NATURE CONSERVANCY CANADA

RESILIENCE INDEX (RI)

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RI OVERVIEW

The **goal** of the RI is to:

1. Capture National Conservation data into a **single** metric
2. Enhance Where To Work site selection outputs
3. Drive What To Do management action optimizations
4. Guide Project Management Plans and Securement

RI provides a “catch-all” **Landscape Level** metric that aids in comparing the relationship between location and conservation impact.

RI INPUT DATA

Conservation data has been captured into 8 broad **Themes**.

A. Biodiversity
B. Carbon
C. Climate
D. Connectivity
E. Environmental Services
F. Habitat
G. Protection
H. Threats

Features (layers) that make up each theme have been **weighted** by importance.

RI FEATURES & RELATIVE WEIGHTS

POSITIVE FEATURES				
THEMES	FEATURES	SIGN	WEIGHTS	RANKS
Biodiversity	Key Biodiversity Areas	+	15	1
Connectivity	Connectivity	+	13	2
Protection	Existing Conservation	+	12	3
Biodiversity	Critical Habitat	+	9	4
Biodiversity	Endangered	+	8	5
Biodiversity	Threatened	+	7	6
Biodiversity	Special Concern	+	6	7
Climate	Refugia	+	6	7
Climate	Velocity	+	6	7
Carbon	Potential	+	5	8
Carbon	Storage	+	5	8
Habitat	Forest Landcover	+	2	9
Habitat	Grassland	+	2	9
Habitat	Wetland	+	2	9
eServices	Freshwater Provision	+	1	10
eServices	Recreation	+	1	10

NEGATIVE FEATURES				
THEMES	FEATURES	SIGN	WEIGHTS	RANKS
Threats	Human Footprint Index	-	38	1
Climate	Extremes	-	12	2

Ranks are rationalized using the **C**onnectivity. **A**dequacy. **R**epresentativeness. **E**fficiency principle.

- Positive weights tally up to **100**
- Negative weights tally up to **-50**

RI PREP DETAILS

Each feature is **scaled** between **0** and **1** before the RI equation is executed. This step is required in order to combine features that have different units of measurement.

Scaling equation:

$$\text{Normalized feature} = (\text{feature} - \text{min value}) / (\text{max value} - \text{min value})$$

RI EQUATION

RI = (feature * weight) + (feature * weight) **-** (feature * weight) etc.

CP&P has provided an RI **recommendation** for review.

Resilience Index Equation:

(key biodiversity areas * 15) + (connectivity * 13) + (existing conservation * 12) + (critical habitat * 9) + (endangered specices * 8) + (threatened species * 7) + (special concern species * 6) + (climate refugia * 6) + (climate velocity * 6) + (carbon potential * 5) + (carbon storage * 5) + (forest landcover * 2) + (grassland * 2) + (wetland * 2) + (freshwater provision * 1) + (recreation * 1) - (human footprint * 38) - (climate extremes * 12)

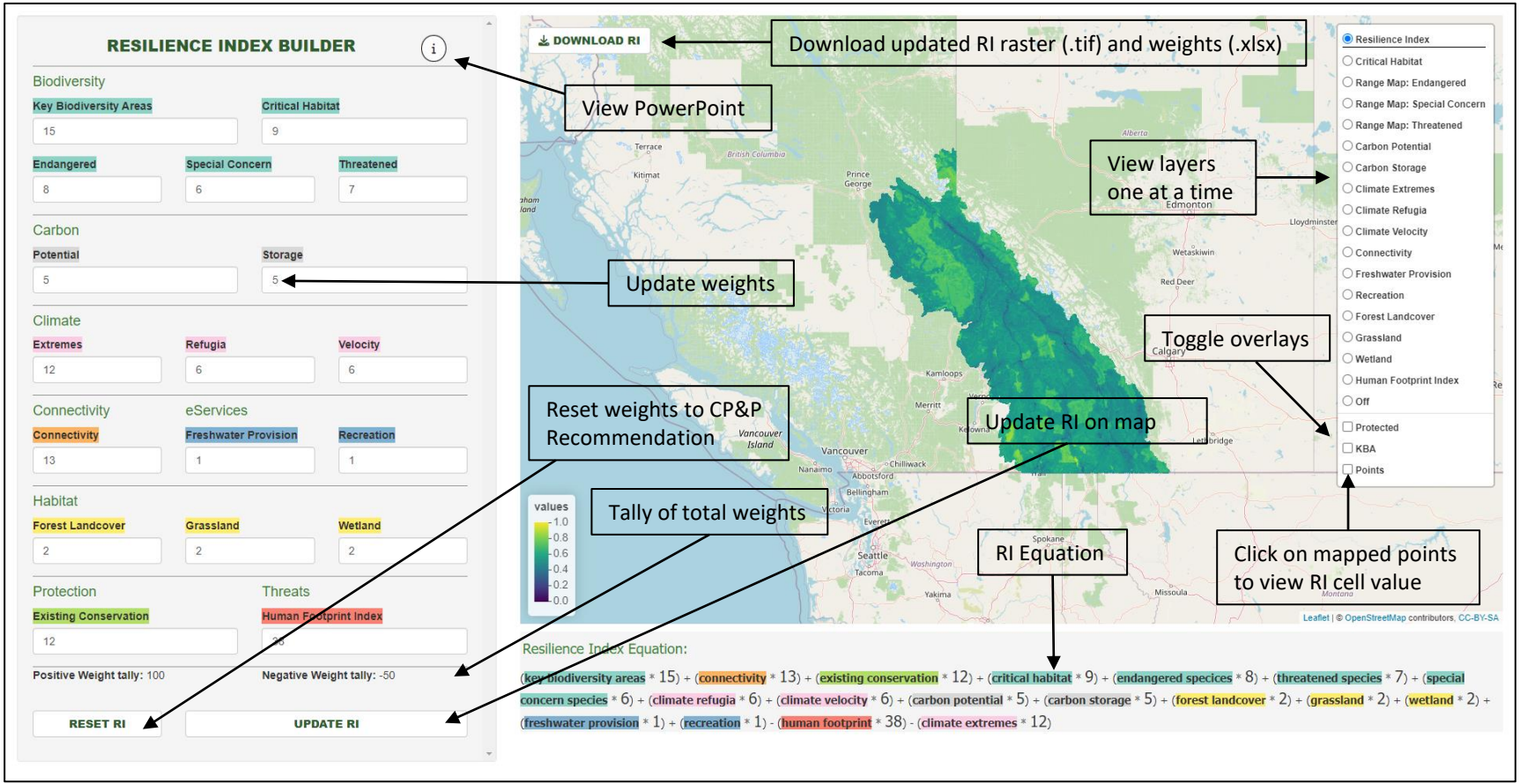
RI BUILDER

- Designed as an **engagement** tool that shows transparency in the make-up of the index.
- Users can **change** weights and update the RI in real time. This provides a means to reason with the relative importance of layers that comprise the index

Main App Features:

- RI map display
- RI equation display
- RI point extractions and pop-up
- RI download

RI BUILDER UI



NEXT STEPS

- Finding agreement on RI **definition**
- Finding agreement on the RI **inputs**
- Finding agreement on RI **weights**
- Communicating what RI is good at explaining and where it falls short (**limitations**)