Theory: the EC Science Plan

- To deliver the high-quality knowledge, information and data that enable the Minister, the Government, the Department and other decision makers to enhance the health and safety of Canadians, protect the quality of the natural environment, and advance Canada's long-term competitiveness.
Theory: the EC Science Plan

Federal S&T must reflect and support the priorities of Canadians

Under this principle, our scientific activities must be designed and undertaken to advance our departmental mandate and the broader priorities of the Government. We must be prepared to adjust these activities when needed to remain focussed on issues of concern to Canadians, while continuing to meet our ongoing and long-term commitments. We also must understand the priorities of Canadians and the full range of demand for Environment Canada's science. Other governments, Aboriginal peoples, communities, citizens and industry use the results and products of our science to help them understand the factors affecting their health, safety, livelihood and environment. To better serve these users, the Department must work to understand what they need, and whether it is the most appropriate science provider to respond to those needs.

Linkages: “And it means maintaining effective relationships between science and those who need the results of our work: policy makers, regulators, service providers, citizens and others -- communicating our knowledge and advice in language they can understand and use.”

(Environment Canada, 2007)
At a minimum, the greater of (a) 10% of each major watershed and 6% of each subwatershed, or (b) 40% of the historic watershed wetland coverage, should be protected and restored.

Wetlands that are in close proximity to each other, based on their functions, or that are in close proximity to other natural features, should be given high priority in terms of landscape planning.

30 m wide naturally vegetation adjacent to streams, greater depending on conditions

75% of stream length should be naturally vegetated

30% watershed forest cover is a high risk minimum, 50% cover is a low risk cover.

Focus on restoring and creating grassland habitat in existing and potential grassland landscapes.

Significant impairment in stream water quality and quantity is highly likely above 10% impervious land cover and can often begin before this threshold is reached. In urban systems a second threshold is likely reached at the 25 to 30% level.
Percent Forest Cover

At the watershed scale:

• 30% minimum forest cover equates to a high-risk approach that may only support less than one half of the potential species richness, and marginally healthy aquatic systems;
• 40% forest cover equates to a medium-risk approach that is likely to support more than one half of the potential species richness, and moderately healthy aquatic systems;
• 50% forest cover or more equates to a low-risk approach that is likely to support most of the potential species, and healthy aquatic systems.
Percent of an Urbanizing Watershed that is Impervious

Urbanizing watersheds should maintain less than 10% impervious land cover to preserve the abundance and biodiversity of aquatic species. Significant impairment in stream water quality and quantity is highly likely above 10% impervious land cover and can often begin before this threshold is reached. In urban systems that are already degraded, a second threshold is likely reached at the 25 to 30% level.
Percent Wetlands in Watersheds and Subwatersheds

• No net loss of wetland area, maintain and restore wetland functions at a watershed and subwatershed scale based on historic reference conditions.
• At a minimum, the greater of (a) 10% of each major watershed and 6% of each subwatershed, or (b) 40% of the historic watershed wetland coverage, should be protected and restored.
Does anybody use it? yes

- Areas of Concern – literally how much to help set de-listing targets.
- Widely adapted in regional and local land use, restoration and conservation plans – statutory and stewardship
- Was cited by Environmental Commissioner (ON)
- Use in EAs, EIS by agencies and consultants
- Guidelines included in conservation authority standard to grade watershed health
- Standard conservation primer, used in post-secondary classrooms
- It has evolved into a wider ‘framework’ for protection, conservation and restoration.
Why do they use it?

- They asked. We listened.

- “When do we know when to stop? When will this area be restored? How much habitat is enough?!?”

- So we answered them
Why do they use it? - resolution

- They are the **right resolution** for the users.
- Land use planners in southern Ontario don’t plan for individual species.

- And traditionally they didn’t plan for habitats.

They do plan for overall natural cover.
Greater than 6% of each
Less than 10% impervious
30 m wide
At least 30% - 50%
should be within 2 km
of each other
Greater than 10% of each
75% of stream length
50-100 m width
Why do they use it? - messaging

- blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah, moreover, and so on, etc, blah, blah, etc, blah, and so on, etc, blah, blah,
Why do they use it? – more…

• The **advice** matches the planning unit.

• They are **not exclusive**. Can use these with other products such as conservation blueprints.
Lessons learned…
How much habitat is enough for what?

• CWS has a mandate that includes birds, the globally rare, cross-jurisdictional species and species at risk.

• This mandate may not align with your mandate.
Limitations, caveats, cautions habitat is closer than it appears, do not take with alcohol, may cause headaches, may cause drowsiness, ....

- Go back to the science, local conditions rule, these are general guidelines.
- There are also clear limits to prescriptive advice and planning.
- Beware perverse results.
So...

What about grassland?
Grassland habitat patches should be clustered or aggregated, and any intervening land cover should be open or semi-open in order to be permeable to species movement.

Focus on restoring and creating grassland habitat in existing and potential grassland landscapes.

Maintain and create small and large grassland patches in existing and potential local grassland landscapes, with an average grassland patch area of greater than or equal to 50 hectares and at least one 100-hectare patch.

Maintain, restore and create native grassland patches to their historic extent and type at a county, municipal and/or watershed scale considering past presence and current conditions.

Some grassland habitat should be located adjacent to hedgerows, riparian and wetland habitats for species that require different habitat types in close proximity.
Grassland Habitat Guidelines

Grassland is different...

• A minority natural habitat in what was a wetland and forest dominated biome/matrix
• that became the dominant matrix as a surrogate (agricultural) habitat
• That enabled new species to settle
• And increased populations of taxa such as grassland birds
• But then the habitat started declining
• But the new species stayed but started to also decrease in number
• And we have to conserve them
• And the surrogate habitat relies on humans to persist
• And it’s a habitat and a land use
• And this leaves us asking what is ‘natural’?
• And does it matter what’s natural?
• What was I thinking?
Grassland Habitat Guidelines

What to do?

• Should it be grassland?
• What should that grassland look like? What functions should it perform?
• What is realistic?
• How do we move forward?
Maintain, restore and create native grassland patches to their historic extent and type at a county, municipal and/or watershed scale considering past presence and current conditions.

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Is it what managers, decision makers, Canadians, etc. need?

What are your needs as an agency, organizer, academic? What is your duty?

Can it be processed in some framework?

In lieu of perfect conservation guidance: what is useful and what starts us on the right path?

Why is it so hard to integrate science into decision making?

Does it have to be so difficult?
We just don’t see the entry point to decision making.
In fact we are asked questions all the time...