U.S. National Vegetation Classification: Advancing the Description and Management of the Nation's Ecosystems

Canadian National Vegetation Classification (CNVC)
Classification nationale de la végétation du Canada

North American perspectives: The Canadian and U.S. National Vegetation Classification collaboration.

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Both the Canadian National Vegetation Classification (CNVC) and U.S. National Vegetation Classification (USNVC) share the same underlying "EcoVeg approach" to ecosystem classification. These national classifications have also been developed through a strong collaboration with subnational state and provincial/territorial partners. Here we briefly introduce the EcoVeg approach, summarize both classifications, and highlight their joint contribution to Ecosystems of North America.

The EcoVeg Approach

Purpose: describe the diversity of terrestrial ecosystems across the globe and inform conservation, management, and research.

Structure: an 8-level hierarchy for natural types, with three upper (formation) levels, three mid (physiognomic-biogeographic-floristic) levels and 2 lower (floristic) levels, and a separate 8-level hierarchy for cultural types.
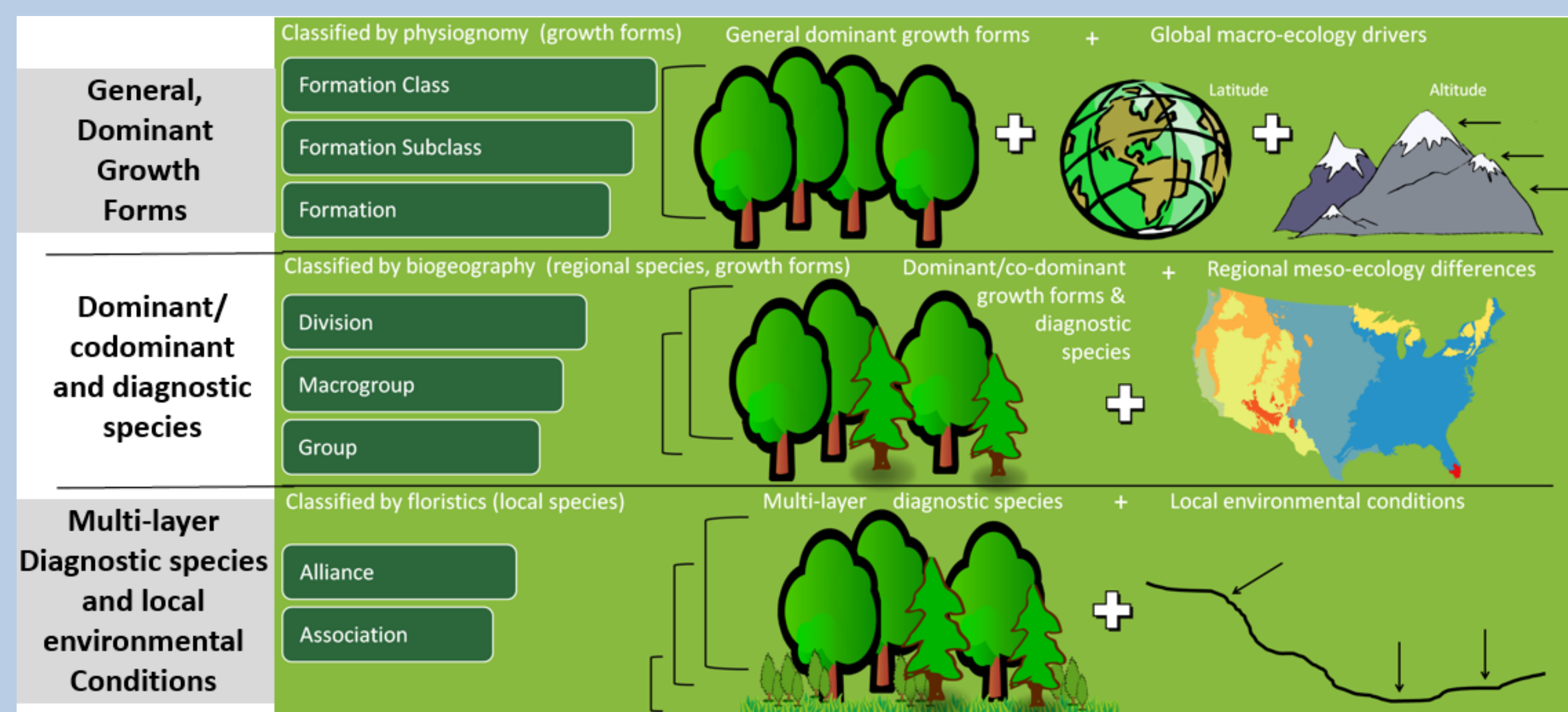
Scope: The approach is global, but most advanced in the western hemisphere, especially the U.S. and Canada.

Applications:
- Support extensive vegetation mapping across the U.S. and Latin America.
- Assess the conservation or at-risk status of macrogroups, groups and associations using IUCN Red List of Ecosystems and NatureServe Conservation Status Assessment protocols.
- Conservation planning

Maintenance: An open, peer-review model that allows for ongoing improvement by ecologists, while providing comprehensive versions for users. Use of the best available scientific information ensures that legacy classification efforts are fully incorporated.

Limitations: Somewhat complicated names for types, limited availability of comprehensive plot data sets, and sparse testing beyond the Americas and Africa.

Faber-Langendoen, D., T. Keeler-Wolf, D. Meidinger, D. Tart, B. Hoagland, C. Josse, G. Navarro, S. Ponomarenko, J.-P. Saucier, A. Weakley, P. Comer. 2014. EcoVeg: A new approach to vegetation description and classification. Ecological Monographs 84:533-561 (erratum 85:473).
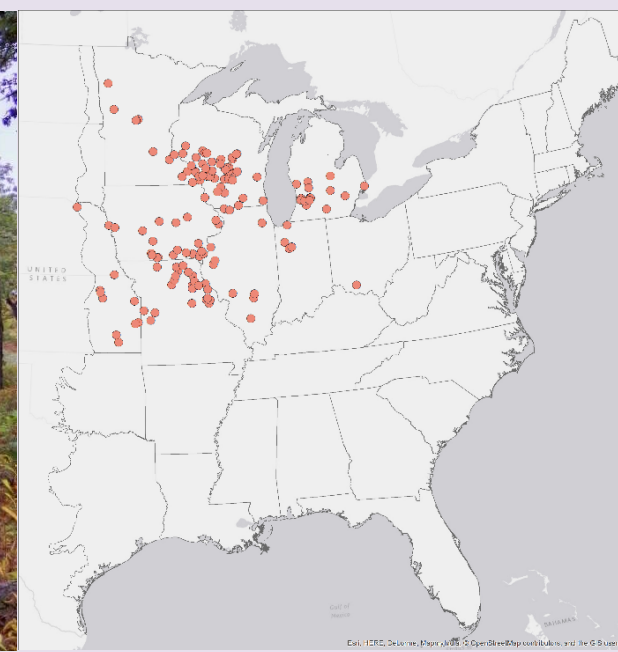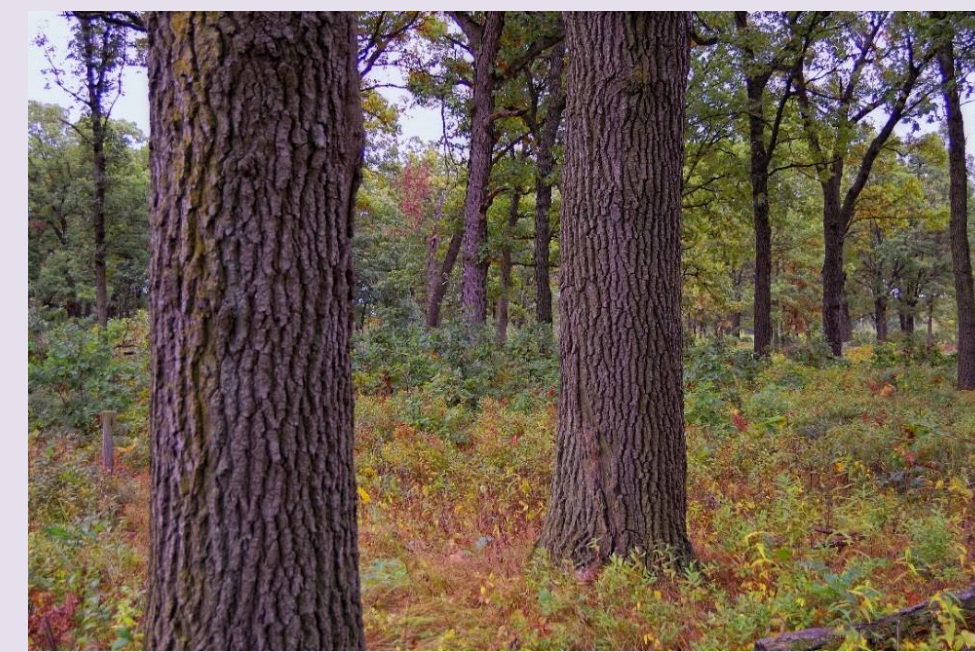
U.S. National Vegetation Classification

The USNVC covers all vegetation, including both cultural and (semi-) natural types. The partnership includes the Federal Geographic Data Committee, Vegetation Subcommittee, chaired by the U.S. Forest Service, with wide representation from federal agencies, and from non-federal partners - the Ecological Society of America and NatureServe.

Status (usnvc.org):
In lower 48 states, known natural types across all eight levels are described, largely through an extended literature synthesis, but with ongoing updates as plot data analyses are completed.

In Alaska, Hawaii, and U.S.-Caribbean, types developed to group level, but are incomplete at the alliance and association levels.


Central Midwest Oak Forest, Woodland & Savanna macrogroup (M012)

Canadian National Vegetation Classification

The goal for the CNVC is a classification for all the natural and semi-natural vegetation in Canada. The CNVC partnership comprises approximately 20 international, federal, provincial, territorial governmental and non-governmental agencies who have contributed data, expertise and/or money towards the development of the CNVC.

Status (cnvc-cnvc.ca):
- Upper levels of the hierarchy characterize all vegetation in Canada
- Lower levels focus has been on forested vegetation.
- Boreal forests mostly complete, based on extensive plot data over most of Canada.
- Considerable progress for temperate forests, particularly in western Canada. Thematic data gaps are significant for non-treed vegetation.
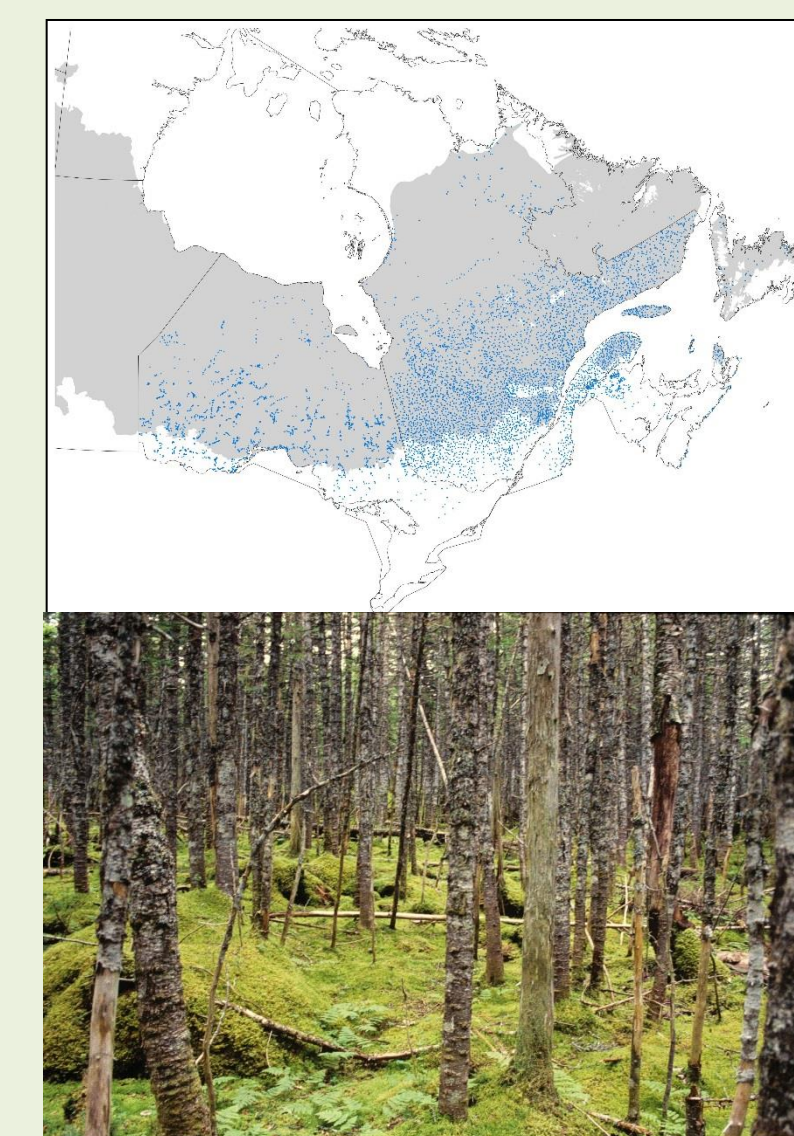
Eastern North American Boreal Forest macrogroup (M495).

Ecosystems of North America

Through the **International Vegetation Classification (IVC),** also based on the EcoVeg approach, a direct integration and harmonization of U.S. and Canadian types is readily achieved (Table 1).

TABLE 1. Current degree of completeness for natural vegetation types within the U.S., Canada, and across North America, as of Sept 1, 2016.

Level	USNVC (50 states & territories)	USNVC (continental 49 states)	CNVC	IVC North America (Canada, U.S.)
Formation Class	6	6	6	6
Formation Subclass	15	11	13	11
Formation	32	27	22	27
Division	69	57	36	57
Macrogroup	183	155	60[2]	156
Group	426	391	30[3]	410
Alliance	1263[1]	1263[1]	53[3]	TBD
Association	6168[1]	6168[1]	214[3]	TBD

[1] includes only types in lower 48 states.
[2] includes zonal forest, Great Plains grassland, and alpine and subalpine macrogroups, and all azonal macrogroups in Canada; excludes ruderal, aquatic and non-zonal upland types.
[3] includes only boreal and Vancouverian forest types.

Together these classifications provide a North American wide perspective on natural ecosystems, suitable for informing ecosystem-based management, research, monitoring and predicting change, and conducting conservation status assessments; e.g. North American Temperate Grasslands.

Northern Tallgrass Prairie

Northwest Great Plains Mixed-Grass Prairie
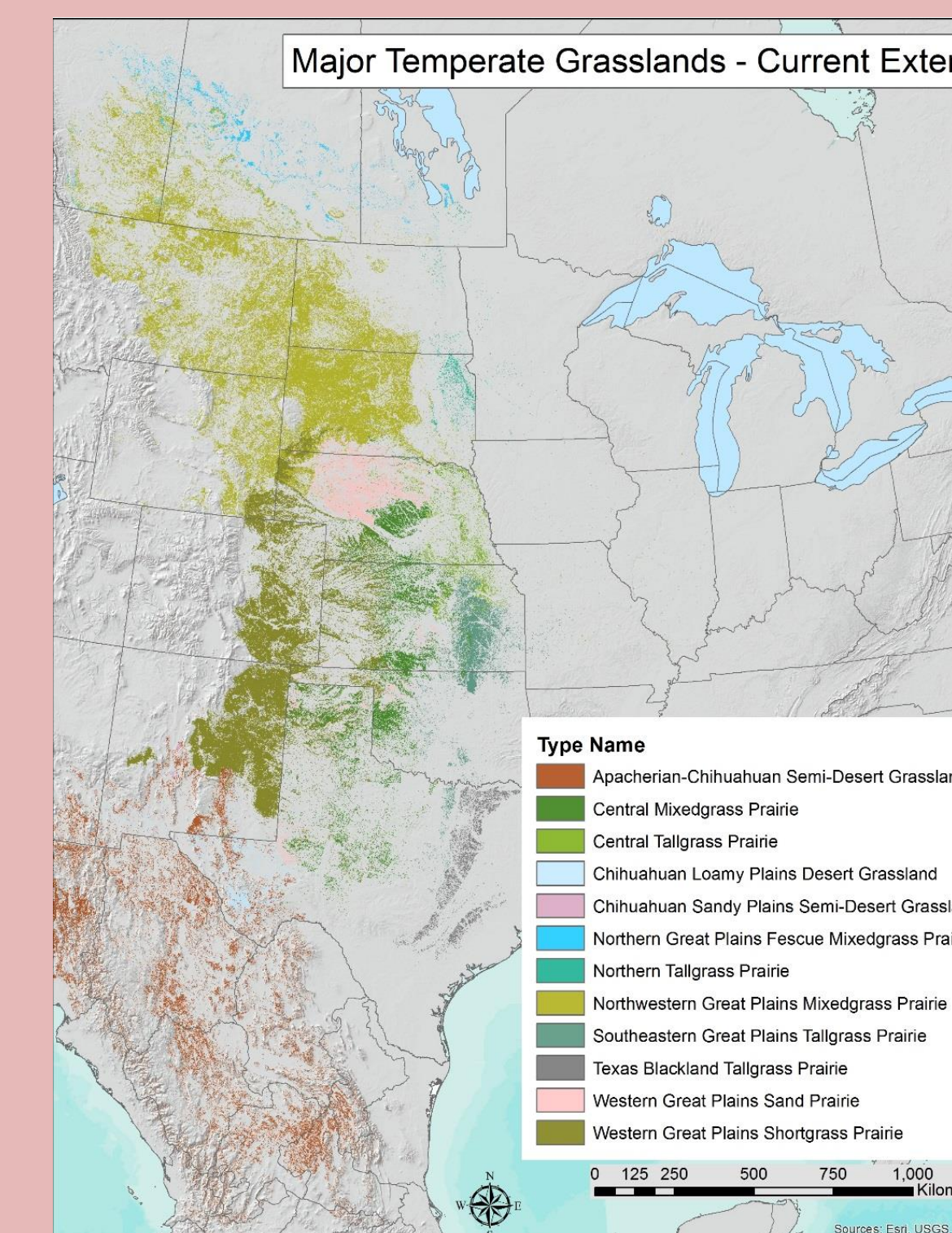
Grassland map from Comer et al. 2017 NatureServe

Faber-Langendoen, D., K. Baldwin, T. Keeler-Wolf, D. Meidinger E. Muldavin, R. K. Peet, C. Josse. 2017. The EcoVeg Approach in North America: International and U.S. and Canadian National Vegetation Classifications. Phytocoenologia [accepted].