Wetland Conservation and Resilience

Ducks Unlimited Canada
Conserving Canada's Wetlands

Dan Buffett
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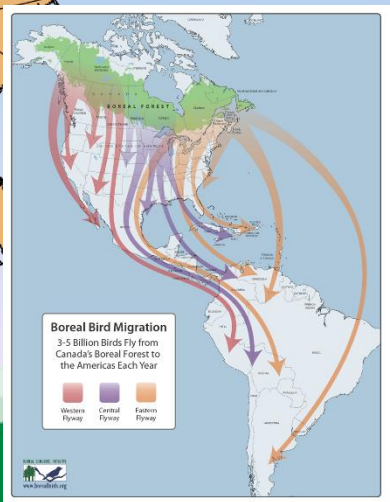
Pacific Flyway

Importance = FOOD

- Migrating and wintering
- 1,000,000 wintering

BC Coast

- Rugged & Steep sided
- Pockets of >440 estuaries



Migratory Flyways

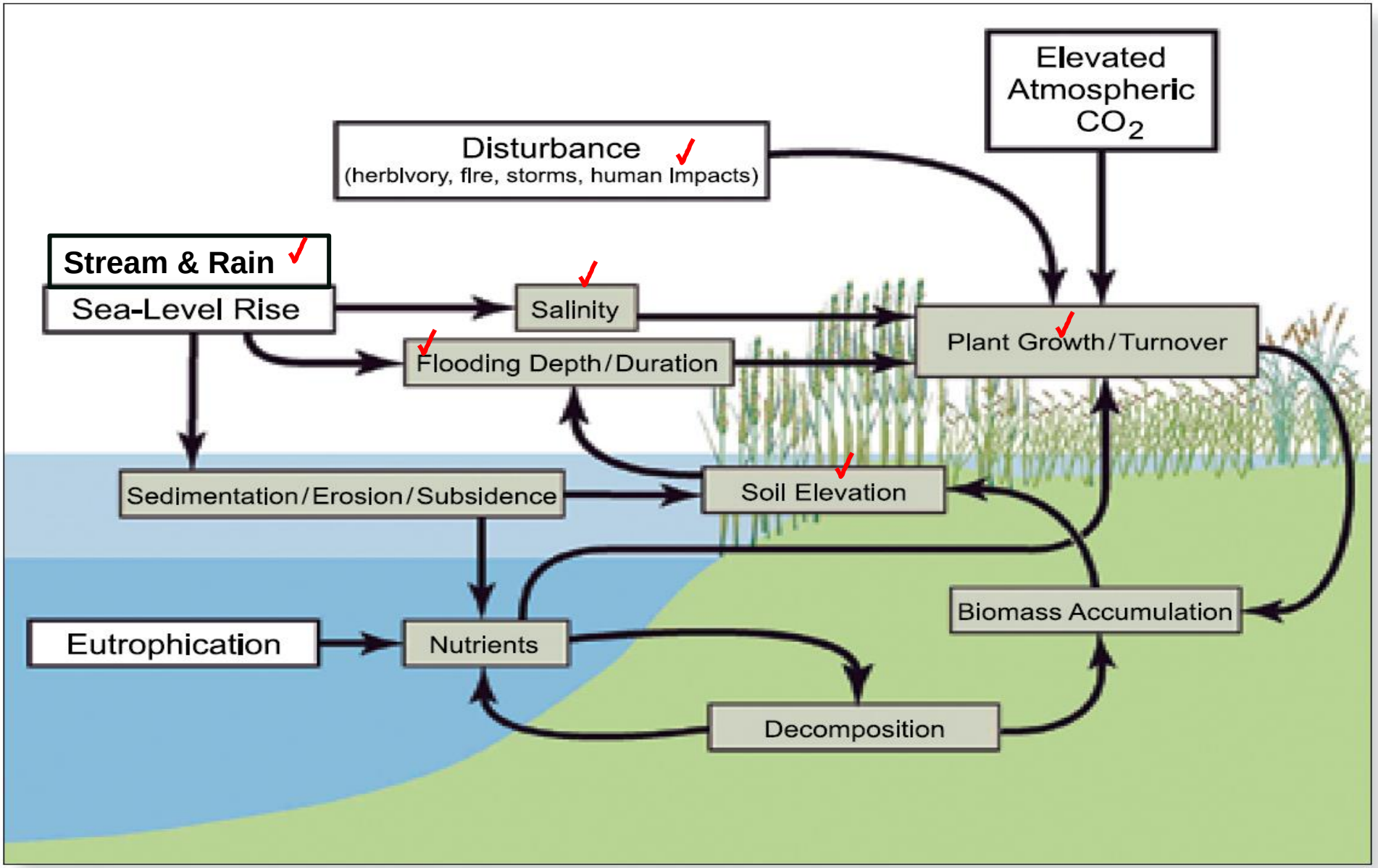
Diversity Foods

- Wetlands: tidal, freshwater
- Agriculture

Diversity Wildlife

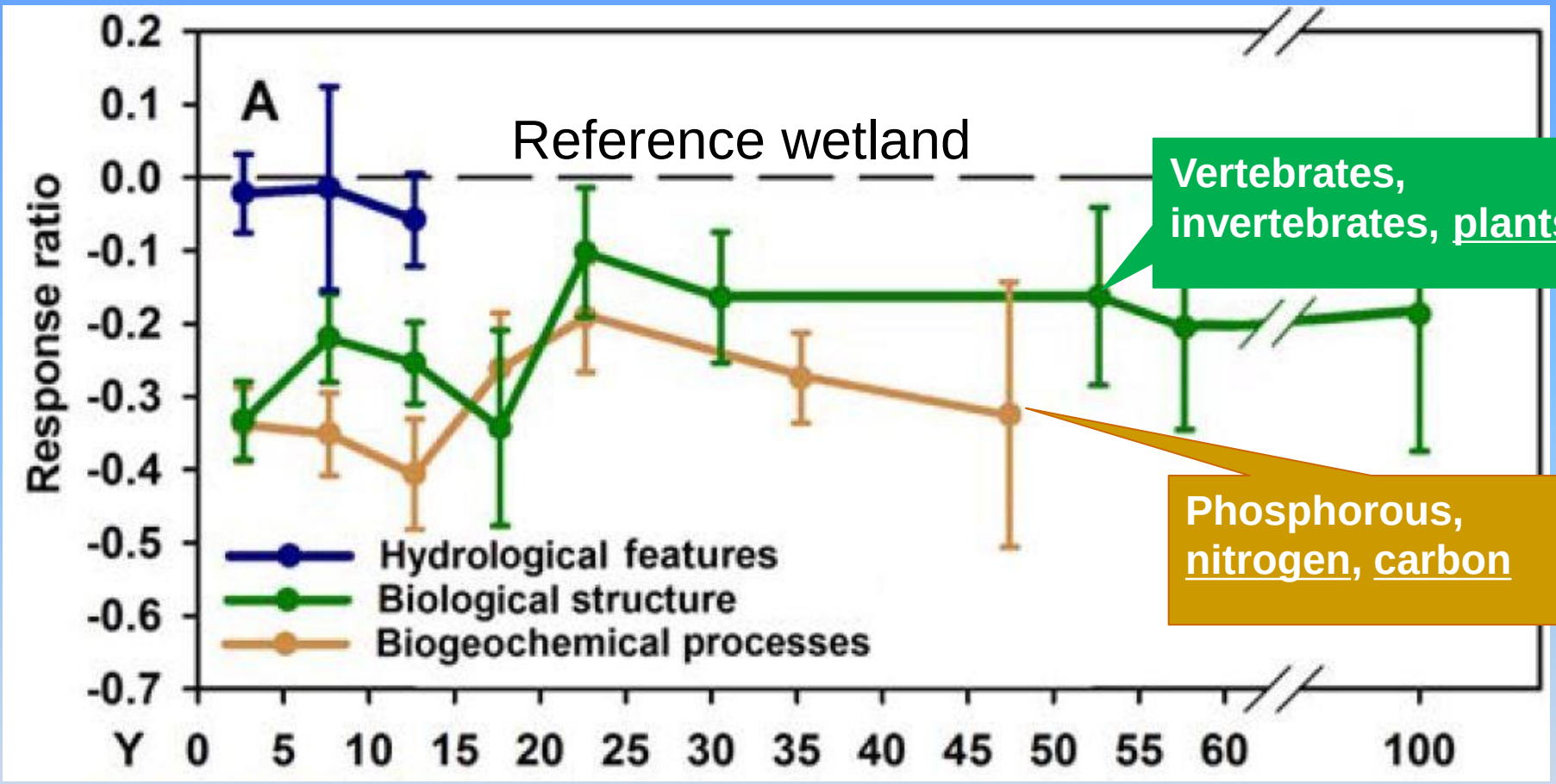
- Waterfowl: sea & dabbling ducks, geese, swans
- Fish: salmon, forage fish

East Coast Van Island Importance



Source: Phillips, S.W., ed., 2007, Synthesis of U.S. Geological Survey science for the Chesapeake Bay ecosystem and implications for environmental management: U.S. Geological Survey Circular 1316, 63 p.

Wetlands – dynamic & complex

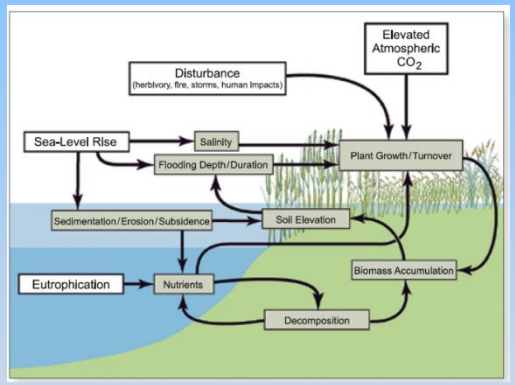


Moreno-Mateos et al. 2012. Structural and Functional Loss in Restored Wetland Ecosystems. Plos Biology

Restored and created wetland responses

List of Options (Actions)

1. Modify Structure e.g. armour, berm/dike, dock,
2. Modify Substrate e.g. beach nourishment
3. Modify Topography e.g. excavate, fill
4. Channel Rehabilitation or Creation
5. Contaminant Removal and Remediation
6. Hydraulic modification
7. Invasive Species Control
8. Wood Placement
9. Physical Exclusion
10. Pollution Control
11. Species/Habitat Enhancement e.g. features, re-veg



Adapted from: Clancy et al. 2009. Management Measures for Protecting and restoring the Puget Sound Nearshore. Washington Department fish and Wildlife.

Process-Structure-Function then link to Actions

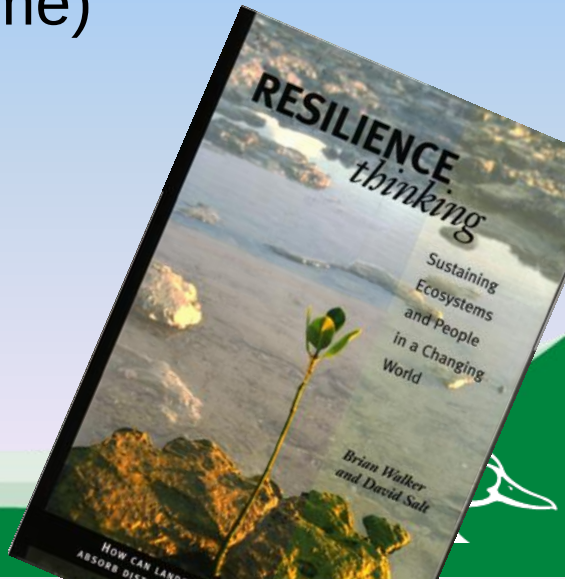
Resilience: The capacity for a system to absorb disturbance and retain the same function, structure and feedbacks and therefore won't change to a different system regime.

– Counter to optimization
  - Simplification, remove redundancies

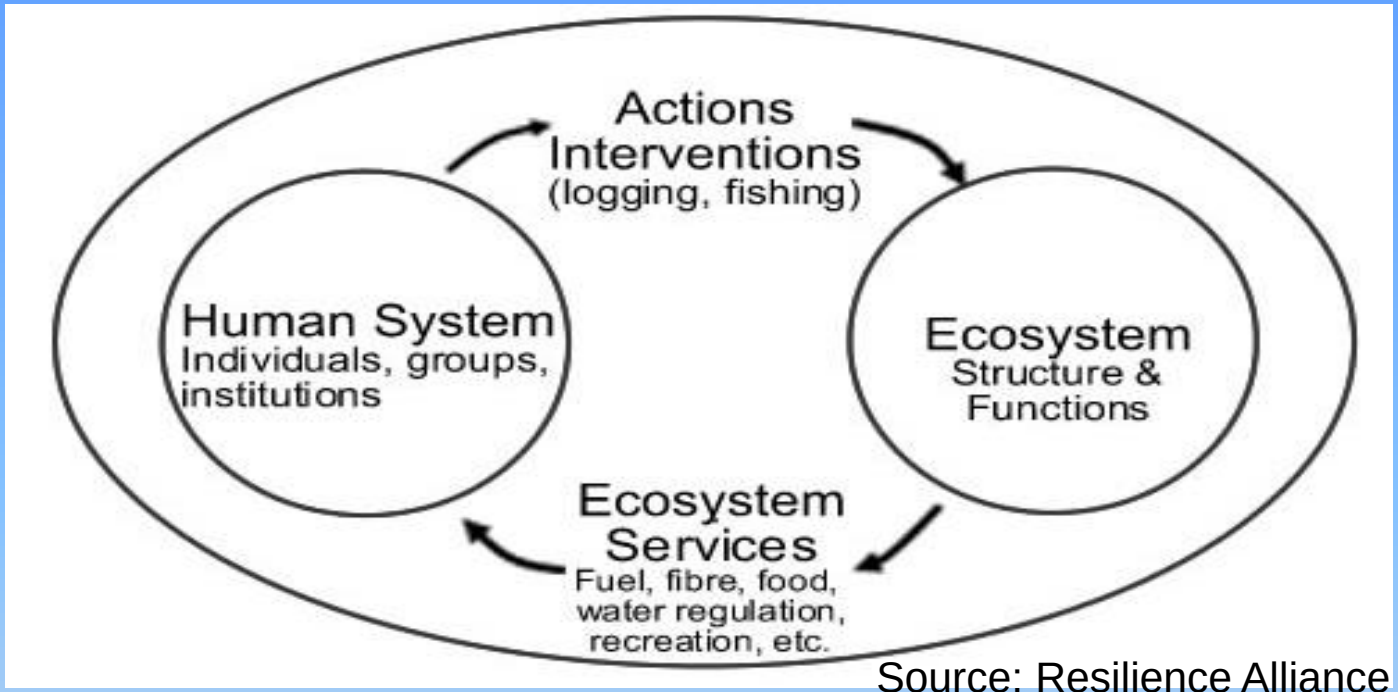
Main components:

– Social-ecological system
– Adaptive cycles (scales – space & time)
– Thresholds

Resilience Thinking (2006) – Brian Walker & David Salt



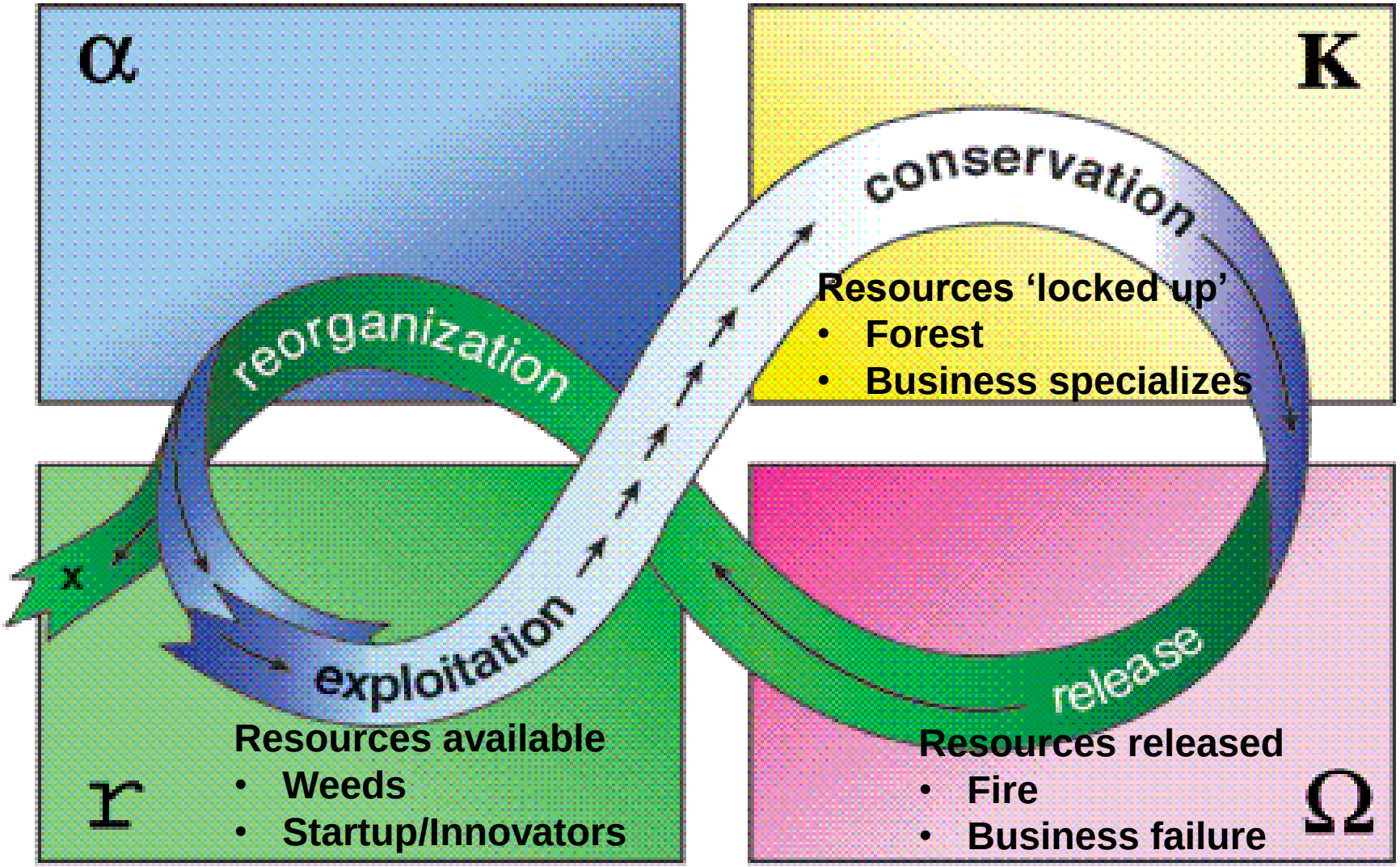
Resilience



Source: Resilience Alliance

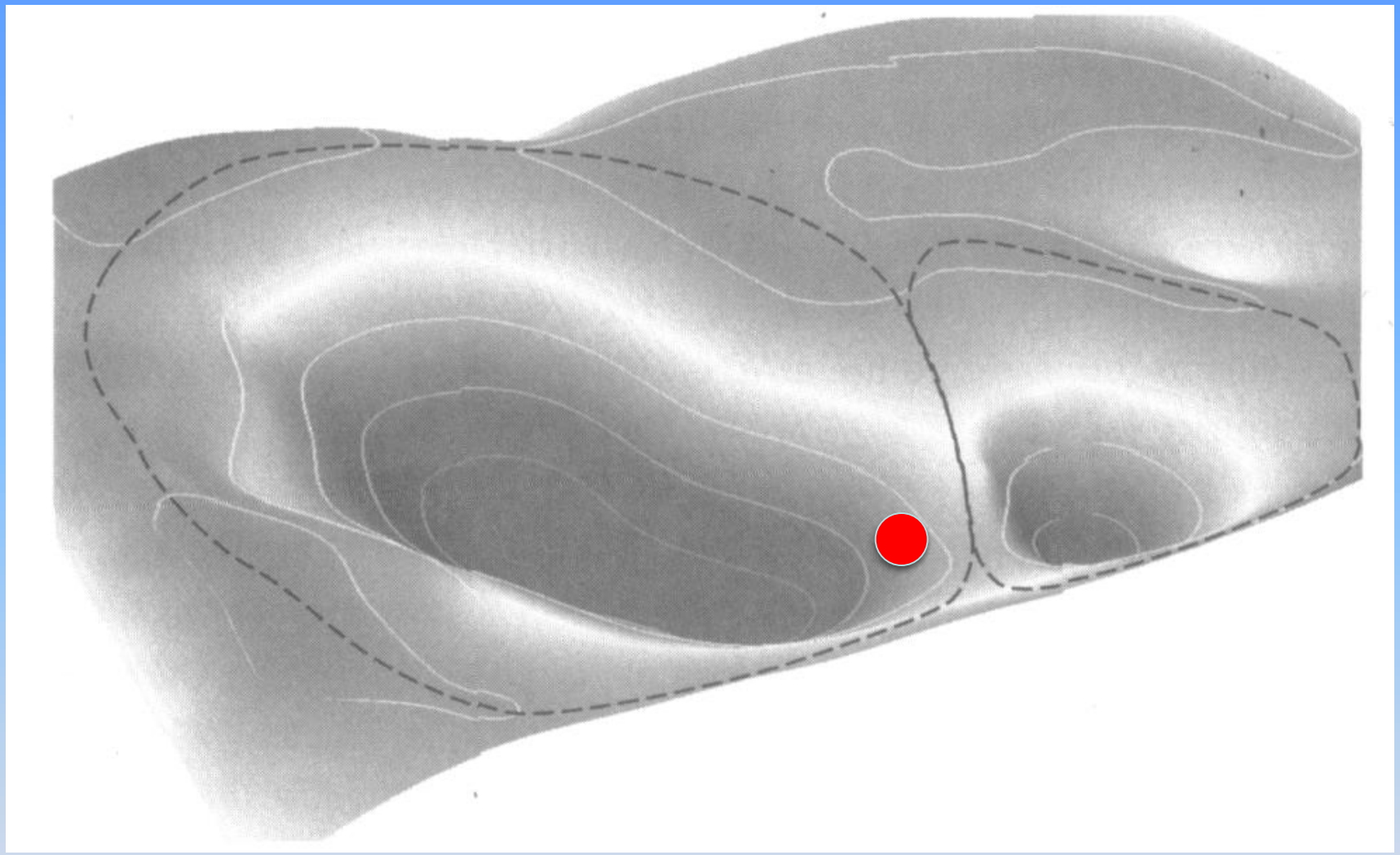
- Involve local people & adaptive learning

Social – Ecological System



Source: Resilience Alliance

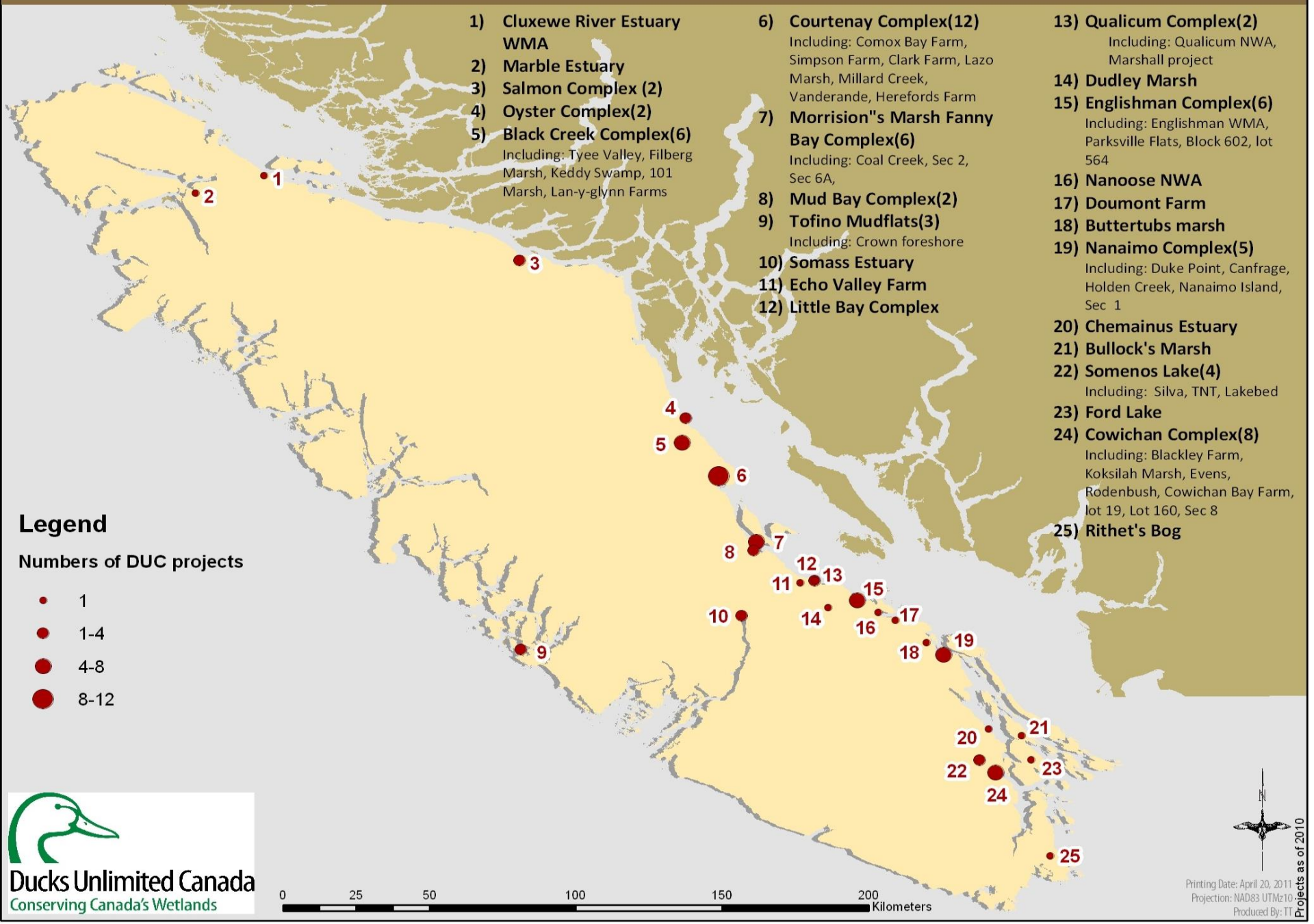
Adaptive Cycles (ecological & social)

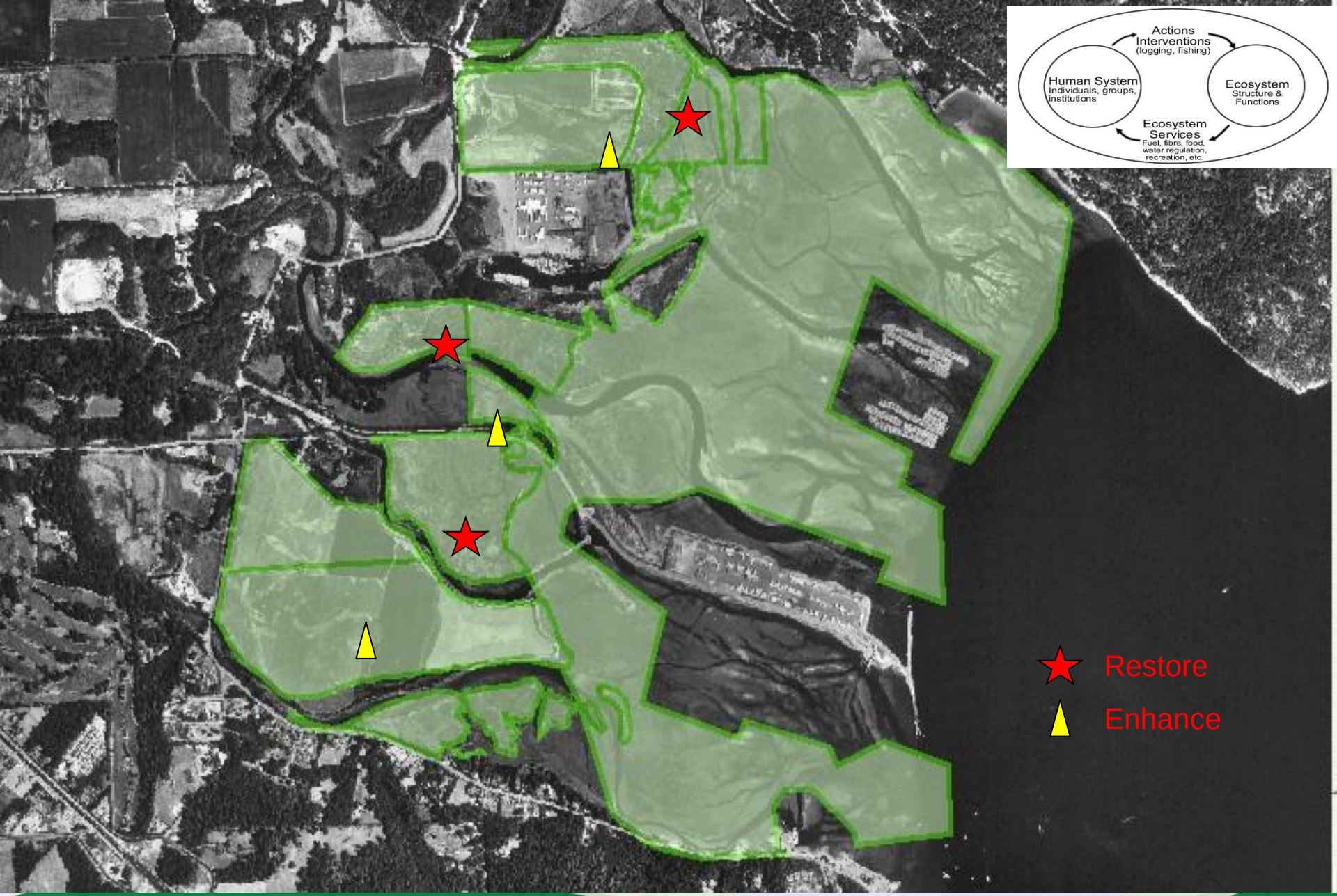


Source: Walker, B, Hollings C.S, Carpenter, S. and Kinzig A. 2004. Resilience, adaptability and transformability in social-ecological systems. Ecology and Society 9 (2): 5

Resilience & Thresholds

Ducks Unlimited Canada Projects - Vancouver Island





Cowichan Estuary (8/8 projects, 777 Ac)

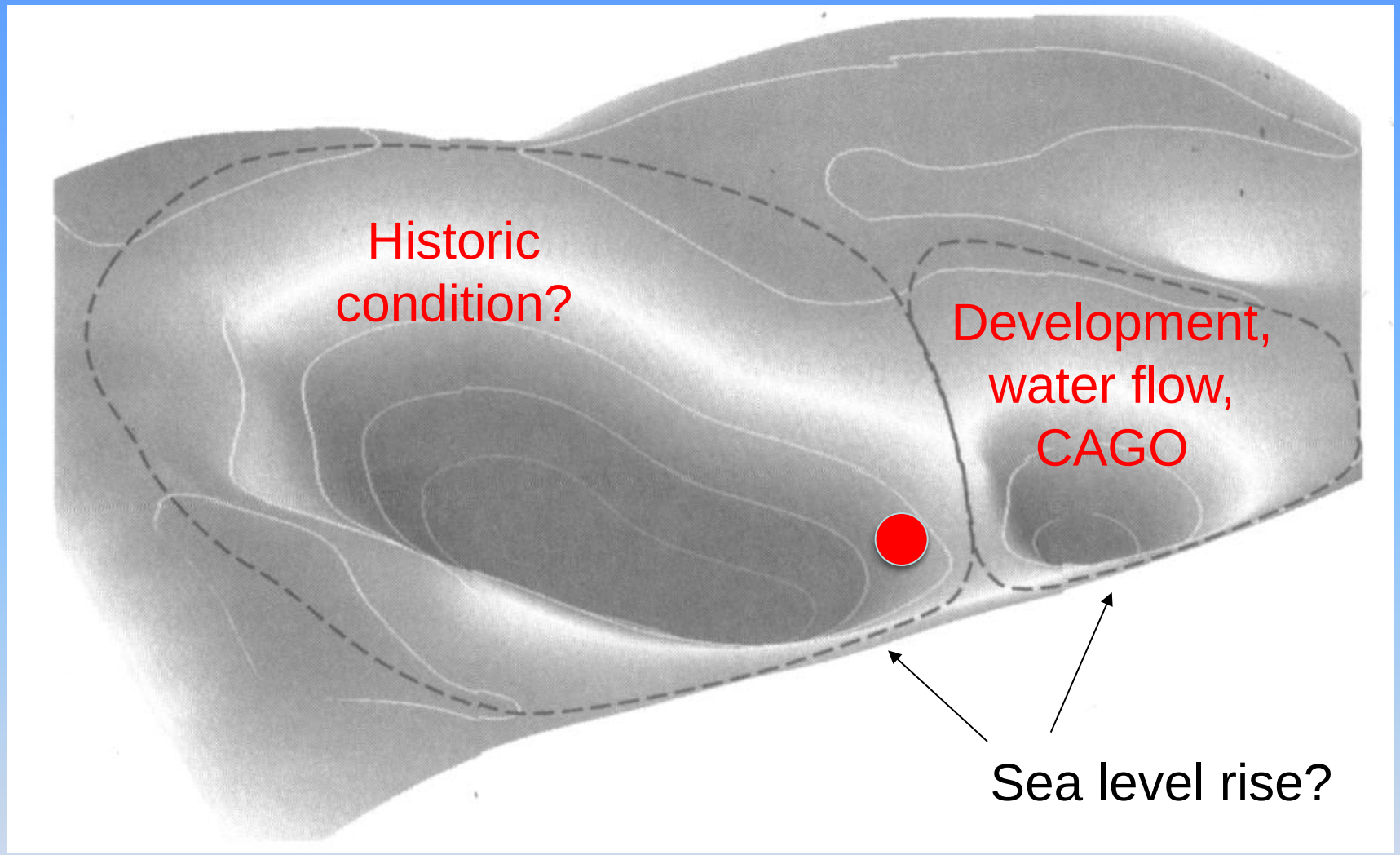
Photos: Goetz Schuerholz

Log removal

Fanny Bay

Little Qualicm Estuary

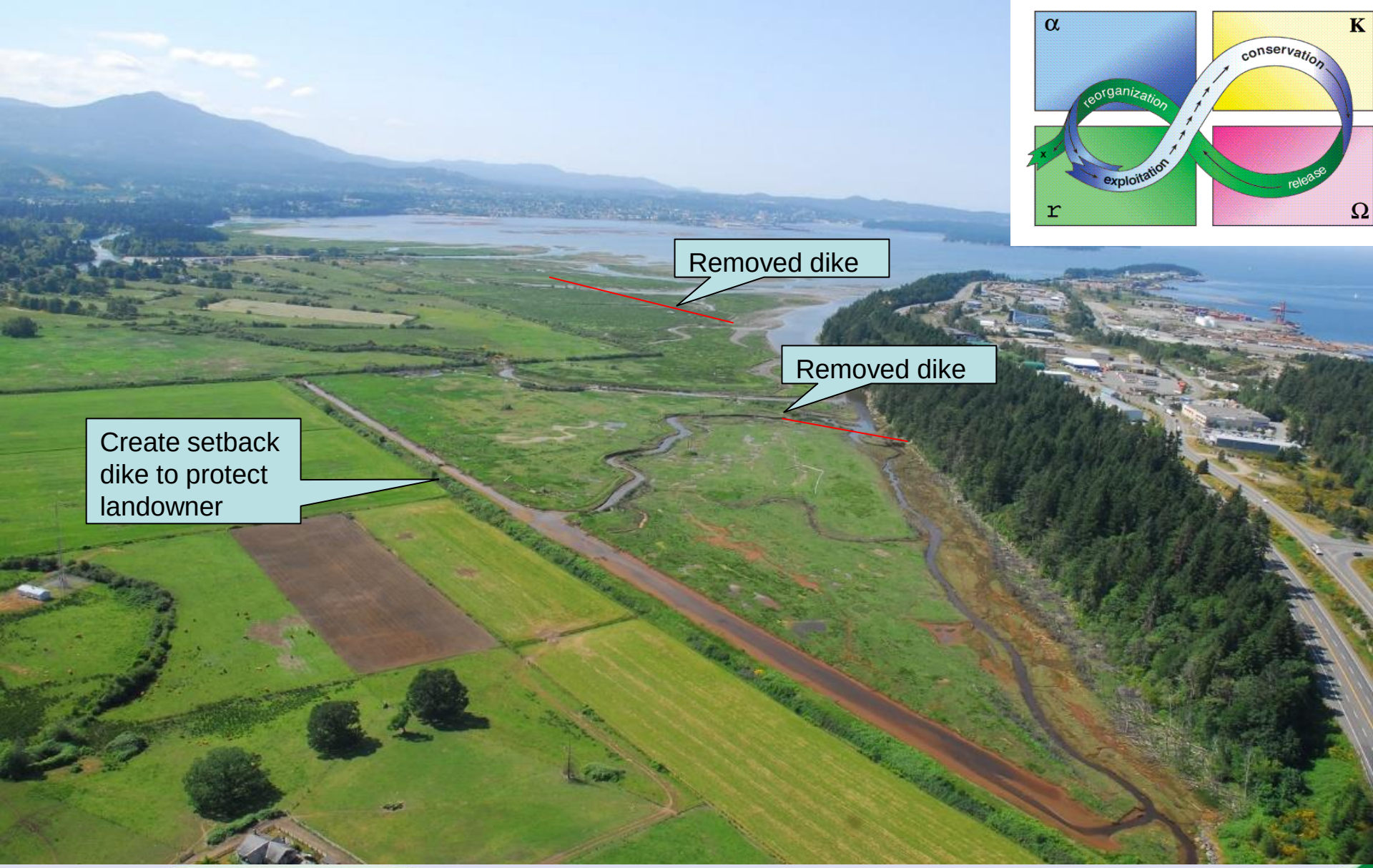
Little Qualicum – changing threats



Source: Walker et al. 2004. Resilience, adaptability and transformability in social-ecological systems. Ecology and Society 9 (2): 5

Thresholds – Little qualicum

Nanaimo Estuary



Nanaimo Estuary (adaptive cycle – time)

- Partnership: Gov, NGO, community
- Wetland & farmland: water release, fish passage

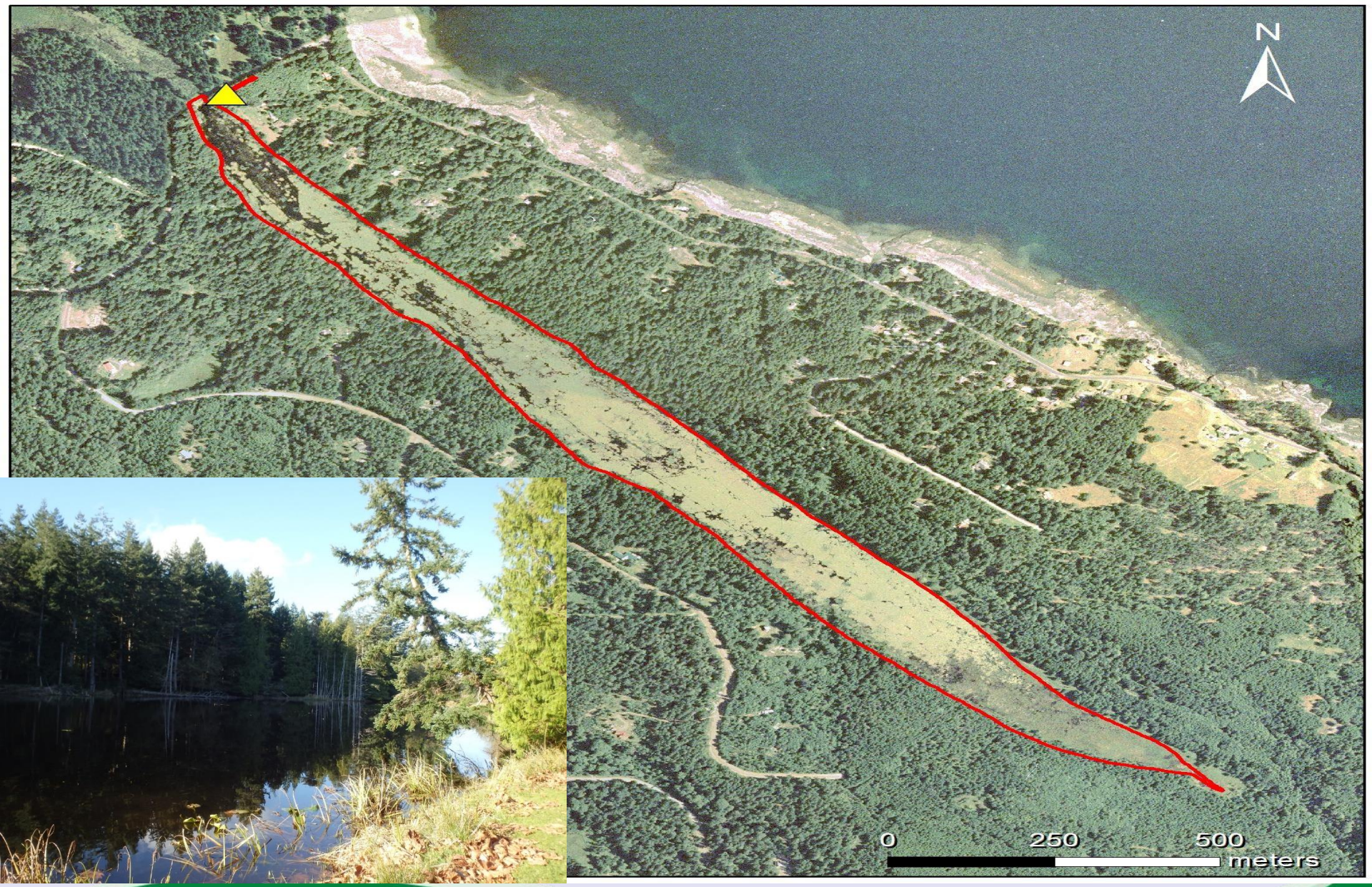
Black Creek watershed

Tyee Valley (40 ha, DFO, Landowner)

Keddy Swamp (66 ha, DFO, HCTF, Landowner)

Wetland 101 (28 ha, DFO, DU, HCTF, TW)

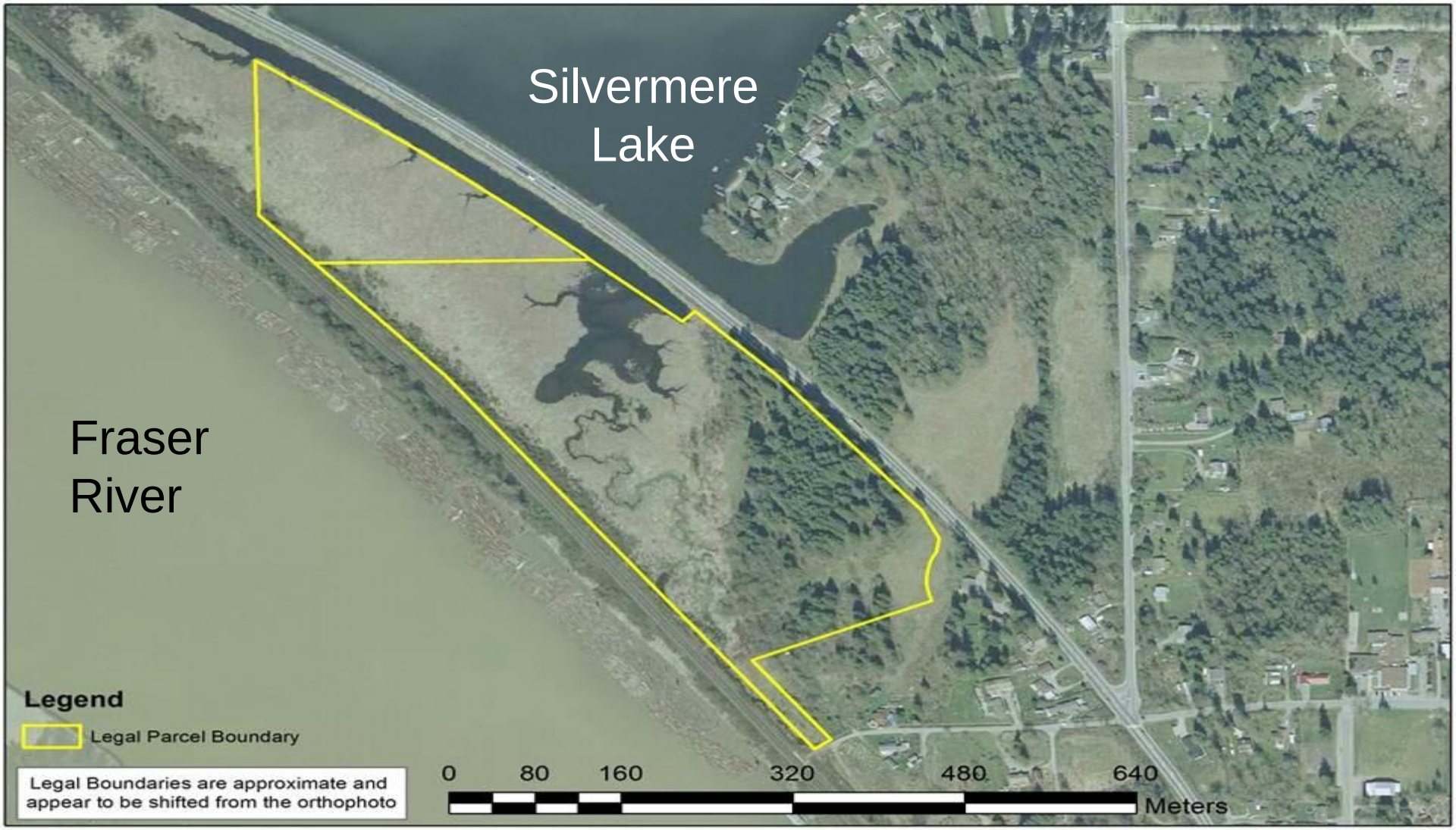
Wetland 101 (Fishway, channel, water release)



Morrison Marsh (Denman Island)

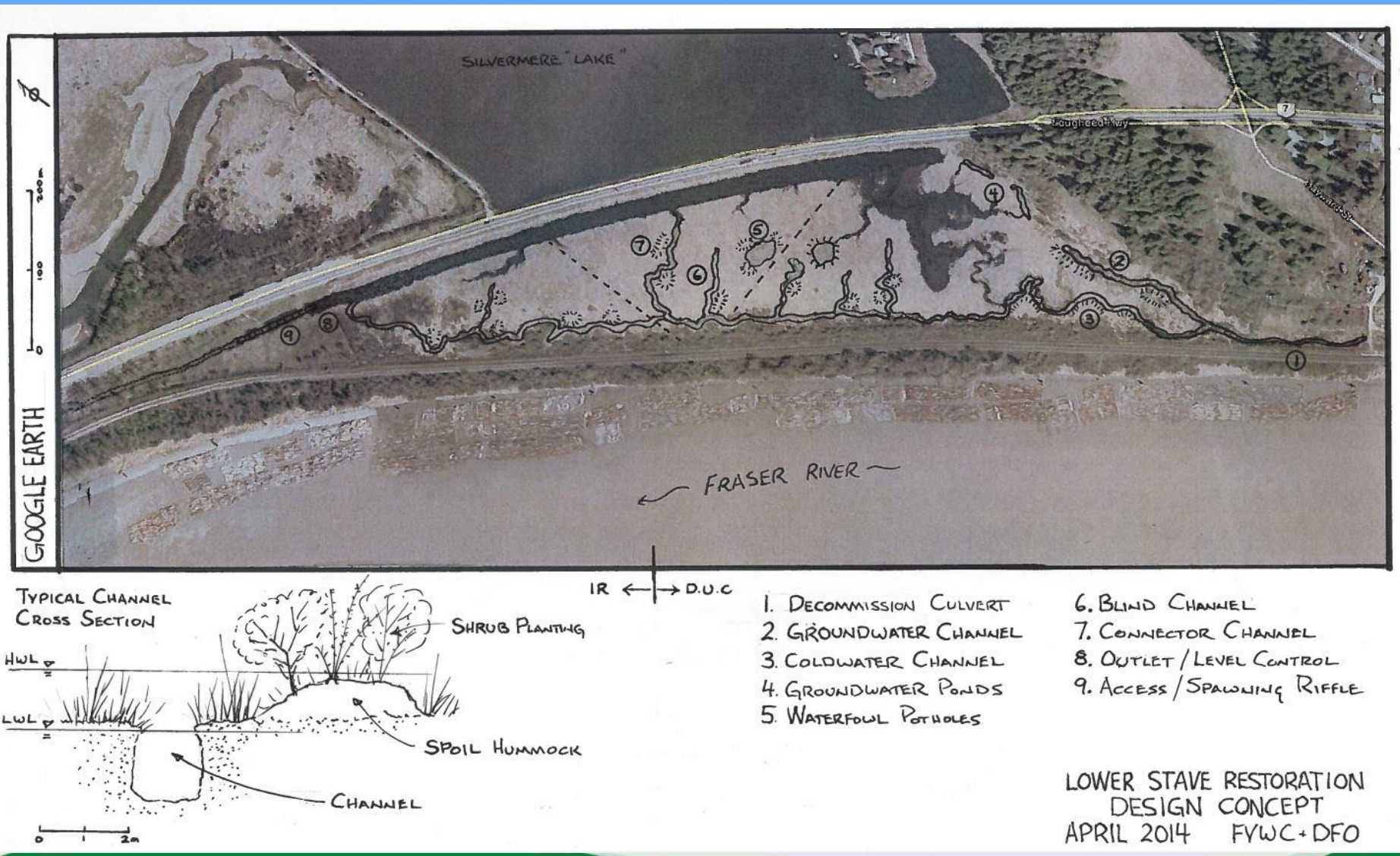
Dudley Marsh (Coombs)

Area: 42 Ac, Enhance 12 ha (30 ac)
Partners: DUC, DFO, FVWC



Stave River– conserve via management

- Design – cool water, separating from wetland



- What we've done isn't enough
  - Information
  - Traditional tools: secure & restore
- Other tools
  - Policy (wetland policies)
  - Incentives to retain water/wetlands
  - Valuing vs Monetizing natural values?
  - Political will

Wetland Conservation – future thoughts

- I will mess up..... uncertainty & failure
  - Assisting nature, learning & collaboration team
- Look ahead
  - How will the system change (self design)
  - The past is for inspiration, not imitation (Israel Zangwill)
- Resilience:
  - Social-ecological, cycles, thresholds
- Collaborate (coordinate) across scales
  - Time & Space (site, watershed)
  - Share success & **failure**

Lessons learned & moving forward

Thanks CVNS & Congratulations