

## Regional Landscape Studies

**☐ NORTHLANDS**

- ☐ NORTHEAST COAST
- ☐ MEGALOPOLIS
- ☐ CANADA'S CORE
- ☐ AMERICA'S HEARTLAND
- ☐ APPALACHIA and the OZARKS
- ☐ THE SOUTH
- ☐ PLAINS and PRAIRES
- ☐ MOUNTAINS and PLATEAUS
- ☐ DESERT SOUTHWEST
- ☐ NORTH PACIFIC COAST
- ☐ HAWAII

**<<<For each region:**

1. Know its physical geography.
2. Identify its unique characteristics.
3. Be able to explain the human imprint.
4. Discuss its sequence occupancy and economic development.

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## Regional Landscape Studies

**Support Material.**

- Read the assigned chapters.
- Supplement this material by looking at any US&C regional geography textbook.
- Consult road maps and regional/historical atlases.

**Required Landscape Road Trip Assignment**

- ✓ **Begin it now!**
- ✓ Select one route.
- ✓ As a region is covered in class, find and illustrate features.
- ✓ *If you start a region-by-region search now, you will have all the features needed well before the due date!*
- ✓ Create a "postcards" file to store maps, images and information.

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## EXAM 1 GRADE DISTRIBUTION

**Highest grade = 104**  
(max score with all extra credits =113)

- 1 A+
- 1 A
- 3 B
- 6 C
- 0 D
- 0 F

**Numbers on the inside cover of exam book:**

1<sup>st</sup> number = multiple choice, max. 60 pts

2<sup>nd</sup> number = essays, 2 at 20 each for 40 pts max.

3<sup>rd</sup> number = extra credit definitions, max. 5 pts

4<sup>th</sup> number = atlas extra credit assignment, max. 8 pts

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## Regional Landscapes of the United States and Canada

# The Northlands

Prof. Anthony Grande

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## Physiographic Diagram of the Northlands

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## Northlands

**Largest region in area of North America.**

Includes Alaska's North Slope and Canada's Arctic Archipelago as well as northern parts of Minnesota, Wisconsin and Michigan.

**VARIED TOPOGRAPHY**

- Rugged highlands
- Coastal lowlands
- Interior plains
- Mountain foothills
- Ice covered plateau
- + Frozen seas

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## Northlands



When you think about this region, what images come into your mind?

Extreme cold/snow  
Eskimos  
Reindeer/caribou  
Tundra/no trees  
Coniferous forests  
Northern lights  
Midnight sun  
Polar bear/seals







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## OVERVIEW: Physical

- ✓ **Inhospitable area:**
  - Extremely cold, long winters
  - Poor soils underlain by permafrost
  - Stagnant cold water in summer
  - Swarms of flying insects in summer
- ✓ **Dense forest (taiga) but tundra is beyond the tree line.**
- ✓ **Ice fields/glaciers in the far north.**
- ✓ **Difficult area to move around:** terrain plus great distances.
- ✓ **Global warming has and will continue to change the area.**





- Uneven frozen surface in winter.
- Soft, wet surface soil layer in summer.
- Deep crevasses on ice fields
- Sea ice/icebergs are year-round shipping hazards.

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## OVERVIEW: Human

- ✓ **Extremely low population density** except for southern margins
- ✓ **Center of Inuit culture:** Nunavut Territory.
- ✓ **Peoples' well-being affected by inhospitable environment:** cold + darkness = physical and mental stress.
- ✓ **Limited economic development:** harsh environment, few people and great distance to markets (lack of roads).
- ✓ **Chief economic activities:** extractive and service
- ✓ **Hudson Bay:** gateway for trade into central area.
- ✓ **Great Lakes:** connector of the southern area to the Atlantic Ocean via the **St. Lawrence Seaway** system.
- ✓ **Global warming will create new dynamics** in the area with the possibility of a real **Northwest Passage** to Asia, plus altered seasonal cycles with new lifeforms and illnesses.

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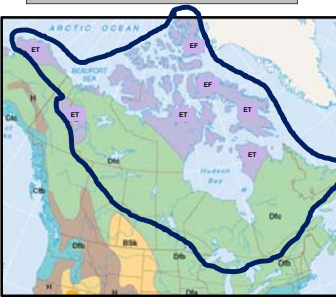
## GEOLOGIC SETTING

- ❖ Centered on **Canadian Shield.**
  - Exposed pre-Cambrian granitic crustal rocks are North America's oldest rocks.
  - Rich in **metallic minerals**
- **Hudson Bay:** Occupies a depression in the middle of the shield that has been flooded by the sea.
  - Caused by the weight of glaciers from the last ice age
  - Experiencing "glacial rebound": getting more shallow and the marshland around the bay is getting wider. Will be subject flooding with rising sea levels.
- **Laurentian Highlands** of Quebec
  - Rugged area with many rivers and lakes
  - Major producer of hydroelectricity
- **Western area:** Underlain by sedimentary rocks. Petroleum in west (tar/oil sand and oil shale); fertile soils in south.



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## CLIMATE



**Coldest area of North America**

**Humid Continental** climate subgroups have noted seasonal swings of temperature:  
**Dfb:** cool summer  
**Dfc:** short, cool summer

**Polar** climate subgroups are summerless climates:  
**ET** tundra and **EF** icecap  
**ET** is found in the northern-most parts of the region.  
**EF** is found over the glaciers of Ellesmere and Baffin islands.

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## Climate Characteristics




- ❖ **Extremely COLD**
  - Ave. January temperatures range from +27°F along the south fringe to -39°F at the Arctic fringe.
  - Temps as low as -76°F have been recorded.
  - Impedes agricultural, hunting and fishing activities.
- ❖ **Equivalent to a semi-arid region** (little new precipitation received)

- **Long winters with short frost-free period:**
  - **Less than 90 days** (3 mo) over most of region.
  - **Range: 135 days** at the southern margins to **14 days** on the Arctic coast.
- ❖ **ALBEDO**  
 ✓ **Albedo = Reflectivity.**
- **Influence:** With global warming there is less ice and more water allowing heat to be absorbed faster by darker land and transparent water (**less reflection**).



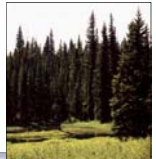


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## Natural Vegetation

- ❖ **TUNDRA**
  - Northernmost land areas where conditions are **too harsh for tree growth** (sap freezes).
  - Lichens, grasses, mosses, shrubs thrive.
- ❖ **TREE LINE**
  - **Zone of smaller and sparser trees** (spruce).
  - Transition between taiga and tundra.
- ❖ **TAIGA** (boreal forest)
  - **Coniferous tree biome** extending across the southern part of the region.
  - Closely spaced spruces, firs, and pines.
  - Slow-growing and short.
  - Trees decrease in size/number from S-N.

## Chief Northland Natural Landscapes

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## Tree Coverage in the Northland




<http://www.globalforestwatch.org/>


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## Harshest Environments:

ice, barren land, tundra



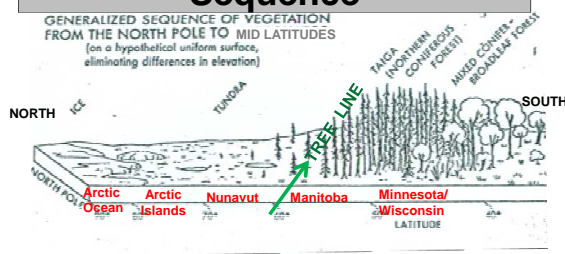
Glaciers are getting smaller.  
Areas are ice and snow free for longer periods of the year.  
Freshwater from melting ice changing salinity of sea water.



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## Northlands Vegetation Sequence

GENERALIZED SEQUENCE OF VEGETATION FROM THE NORTH POLE TO MID LATITUDES (on a hypothetical uniform surface, eliminating differences in elevation)



NORTH POLE    Arctic Ocean    Arctic Islands    Nunavut    Manitoba    Minnesota/Wisconsin    SOUTH

LATITUDE

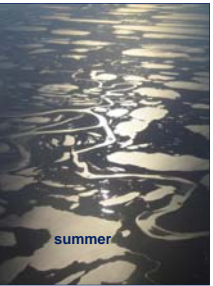

Landscape development is chiefly **latitude/climate** related.  
(Landforms/elevation have minimum influence except in Quebec Province.)


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## Extent of Permafrost

**PERMAFROST:** Subsurface layer of permanently frozen ground associated with the tundra.

The surface thaws during the warm period but water cannot drain away.



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**Freeze-thaw cycles create polygons and undermine foundations.**



### Dealing with Permafrost

- 1: Foundations must be anchored into the permafrost by driving piles into it.
- 2: Road beds must be thickened.
- 3: Heated structures must be raised and insulated to prevent thawing the ground.





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### Canada's Native Population

**INUIT Culture**



**NATIVE AMERICAN/ MÉTIS Culture Groups**



*The Trapper's Bride* by A. J. Miller, 1837 - Métis people

1887 Manitoba

✓ **American Indians are concentrated in the taiga.**  
Traditional eco based on hunting/fishing.

✓ **Métis: Descendants of the intermarriage of Indian women and European fur traders**  
They outnumber American Indians in the taiga. Many are engaged in farming.



**Inuit (aka Eskimo) are the predominant group of the tundra.**

- Arrived in North America about 4,500 yrs ago. Culture extends from Siberia to Greenland.


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### First Nations

Inuit	American Indian
<ul style="list-style-type: none"> <li>Hunted/fished on water and ice; tundra dwellers.</li> <li>Used seal-skin kayaks and harpoons.</li> <li>Hunted for seal, whale, fish and marine animals.</li> <li>Nomadic</li> </ul>	<ul style="list-style-type: none"> <li>Hunted/fished on land; taiga dwellers.</li> <li>Used birch-bark canoes and bows and arrows.</li> <li>Hunted for big game/fish.</li> <li>Herded caribou.</li> <li>Invented snowshoes for winter movement.</li> </ul>

**Both groups moved with the seasons, following animal migrations.**



[https://www.nytimes.com/2017/02/07/travel/first-nations-arctic-unesco-biosphere-canada.html?\\_r=0](https://www.nytimes.com/2017/02/07/travel/first-nations-arctic-unesco-biosphere-canada.html?_r=0)

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### Early European Settlers

➤ **First came the French.**

- Voyageurs, fur trappers and traders, missionaries.
- Controlled the Great Lakes/St. Lawrence drainage basin in early days.
- Trading posts and forts at strategic sites now the location of today's cities.

➤ **Then came the British.**





- Hudson's Bay Company:** fur-trading company established north of French territory.
  - Granted regional **trade monopoly** by British government.
  - Settlements on the margins of Hudson Bay.
- Control extended west to the Rocky Mts. as **Rupert's Land**.
  - Pelts** (Arctic fox, beaver, bear) and **hides were prized**.

Review maps in Historical Atlas.

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### Settlement Pattern

- Low population density.**
- Created/dominated by one major economic activity** as mining, transportation, defense.
- Small agricultural settlements** in fertile, warmer areas.
- In the Far North**
  - Available **food and supplies** are key to original village locations.
  - Few permanent settlements.** Barren land of central region difficult to survive.
  - Today most settlers are employees of government or mining companies and are non-Native males.**

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### Settlements







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### Local Transportation

Lack of roads impedes movement throughout the region especially on the tundra. **Check your atlas.**

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### Lumbering

❖ **The taiga is the largest area of uncut forest in North America.**

- **Canada is the world's leading exporter of forest products.**
- Lumber, pulp and paper operations are found in the southern area from Quebec to Manitoba.
- **Spruce forests prime source of pulp for paper mills.**
- Mills are located on water supply and power sites along the southern edge of Canadian Shield.

Moving logs on the Gatineau R., Quebec

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### Paper Mills, Quebec Prov.

Trees delivered to mill for chipping.

Barge carrying wood chips to paper mill for pulping.

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### U.S. Mining

❖ **Mesabi Range (Minnesota), and areas of northern Wisconsin and Michigan, produce iron ore.**

- **Taconite:** Contains c.30% iron, replacing exhausted high-quality ores. It is **ground into powder** before shipment, removing rock and making the load lighter and concentrated
- ✓ **Situational advantage:** network of the Great Lakes, St. Lawrence Seaway and railroads provide an outlet.

THE IRON RANGES OF THE LAKE SUPERIOR REGION

Ontario

Minnesota

Michigan

Wisconsin

Lake Superior

Iron ore strip mine

Loading an iron ore ship at Duluth, MN

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### Canadian Mining

❖ **Canadian Shield is a vast area of hard igneous rock at the surface.**

- ✓ **Rocks contain many important minerals:** iron, copper, lead, zinc, nickel, uranium, gold and asbestos.
- Mining and processing centers have grown in the area.
- **Metals are smelted on site** to concentrate the ore.
- Moved by rail and water networks.

Open pit asbestos mine at Thetford, QC

Closed iron mine, Marmora, ON

Diamond mines near Yellowknife, NWT

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### Mining Center Complexes

**Sudbury, ON:** Center of copper and nickel mining and smelting





**Timmins, ON:** Open-pit copper mine

World's tallest smokestack 1200 ft high




**Thompson, MB:** Nickel mine complex

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### Effect of Acid Pollution

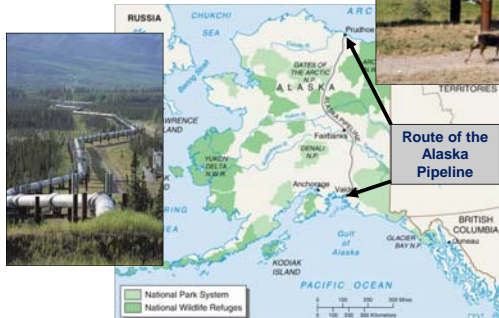






### Petroleum



- ❖ **Alaska's North Slope**
  - Extraction is a technological feat
  - Problem of moving petroleum to market:
    - distance to the sea
    - use of pipelines in a cold climate.
- **Best prospects for additional discoveries**
  - Mackenzie River delta region of the Northwest Territories
  - Arctic Ocean seabed

### Alaska Pipeline

Route of the Alaska Pipeline

### Athabasca Oil/Tar Sands

- ❖ **Alberta Province** in the taiga region has 85% of world's proven resources.
- **The world's largest known near-surface repository of bitumen: heavy crude oil.** It is mixed with the sandy soils of northern Alberta.
  - Accessible by strip mining.
  - Oil produced from steam injection and refining.
  - Estimated economically recoverable oil to be about 170 billion barrels.

### Alberta Tar Sands Strip Mining






Raw tar/oil sand



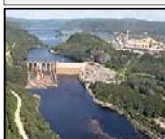


Strip Mine

Processing Plant

Raw bitumen

To get **one barrel** of oil, **four tons** of tar sands have to be processed.

### Hydroelectricity

- ❖ **Quebec and Labrador have the greatest untapped production potential.**
  - Sites located at the southern portion of the Canadian Shield.
- **Basis of the aluminum smelting industry.**
- **Surplus energy sold to NYS, Ontario, New England as part of an international grid system.**
- **Resistance from environmental groups. Why?**

### Strategic Northland

NORAD = North American Air Defense Command  
DEW = Distance Early Warning Line

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### Northland Tourism

❖ **Rising incomes and leisure time allow for more recreation.**

- **Southern margins** (Minnesota, Wisconsin, Michigan; Quebec; Ontario) draw outdoor oriented tourists.
  - Easily accessible.
  - Heavy usage.
- **Central and northern portions** are visited less because of harsh environment.

➤ **Environmental Concerns:** Fragile environment that needs to be protected.

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### NEXT

## NORTHEAST COAST

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