

Novel Ecosystems

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Outline



What are
Novel
Ecosystems?

The Novel
Ecosystems
Debate

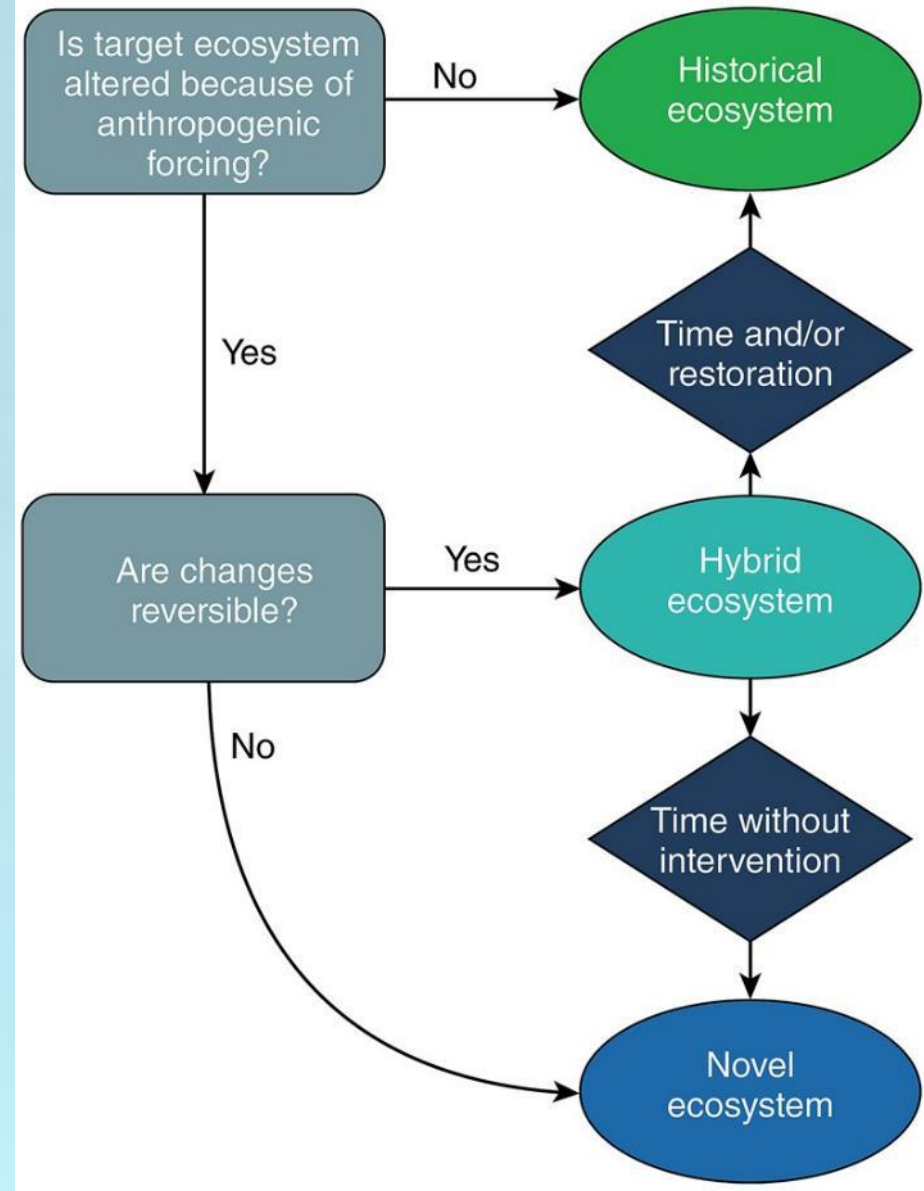
Reconciliation
Ecology

Indigenous
Relationships

Restoration in
Parks Canada

Novel Ecosystems

1. New species combinations (non-native species)
2. Result from deliberate/inadvertent human actions
3. Need no human management to persist



Historical: Pukaskwa National Park

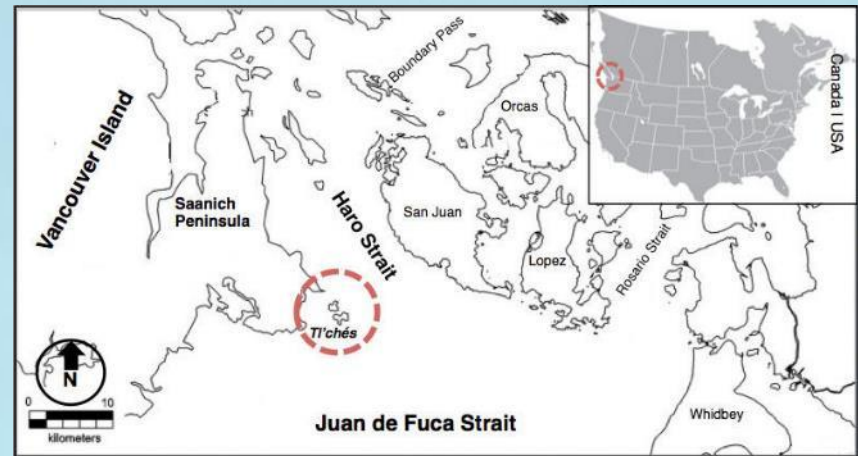
- Ecosystems dominated by native species assemblages
- Intact (mostly)



Hybrid & Novel: Tl'chés, West Chatham Island



camas



Heritage plum

Gomes, T. C. (2013). Novel ecosystems in the restoration of cultural landscapes of Tl'chés, West Chatham Island, British Columbia, Canada. *Ecological Processes*, 2(1), 15.

What's novel about novel ecosystems?

1. Change is occurring faster than before
2. Are historical references still relevant?
3. Novel ecosystems can have value

Transplanting heritage plum with Lekwungen
George brothers in Chatham Islands.



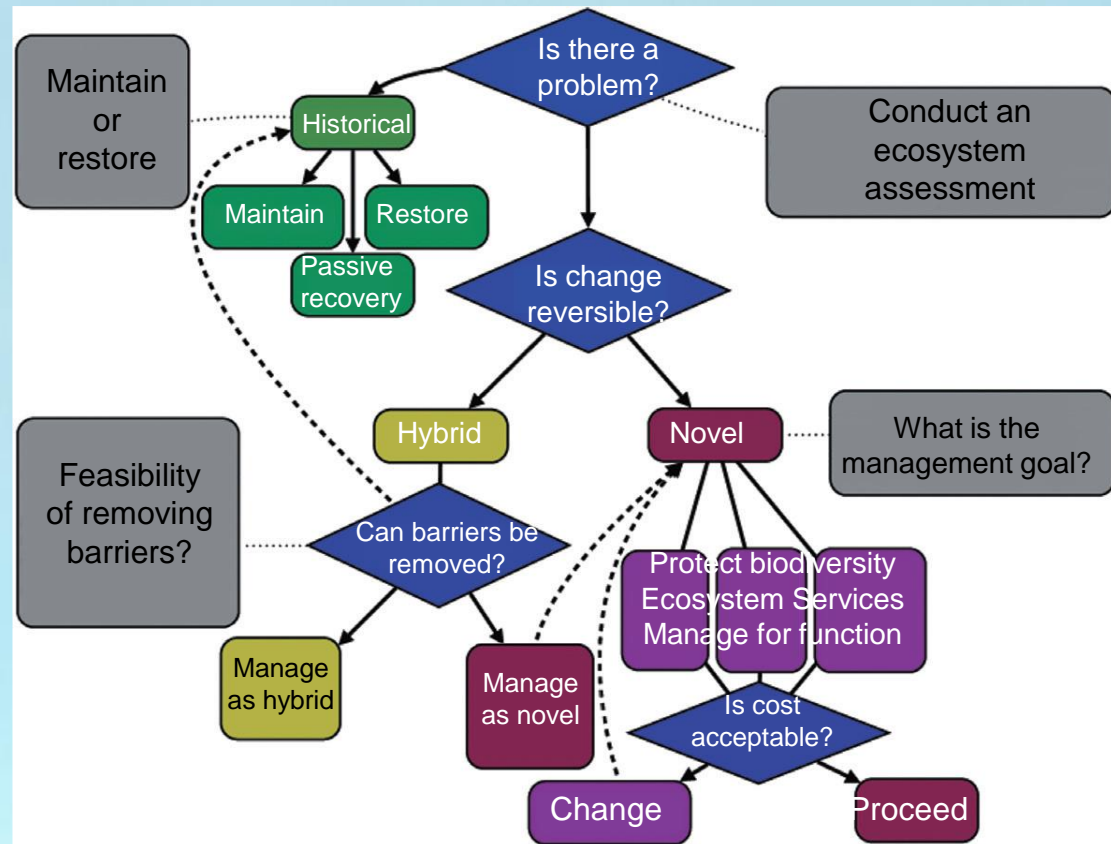
Restoration Ecologist's Prayer

[higher power] grant me
the serenity to accept
the novelty I cannot
change

The funding to restore
the ecosystems that I
can

And a flow diagram to
know the difference

Marilyn Jordon, Long Island Natural History
Conference, April 30, 2015



Hulvey et al. (2013). Incorporating novel ecosystems into management frameworks. *Novel ecosystems: intervening in the new ecological world order*, 157-171.





Plenary

Karsten Heuer,
Bringing Back
Bison to Banff
National Park



Friday, Feb 15: 3:15-
4:15 pm, Diamond
Family Auditorium

Debate about Novel Ecosystems

Critique

Response

1. Ecological thresholds confused with socio-economic and political

Murcia et al., (2014). A critique of the 'novel ecosystem' concept. *TREE*, 29(10), 548-553.

“a novel ecosystem is not an alternate state but a decision”

Miller & Bestelmeyer (2016). What's wrong with novel ecosystems, really? *Restoration Ecology*, 24, 577-582.

2. Advocating a dangerous idea that hampers (traditional) conservation, restoration practice

Murcia et al., (2014). A critique of the 'novel ecosystem' concept. *TREE*, 29(10), 548-553.

- Not advocates
- Additional options for managing ecosystems resistant to traditional practices

Standish et al (2013). Concerns about novel ecosystems. *Novel ecosystems: intervening in the new ecological world order*

3. Novel ecosystems fails to recognize the threat of invasive species

Simberloff et al (2015). “Novel ecosystems” are a Trojan horse for conservation. *ENSIA*.

“...more emphasis on understanding effects...and less on date of arrival and place of origin”

Davis et al (2011). Don't judge species on their origins. *Nature*, 474, 153.

Restoration is a values-based discipline

- “Ecological architecture”

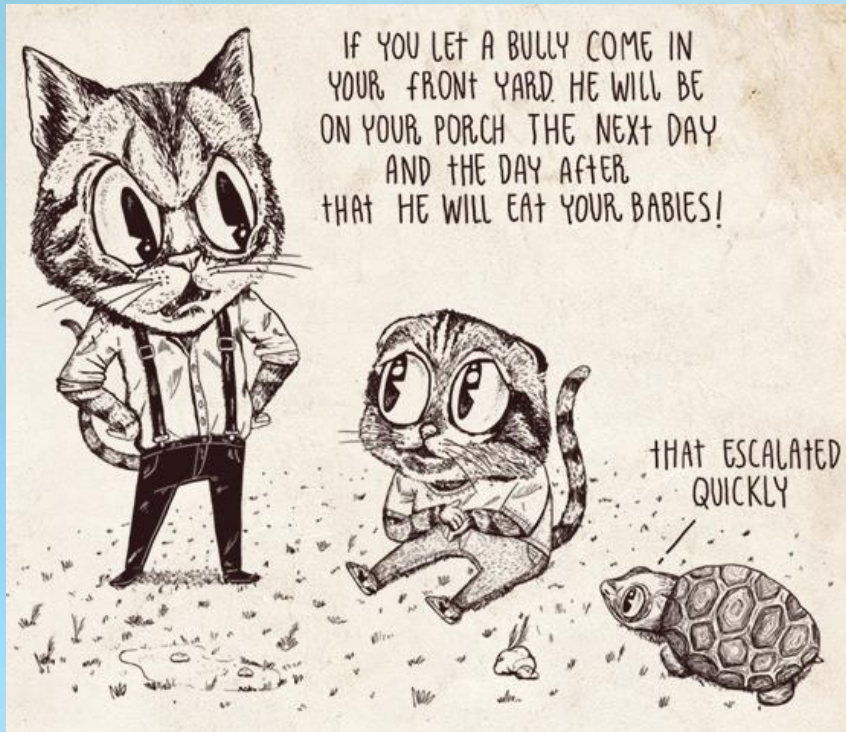
Davis & Slobodkin (2004). The science and values of restoration ecology. *Restoration Ecology*, 12(1), 1-3.

- Ecological restoration is the process of assisting the recovery of a degraded, damaged, or destroyed ecosystem to reflect values regarded as inherent in the ecosystem and to provide goods and services that people value.

Martin, D. M. (2017). Ecological restoration should be redefined for the 21st century. *Restoration Ecology*, 25(5), 668-673.

- Debate about novel ecosystems cannot be resolved

Are novel ecosystems a slippery slope?



Almossawi and Giraldo 2014. *An Illustrated Book of Bad Arguments*.

- Historical reference anchors restoration efforts
- Without it, ecosystems will be used and abused for their services and utility to humans

Maybe, and there are other possible outcomes

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Reconciliation Ecology

Original definition of *Reconciliation Ecology*

- It seeks to give many species back their geographical ranges without taking away ours
- Redesigning anthropogenic habitats so that their use is compatible other species (i.e., novel ecosystems)

acceptance of a lesser option

Reconcile

1. to account for harms done
2. to resolve differences
3. to restore harmony
4. to make consistent

Reconciliation Ecology (draft)

reconciling the damage that has been done to land/waters, and ourselves, while fostering reconciliation with others

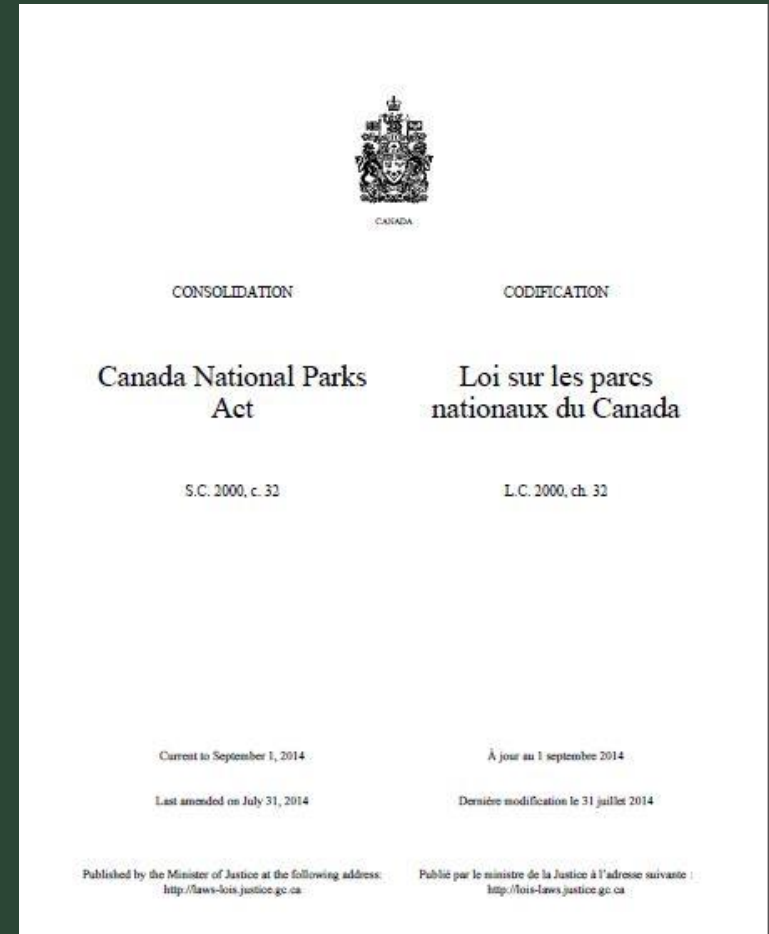








Ecological Restoration in Parks Canada

8. (2) Maintenance or restoration of ecological integrity.... shall be the first priority

Ecological integrity: *a condition that is determined to be characteristic of its natural region and is likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes*

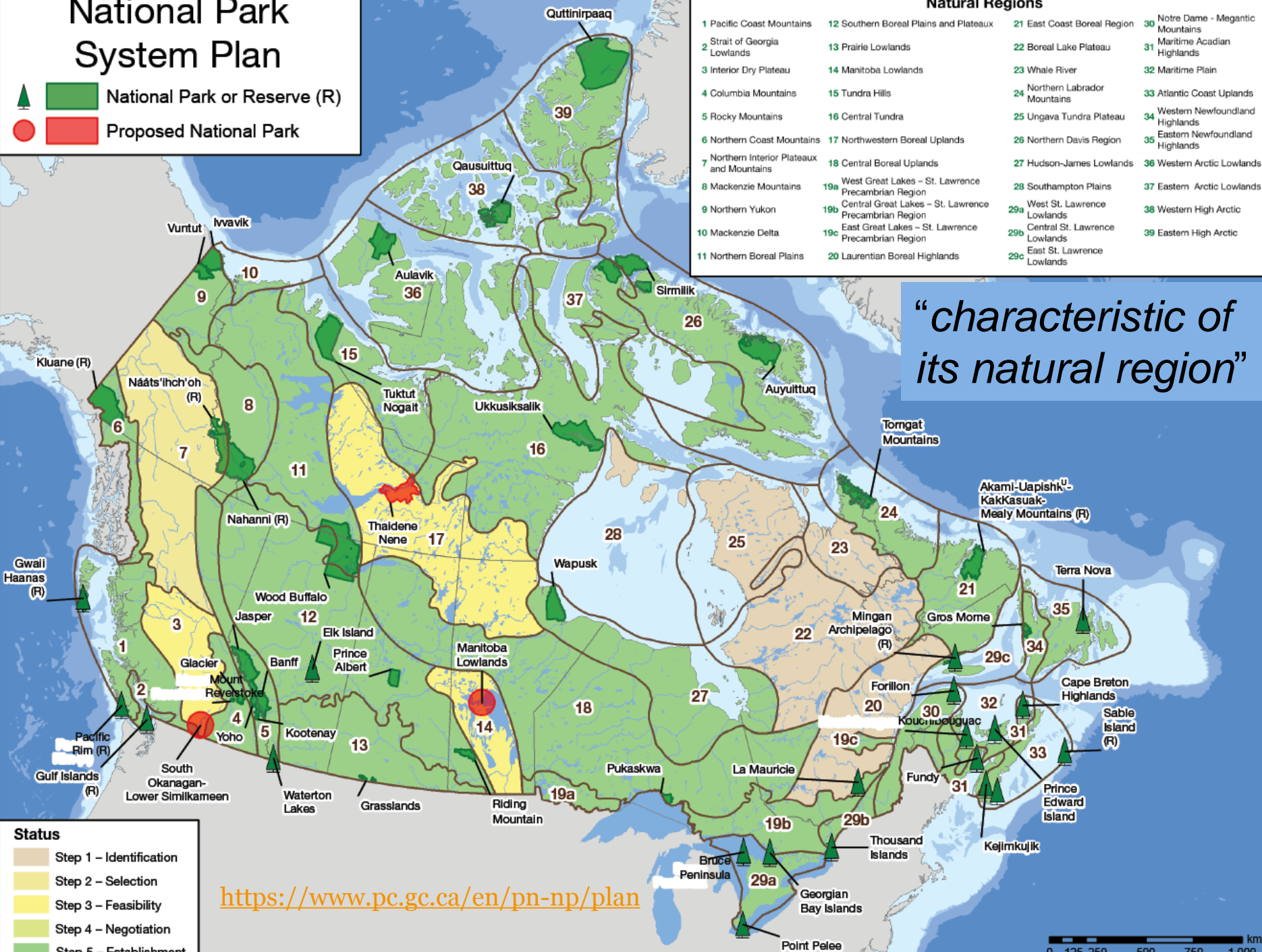







National Park System Plan

-   National Park or Reserve (R)
-   Proposed National Park

- ## Natural Regions
- | | | | |
|--|---|-----------------------------------|------------------------------------|
| 1 Pacific Coast Mountains | 12 Southern Boreal Plains and Plateaus | 21 East Coast Boreal Region | 30 Notre Dame - Megantic Mountains |
| 2 Strait of Georgia Lowlands | 13 Prairie Lowlands | 22 Boreal Lake Plateau | 31 Maritime Acadian Highlands |
| 3 Interior Dry Plateau | 14 Manitoba Lowlands | 23 Whale River | 32 Maritime Plain |
| 4 Columbia Mountains | 15 Tundra Hills | 24 Northern Labrador Mountains | 33 Atlantic Coast Uplands |
| 5 Rocky Mountains | 16 Central Tundra | 25 Ungava Tundra Plateau | 34 Western Newfoundland Highlands |
| 6 Northern Coast Mountains | 17 Northwestern Boreal Uplands | 26 Northern Davis Region | 35 Eastern Newfoundland Highlands |
| 7 Northern Interior Plateaux and Mountains | 18 Central Boreal Uplands | 27 Hudson-James Lowlands | 36 Western Arctic Lowlands |
| 8 Mackenzie Mountains | 19a West Great Lakes - St. Lawrence Precambrian Region | 28 Southampton Plains | 37 Eastern Arctic Lowlands |
| 9 Northern Yukon | 19b Central Great Lakes - St. Lawrence Precambrian Region | 29a West St. Lawrence Lowlands | 38 Western High Arctic |
| 10 Mackenzie Delta | 19c East Great Lakes - St. Lawrence Precambrian Region | 29b Central St. Lawrence Lowlands | 39 Eastern High Arctic |
| 11 Northern Boreal Plains | 20 Laurentian Boreal Highlands | 29c East St. Lawrence Lowlands | |

“characteristic of its natural region”



- ### Status
-  Step 1 - Identification
 -  Step 2 - Selection
 -  Step 3 - Feasibility
 -  Step 4 - Negotiation
 -  Step 5 - Establishment

<https://www.pc.gc.ca/en/pn-np/plan>

0 125 250 500 750 1,000 km



These photos from Banff were taken 50 years apart, which is older?



A



B

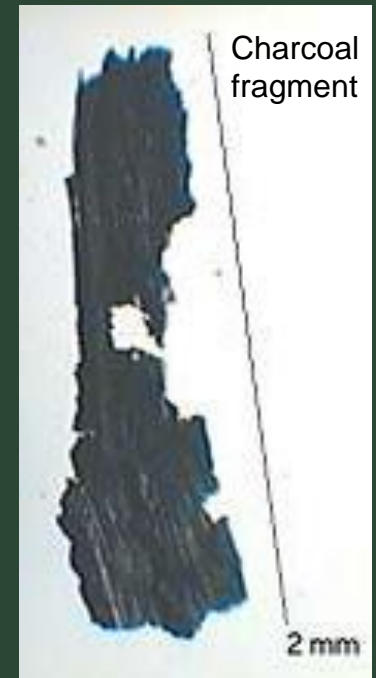
High historic fire frequency: First Nations' burning

White et al., 2002. New approaches for testing fire history hypotheses. Pages 398-411 in: S. Bondrup-Nielsen, N.W.P. Munro, G. Nelson, J.H.M. Willison, T.B. Herman, and P. Eagles, editors. Managing protected areas in a changing world. Proceedings of the 4th International Conference on Science and Management of Protected Areas. Science and Management of Protected Areas Association, 14-19 May 2000, Waterloo, Ontario, Canada.



Garry oak meadows

- Dependent on prescribed fire
- Replaced by Douglas-fir forests
- Restored meadows still invaded
- Species at risk



Concurrent A. Burning Issues in Fire Restoration, Wed Feb 14

- Celeste Barlow, 2:15 pm: *Garry Oak Ecosystem Stand History in Southwest British Columbia: Implications for Restoration, Management and Population Recovery*
- Dr. Marlow Pellatt, 4:30 pm: *Bringing Back Fire to Garry Oak Ecosystems in the Gulf Islands National Park Reserve: An Ecocultural Restoration Project*



The myth of pristine wilderness

- Human disturbances are “characteristic of the natural region”
- Early park establishment ignored Indigenous people’s relationships to the land

“This ignorance of naturalized knowledge has contributed to the decline of ecological integrity in many parks.”



Report of the Panel on the Ecological Integrity of Canada’s National Parks. Ottawa, ON

Humans are nature

- “Traditional” ecological restoration and novel ecosystems maintain separation of humans and nature
- Other worldviews are more integrative

Right Relationship

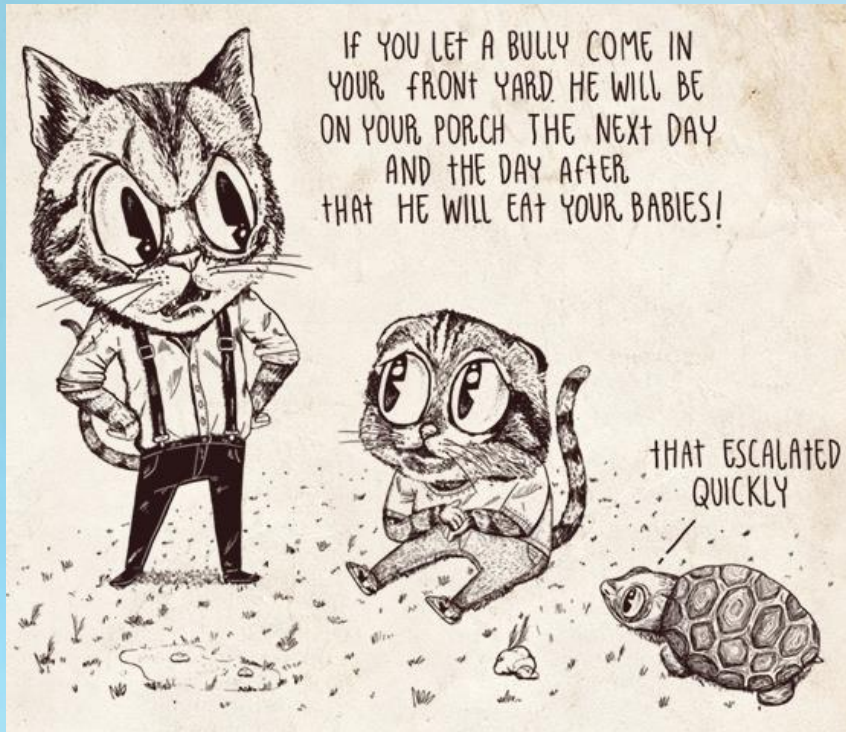
“A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.” Aldo Leopold

Reconciliation Ecology

reconciling the damage that
has been done to land/waters
and ourselves, while fostering
reconciliation with others



Is “humans as nature” a slippery slope?



Almossawi and Giraldo 2014. *An Illustrated Book of Bad Arguments*.

- Ecosystems will be used and abused for their services and utility to humans

Maybe, and there are other possible outcomes



Ecological restoration in national parks



Hyperabundant moose and deer eat the ecological integrity of national parks

Concurrent A. Fri Feb 16, The Hype about Hyperabundant Herbivores



Thousand Islands National Park and Mohawks of Akwesasne

- Food security
- Deer meat used in Haudenosaunee naming ceremony





Thousand Islands National Park and Mohawks of Akwesasne



- Mentoring for youth and inexperienced harvesters
- Haudenosaunee





Gulf Islands National Park and Hul'q'umi'num and W̱SÁNEĆ

Clam Garden and classroom





Parks Canada and Indigenous Peoples

- Then: Excluded Indigenous People
- Now: Meaningful relations with 130 Indigenous groups
- Agreements with indigenous peoples = 68% Parks Canada's places

P	artnership:	Working collaboratively in heritage place planning, management, and operations.
A	ccessible:	Encouraging access to traditional lands and traditional activities.
R	espectful:	Building mutual respect, trust and understanding.
K	nowledge-Based:	Honouring and incorporating traditional knowledge.
S	upportive:	Supporting Aboriginal partners' community interests.



Pathway to Canada Target 1



Quttinirpaaq National Park
Photo by Ryan Bray, © Parks Canada

*By 2020, at least **17%** of terrestrial areas and inland water, and 10% of coastal and marine areas, are conserved through **networks** of protected areas and other effective area-based conservation measures.*

Parks: Colonial Crime Scenes?

“...the places Canada has made into parks are filled with our stories—every mountain, every valley has a name and a history for Indigenous peoples.

It is in these places that our history is alive: our Mecca is here, our Magna Carta, our Thermopylae.

...Stolen from Indigenous people
– a form of green colonialism.”

Robert Jago (2017). Canada's National Parks are Colonial Crime Scenes, *The Walrus*



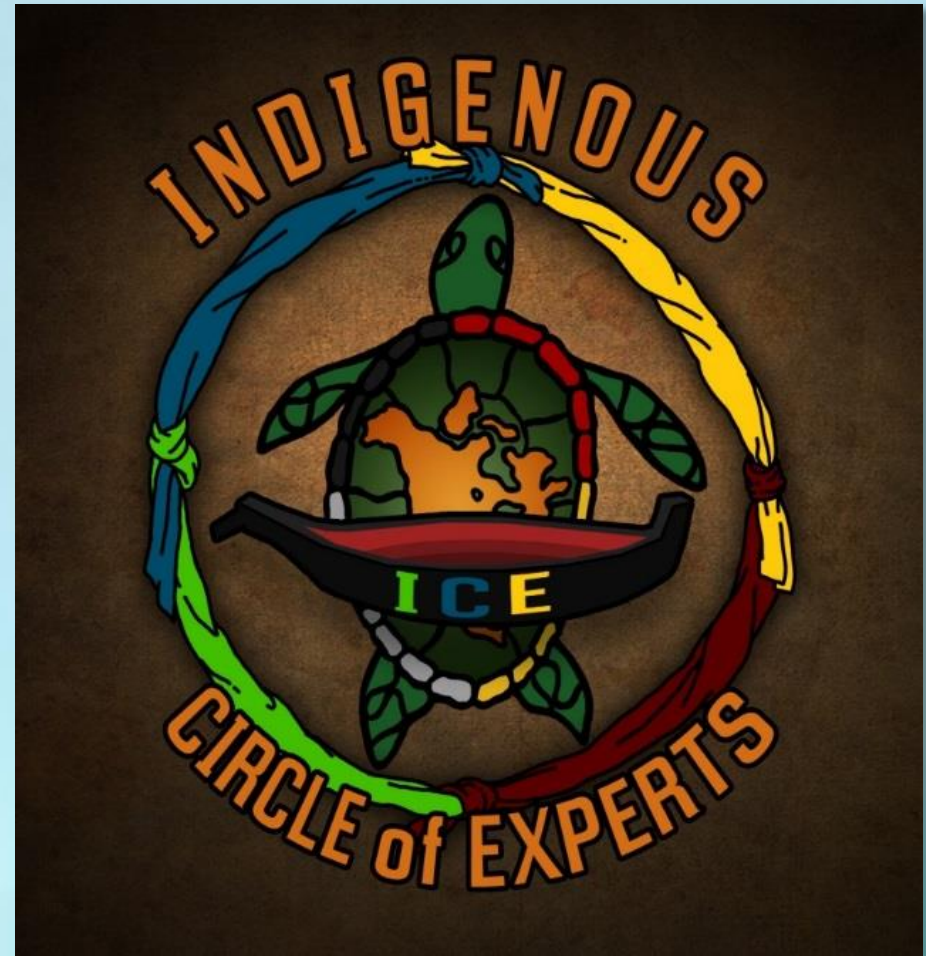
European “discovery” of the spring



Flow of Life by Roland Rollindmud, Stoney Nakoda

Indigenous Protected and Conserved Areas

- Practice traditional laws
- Pass on teachings to the next generation
- Maintain an intricate connection to the land and waters



Reconciliation Ecology

reconciling the damage that has been done to land/waters, and ourselves, while fostering reconciliation with others



“help restore the guilty past and transform it into the soil on which a more hopeful future can grow”

Kidwell, J. (2016). Hybrid Encounters in Reconciliation Ecology. *Worldviews: Global Religions, Culture, and Ecology*, 20(3), 238-250.

The Ethical Space of Engagement

is formed when two societies, with disparate worldviews, are poised to engage each other.



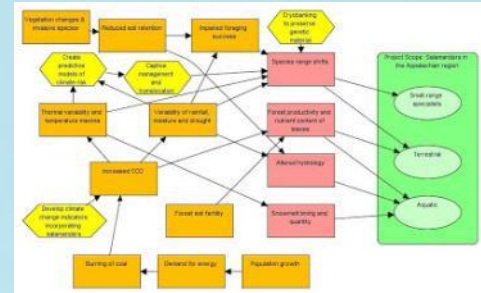
Ermine, W. (2007). The ethical space of engagement. *Indigenous Law Journal*, 6, 193.

Two-eyed Seeing

Etuaptmumk

- one eye, Indigenous knowledge
- the other eye, Western knowledge
- use both these eyes together

E.g., Nouns vs. Verbs





Prescribed fire on Tumbo Island, Gulf Islands National Park Reserve

Reconciliation ecology

Places humans *within nature*

- illuminates our responsibilities
- reconciles our relationships – with ourselves and all else

Less separation,
more reconciliation





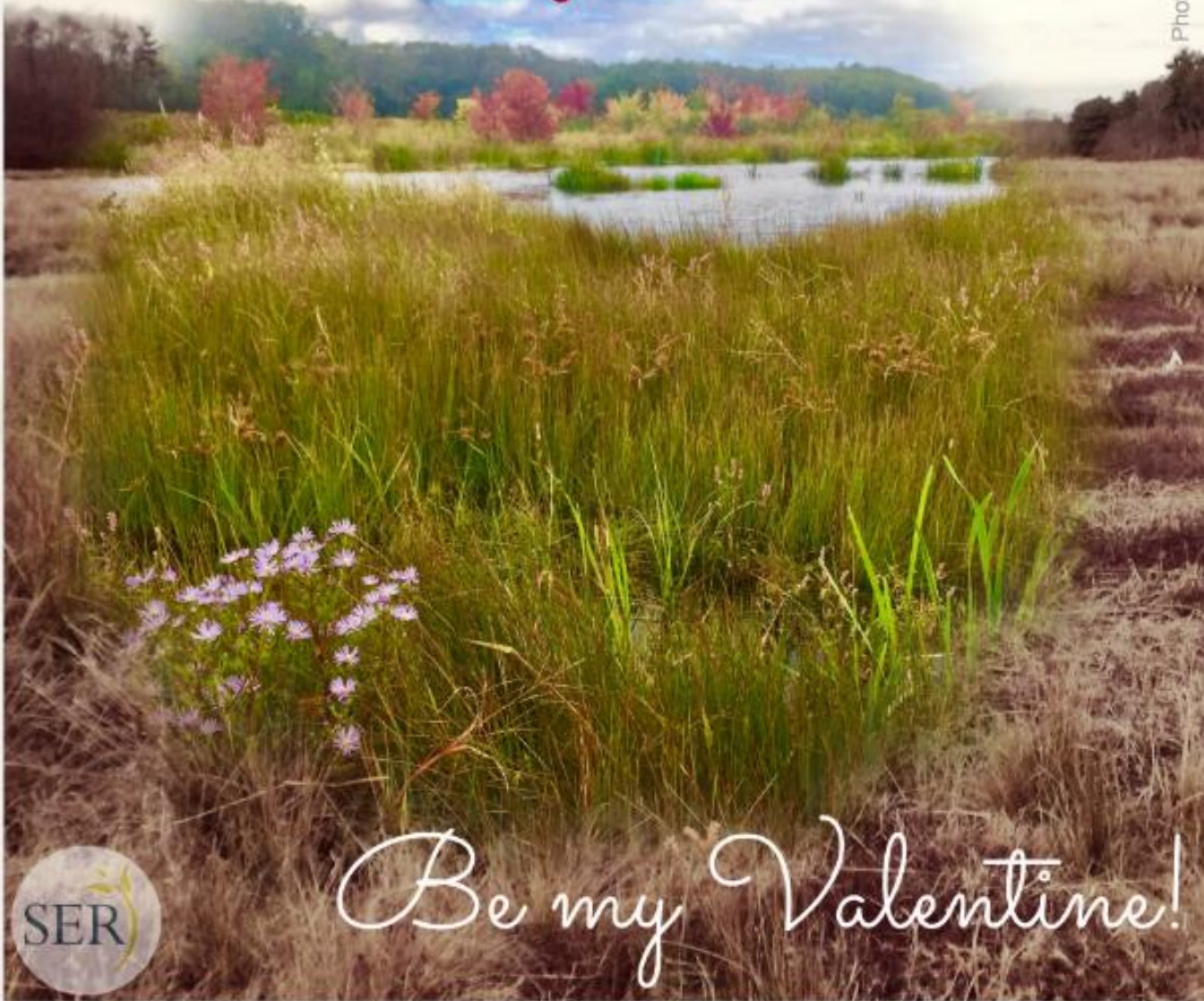
Reconcile: to restore harmony



Two row wampum (1613)

Restore my heart...

Photo: Alex Hackman



Be my Valentine!