Global Peatland Hotspot Atlas:
The State of the World's Peatlands in Maps
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UN environment programme

Peatlands of North America

North America's peatlands occur across a wide climatic range, from Arctic polygonal permafrost landscapes to temperate fens and subtropical swamps. Though only 2% are degraded, growing risks arise from intensive land use change, climate change, and permafrost thaw.

Global Peatlands Initiative

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Authors
Alexandra Barthelmes (GMC/DUENE e.V.),
Cosima Tegetmeyer (GMC/DUENE e.V.), Hans Joosten (GMC/University of Greifswald), Patrick Scheel (UNEP).

Production, Coordination and Review
Patrick Scheel (UNEP), Jan Peters (GMC/MSF),
Dianna Kopansky (UNEP).

Design and layout
igel+ente, Büro für Gestaltung, Fotografie und Kommunikation Greifswald, Germany
Anna Knüppel & Michael Schröder (www.igelundente.de)
Nora Prinz (www.noraprinz.de)

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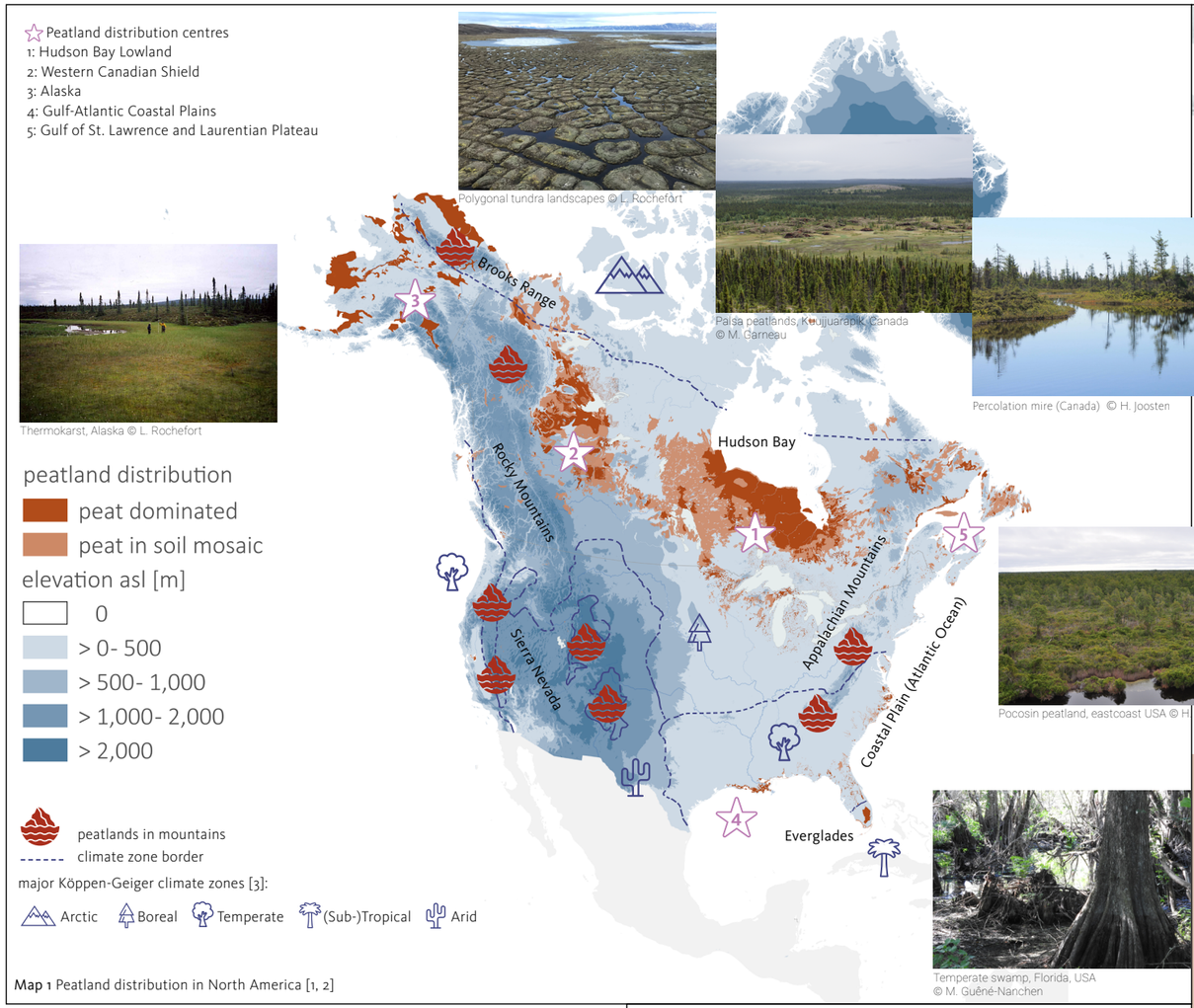
Peatlands of North America



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Thermokarst, Alaska © L. Rochefort

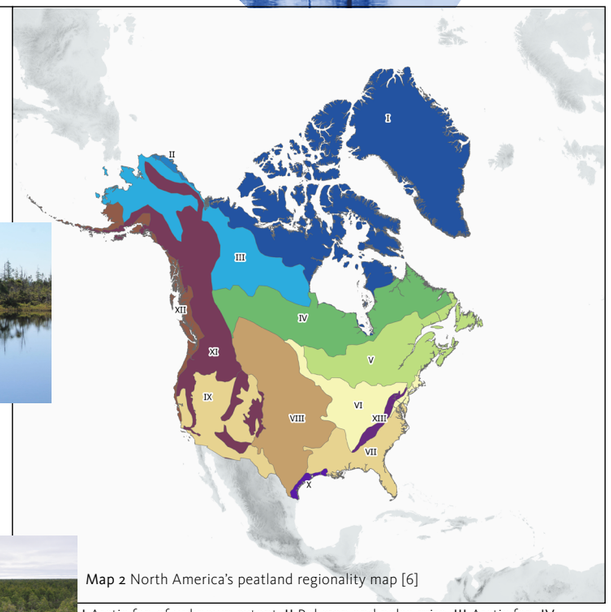
Palsa peatlands, Kuujjuarapik, Canada © M. Garneau

Percolation mire (Canada) © H. Joosten

Pocosin peatland, eastcoast USA © H. Joosten

Temperate swamp, Florida, USA © M. Guêné-Nanchen

Map 1 Peatland distribution in North America [1, 2]



Map 2 North America's peatland regionality map [6]

I Arctic fen of unknown extent, **II** Polygon and palsa mire, **III** Arctic fen, **IV** Sphagnum and Spruce bog, **V** Atlantic (raised) bog, **VI** Eastern forested fen, **VII** South-eastern forested and grassy fen (incl. Pocosin), **VIII** Prairie grassy marsh, **IX** Dryland grassy marsh, **X** Western Gulf coastal marsh, **XI** N-America Western mountain compound fen and bog, **XII** Pacific (raised) bog, **XIII** N-America Eastern mountain compound fen and bog

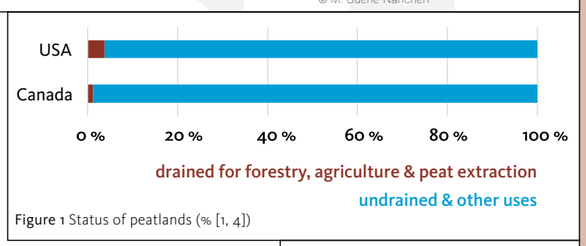
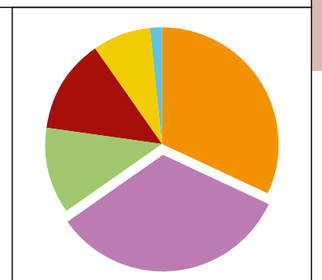


Figure 1 Status of peatlands (% [1, 4])



Share of global peatland area (32.5 % [1, 4])

- **Total peatland area: 158 million ha**
- **Distribution: Hudson Bay Lowland, Canadian Shield, Alaska, Coastal Plain (Gulf of Mexico), Labrador Peninsula / Newfoundland**
- **Peatland cover over total regional surface area: 8.5 %**
- **Share of global peatland area: 32 %**
- **Degraded peatlands: 2 %**
- **Annual GHG emissions from peatlands: 89 Mt CO_2e / yr**
- **Share of global GHG emissions from peatlands: 5 %**
- **Peatlands within protected areas: 20 %**
- **Top 5 countries with largest peatland area:**
  1. Canada (119,377,000 ha)
  2. United States (38,813,000 ha)
  3. Greenland (8,000 ha)
- **Total peatland carbon stock: 184,151 Mt C [4]**
- **Threatened peatland species: Flora: 12 VU, 15 EN, 11 CR; Fauna: 30 VU, 21 EN, 5 CR [7]**
- **Ramsar Wetlands of International Importance with peat: 36 sites (16.4 % of total Ramsar sites in North America [5])**

In North America, **peatlands are widespread in the cold low arctic climate zone**, becoming rarer towards the middle and high Arctic [1, 3]. **Arctic peatlands (Pingos, Polygonal Peatlands, Palsas**, in Alaska, Northwest Territories, Yukon Territory, Nunavut, northern Alberta, Saskatchewan, Greenland) often have a low peat thickness and the transition between peatlands and wet tundra is difficult to distinguish. The vegetation of **arctic fens** consists mainly of brownmosses (e.g., *Scorpidium*, *Aulacomnium*), sedges (e.g., *Carex aquatilis, Eriophorum scheuchzeri*), and grasses (e.g., Arctagrostis latifolia, Dupontia fisheri [2]).

From Alaska to Newfoundland, Labrador, and north of the prairies, **peatlands cover about 25–30 % of the boreal forest biome**. They are shaped by latitudinal and longitudinal climate gradients, as well as the geological formations on which they lie [2, 3]. They occur as ***Sphagnum* moss and spruce bogs** which exhibit a variety of Sphagnum species and dwarf shrubs, whereas **fens** are dominated by Cyperaceae species such as *Carex aquatilis, C. lasiocarpa, Trichophorum cespitosum*, and wooded swamps feature trees such as *Acer rubrum*, *Abies balsamea*, *Fraxinus nigra*, or *Alnus*.

***Sphagnum bogs*, fens, kettle hole mires and wooded swamps** are also found in temperate regions, such as along the east coast of the U.S. and Canada, and in the Great Lakes region, often with forest or high shrub cover. The diversity of peatlands here is determined by peat thickness, water table fluctuations, and tree density [1].

In the southeastern U.S. coast and coastal plains from Virginia southward to the Everglades of South Florida and westward along the Gulf of Mexico, **swamps and 'pocosins' are common. Swamps** are dominated by tree species like *Pinus*, *Chamaecyparis*, *Taxodium*, *Acer*, *Nyssa*, or *Persea*, while fens are characterized by Cyperaceae and Poaceae. Typical Pocosin vegetation is very acidic and dominated by pine woodlands or cedar forest. These communities occur on peatlands of poorly drained interstream flats, and peat-filled bay depressions. The wettest sites (or the center of bays) may contain only low shrubs and stunted pond pine, with beds of *Sphagnum*, pitcher plants (*Nepenthes*), and cranberry (*Vaccinium* [4]).

The sub-tropical shorelines can host **mangrove forests** with *Rhizophora mangle*, *Avicennia germinans*, and *Laguncularia racemosa*. Boreal, temperate and sub-tropical mountain systems host **fens** dominated by Cyperaceae, and **blanket bogs** dominated by Sphagnum, Cyperaceae and dwarf shrubs in the Rocky Mountains, Brooks Range (Alaska), Sierra Nevada (California), and eastern North American Mountains. Only about 2 % of North America's vast peatlands are degraded, because many are located in arctic and boreal climates unsuitable for agriculture or forestry and sparsely populated. However, peatlands have suffered from intensive land-use-related drainage and degradation, mainly for agriculture, in temperate and subtropical climates and from oil, gas and oil sand exploration and extraction also in the boreal and the arctic. Climate change is expected to affect all peatlands in North America in the future, including the vast permafrost peatlands and boreal areas [5, 6], which are threatened by permafrost thaw and increased fire frequency and intensity [1].

Sources: 1. UNEP (2022) Global Peatlands Assessment – The State of the World's Peatlands. Evidence for action toward the conservation, restoration, and sustainable management of peatlands. Main Report. Global Peatlands Initiative. United Nations Environment Programme, Nairobi. 2. Greifswald Mire Centre (2022) Global Peatland Map 2.0. Underlying dataset of the UNEP Global Peatland Assessment. 3. Peel, M. C., Finlayson, B. L., McMahon, T. A. (2007) Updated world map of the Köppen-Geiger climate classification. Hydrol. Earth Syst. Sci.: 1633-1644 4. Joosten, H. (2009) The Global Peatland CO2 Picture. Peatland status and drainage associated emissions in all countries of the World. Wetlands International, Ede, 10 p. + tables. 5. Data extracted from the Ramsar Sites Information Service 6. Greifswald Mire Centre (2024). Draft peatland regionality maps for the World. contact: alex.barthelmes@greifswaldmoor.de 7. Data extracted from the IUCN Red List of Threatened Species (VU = vulnerable; EN = endangered; CR = critically endangered).