Regional Landscapes of the United States and Canada

HAWAII
Prof. Anthony Grande

DATES TO REMEMBER

- **MAY 7**: Last day to hand in OPTIONAL EXTRA CREDIT PROJECTS, listed on syllabus.
  - Short research paper on a preapproved topic
  - “Geography of the US & Canada in the News”
- **MAY 14**: Last day to hand in REQUIRED LANDSCAPE EXERCISE without penalty.
  - Last class lecture.
- **MAY 21**: Exam III: The Final Exam
  - From 11:30 AM to 1:30 PM.
  - Same format and length as exams I and II
  - Last day to hand in extra credit exercise for Ex. III.

OVERVIEW

- Above water tops of the youngest volcanoes of the Mid-Pacific Seamount Chain which extends underwater to the Aleutian Trench.
- Last area on earth to be discovered and settled.
- Diverse population with strong Polynesian and Asian influences.
- Population concentrated in metro Honolulu.
- Tourism and agriculture based economy.
- Ethnic Hawaiian cultural rebound.

The State of Hawaii

- Oahu:
  - Heart of the state.
  - Densely populated and intensively used.
  - Location of Pearl Harbor and Waikiki
- Hawaii (“Big Island”)
  - Dominated by five huge shield volcanoes; experiences ongoing eruptions
  - Large ranches
  - Sugar cane plantations; Kona coffee
  - Tourism

The Islands

- Mid-Pacific Ocean location 2,300 mi from California.
- Volcanic in origin.
- Tropical in nature.
- There are 8 inhabited islands; 4 have population concentrations.

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The Islands (cont’d)

- **Maui**
  - Second largest island; composed of two volcanoes, including Haleakala, separated by a central lowlands.
  - Lahaina was the capital of the Kingdom of Hawaii and the center of Pacific whaling fleet.
  - Intensive tourist development
- **Lanai**
  - Leeside of Maui and therefore dry
  - Called the Pineapple Island because the entire island is one pineapple plantation owned by Dole Corp. (now Castle and Cooke)
- **Molokai**
  - Half ranchland, half rugged mountains.
  - Least economically developed; recent tourist site.
  - Location of a leper colony of Father Damien fame.

The Islands (cont’d)

- **Kauai**
  - Heavily eroded into spectacular scenery.
  - Contains one of the wettest spots on earth.
  - Lush vegetation.
- **Niihau**
  - Lee side of Kauai, therefore less rainy.
  - Privately owned since 1864; current owner the Niihau Ranch Company.
- **Kahoolawe**
  - Flattest, driest and smallest of the main islands.
  - Formerly a bombing range for the military now returned to the state

Geology

- Located in the middle of the Pacific Plate over a hot spot on the earth’s crust that creates underwater volcanoes.
- The islands are the visible portion of a series of massive volcanoes that stretch NW to Siberia.
- Active volcanoes are found only on Hawaii (Big Island) which is currently over the hot spot.

**Geologic Hot Spot**

- The Hawaiian island chain is a product of the movement of the Pacific Plate over a hot spot.
- A hot spot is volcanic activity produced above a zone of weakness in the lithosphere that allows molten material to reach the surface.
- Movement of the Pacific Plate over the Hawaiian hot spot has created volcanoes on the oceanic crust. (The longer an island stays over the hot spot, the wider and taller it gets.
- When the island moves away from the hot spot, volcanic activity ceases.
Principal Volcanoes of Hawaii

Loihi Seamount

Volcanism on Hawaii

Mauna Kea
Hawaii (youngest island)

Punalu’u Beach
Hawaii

Haleakala Caldera
Island of Maui

The Loihi Seamount will become the next Hawaiian Island. It is currently about 9,000 feet above the ocean bottom and about 1,000 feet below sea level.

Kilauea is the current active volcano on the island of Hawaii.

Mauna Kea rises 13,784 ft above sea level. The ocean floor is 18,000 ft below sea level. From its base on the ocean floor to its summit, Mauna Kea is 31,784 ft tall, making it the world's highest mountain. It is dormant.

“Black sand” beaches are really made up of volcanic cinder and ash.

Volcanic craters within the Haleakala Caldera. Volcano was formed 800,000-1 mil yrs ago; last eruption in 1750.
Sea Cliffs
Molokai

Diamond Head
Oahu

Waimea Canyon
Kauai (oldest main island)

Na Pali Coast
Kauai

Climate
On each island, climate zones form in relation to elevation and wind direction.
Predominant wind is from the northeast.
On Hawaii, because of the height of Mauna Loa and Mauna Kea, all climates exist except icecap.

Temperature
- Tropical location (entirely south of Tropic of Cancer)
- Maritime influences dominant
- Temperature range
  - Highest temps September and October
  - Lowest temperatures early March
  - Minimal range in temperatures
    - Record high: 88°F
    - Record low: 57°F
Precipitation

Seasonal Variation
- Drier summer May to Oct
- Moister winter Oct to April

Orographic Rainfall
- North and east sides of islands are rainier.
  - Mount Waialeale (Kauai) gets 465 in. of rain each year (one of the wettest places in the world)
  - Waimea, 15 mi. away, gets less than 20 in. per year
- Snow at the summit of Mauna Loa and Mauna Kea
- Southwestern portions of the islands are drier.

Polynesia

Hawaii is considered the northern outpost of the Polynesian culture realm.
- Polynesians from the South Pacific settled the islands c. 1500 yrs ago.
  - Migrated by canoe from the Marquesas Islands, 2500 mi to southeast.
  - Second wave arrived about 1,000 yrs ago

Ocean-going Technology

Ancient Polynesians were advanced in shipbuilding and navigational techniques. (They had to be able to get back to their home island)

European Discovery of Hawaiian Islands

In 1778 British explorer Capt. James Cook was the first European to land on the islands.

Giant Waves

Winter storms in the North Pacific generate the waves off the coast of Oregon and California.
- NE winds push water toward mid-Pacific where the Hawaiian Islands are "in the way" of ocean swells.
  - The swells break in shallow water creating waves up to 50 ft. high along the northeast shores of the islands.
European Impact

- Capt. Cooke arrives in 1778 finding Hawaiians living under various rulers.
- Under King Kamehameha (1791-1819), the Hawaiian people were united.
- The islands become a rest, refueling and transhipment station for trade with East Asia in late 1700s.
- Became a center of the North Pacific whaling industry (early 1820s).
- Missionaries came in the early 1800s; they undermined the influence of Hawaiian rulers.

European/American Impact

- Kamehameha dies in 1819.
- Competing European efforts to fill the power vacuum (France 1820-50s; Britain 1840s).
- The influence of American plantation owners grew in the late 1800s.
- Led to the overthrow of Hawaiian rulers in 1893 and the declaration of the Republic of Hawaii. (Feared return of monarchy and possible European inroads.)
- Annexation by U.S. in 1898.
- Statehood in 1959

Non-native Impact

Impacts on Native Hawaiian culture
1. Disintegration of political/economic traditions.
2. Food gathering and distribution systems upset leading to famine.
3. Infectious diseases introduced (measles, leprosy, smallpox, syphilis, tuberculosis)
4. Population reduction: declined from 150,000 (1804) to 75,000 (1850).
5. Intermarriage: reduced the Polynesian blood line.
6. Introduction of non-native species of animals and plants.

Hawaii’s Population

- Pre-European pop. est.: 300,000
- 1876: 54,000
- 1920s: 300,000
- World War II: 400,000 service personnel (grew to 850,000 during war)
- Census 2010: 1,360,301
- Immigration bringing higher population growth than US average.
- Concentration on Oahu.

Ethnicity in Hawaii

- Greater integration than other parts of U.S.
- Success of Japanese and Chinese groups
  - High educational levels
  - High per capita incomes
- Lower levels of well-being are found among
  - Native Hawaiians
  - Filipinos (and other later arrivals)

Federal Government

- Federal Government controls much of the land on the islands especially with military facilities.
- Military
  - Strategic location both historic and present
  - Headquarters of Pacific Command and center of Pacific operations for all services.
- Impact
  - Owns 25% of Oahu; employs 25% of work force
  - Vulnerability to cutbacks
Pearl Harbor

Pearl Harbor is a large lagoon on Oahu. Its protected harbor made it an ideal naval base, but the narrow inlet is a liability. The lagoon was deepened in the early 1900s to accommodate large ships. On Dec 7, 1941 it was the target of a Japanese aerial attack.

Tourism

- Perception as tropical paradise
- First scheduled trans-Pacific flights in 1936, but ships remained primary transportation to 1950s
- Increased visitors
  - Larger aircraft
  - Economic growth
- Sources of tourists
  - Mainland U.S.
  - Asia, esp. Japan

Tourism: A Mixed Blessing?

- Principal growth sector
  - $11 billion to economy
  - 171,000 employees (22% of all jobs)
- Problems
  - Congestion
  - Pollution
  - Decline in scenic beauty
  - Instability
    - Seasonal.
    - Subject to swings in the economy.
    - Inconvenience to locals esp. Native Hawaiians

Polynesian Cultural Center

Population Density on the main islands

Honolulu

- Dominates Hawaii
  - 72% of residents
  - 80% of economy
- Hemmed in by mountains, ocean, Federal land
- High living costs
- Congestion
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Sugar Cane Field and Mill

Pineapple Plantation

Cattle Ranch, Island of Hawaii

Cattle are raised on the dry side of the island on “Texas-type” ranches.

Plant and Animal Life

- Diverse plant and bird community
  - Isolation
  - Tropical and temperate climate
  - Environmental variation, including arid areas
- Several thousand plants and 66 birds found nowhere else
- Primary threats
  - Human destruction
  - Introduction of alien plants and animals

A Paradise?

- Public’s perception of Hawaii as a paradise.
- Problems
  - Cost of living, esp. everyday items
  - Unemployment, limited availability
  - Isolation
- Positive attributes
  - Racial and ethnic assimilation.
  - Scenic beauty.
  - Environmental awareness.

The End

Except for the Final Exam on Monday, May 21 at 11:30 AM.