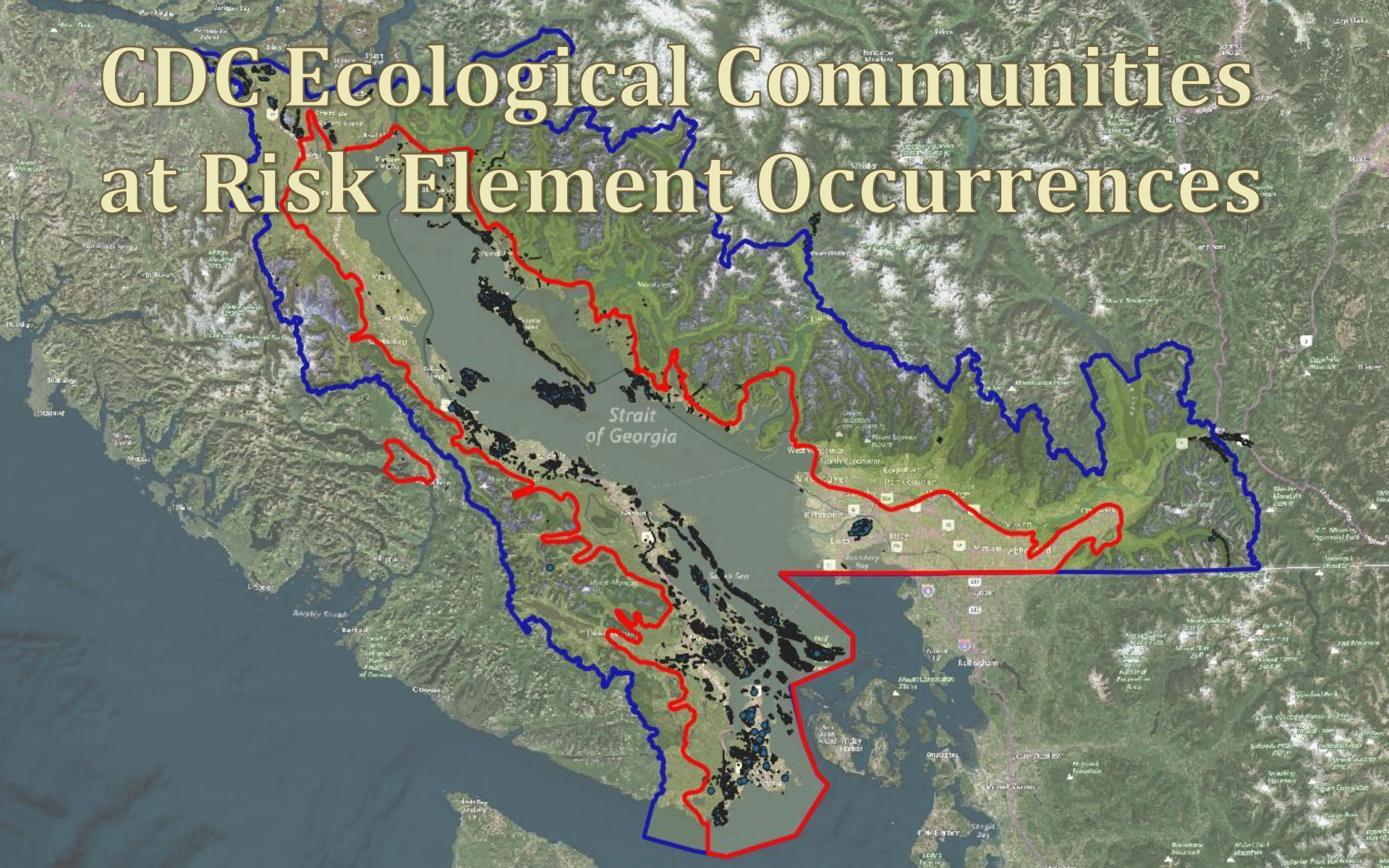


https://catalogue.data.gov.bc.ca/dataset/ce-disturbance-2021

Challenges: Species & Ecosystems at Risk (SEAR)

- CDC SEAR element occurrence mapping **biased** / incomplete
- Lack of predictive/habitat mapping (important habitats **not captured**)
- No clear link between ecosystems at risk and TEM site series
- **Site/ground level** mapping: at risk ecosystems often not captured by QEPs
- Reporting & submitting **observations** not easy or mandatory; capacity issues
- **Culturally significant ecosystems:**
  - Not formally flagged
  - Extent has shrunk with halt of indigenous management
  - Mapping Garry Oak patches difficult due to forest infilling.
  - Data is lacking; strict protocols for consent and confidentiality required

CDC Ecological Communities at Risk Element Occurrences



CDC Species at Risk Element Occurrences

iNaturalist Threatened Species

Objectives for Today

- **Summary** of project results to date ✓
- **Share and learn** about other mapping projects
- **Brainstorm** collectively on ideas for future direction, shared & individual action.
- **Relationship building,** meet other people who are doing the work.
- Identify **experts** to work together on resolving the gaps or problems
- Define tangible **next steps** towards a biodiversity atlas (tiny tasks for tiny teams – *working groups*)