

THE BALD EAGLES OF OLYMPIC NATIONAL PARK

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GSS 313.31



OLYMPIC NATIONAL PARK

DEMOGRAPHICS

- **Olympic National Park** is in Washington State on the Olympic Peninsula, which is in the southwestern region. The park has a plethora of vastly differing ecosystems; from the 70 miles of desolate, wild coastline to dense rainforests. There are even glacier-capped mountains for the adrenaline junkies! The contrasting habitats are likely due to the drastic changes in elevation and precipitation across the park. The park is so diverse it is said to possess around 1,500 plant species and myriad beautiful animals (“Olympic...”).
- For my project I will be focusing on the species ***Haliaeetus leucocephalus***, or otherwise known as the Bald Eagle.



Source: <https://www.myolympicpark.com/park/autumn>



HALIAEETUS LEUCOCEPHALUS; THE BALD EAGLE



Source:

<https://www.jonathancullor.com/blog/bald-eagle-haliaeetus-leucocephalus>

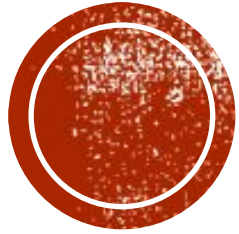
- **Diet:** They eat predominantly fish, but will also devour small birds and mammals
- **Behavior:** typically monogamous
- **Lifespan:** 15 to 20 years in the wild
- **Perception:** Great binocular vision with a reduced sense of smell.
- **Communication:** high-pitched tweets and wing flaps
- **Cite:** (Siciliano)

▪ Purpose

- The purpose of this project is to expand biological conservation knowledge, increase environmentally-conscious decisions, and overall widen a love for the solitude found in nature.



- Do bald eagles live in a specific type of habitat or do they roam free?
- Are bald eagles at any risk of extinction due to human overconsumption or drastic environmental change?
- If not, where are the ideal locations within the Olympic National Park to birdwatch these formidable flyers?
- How do populations of eagles compare outside of the protection of the park?



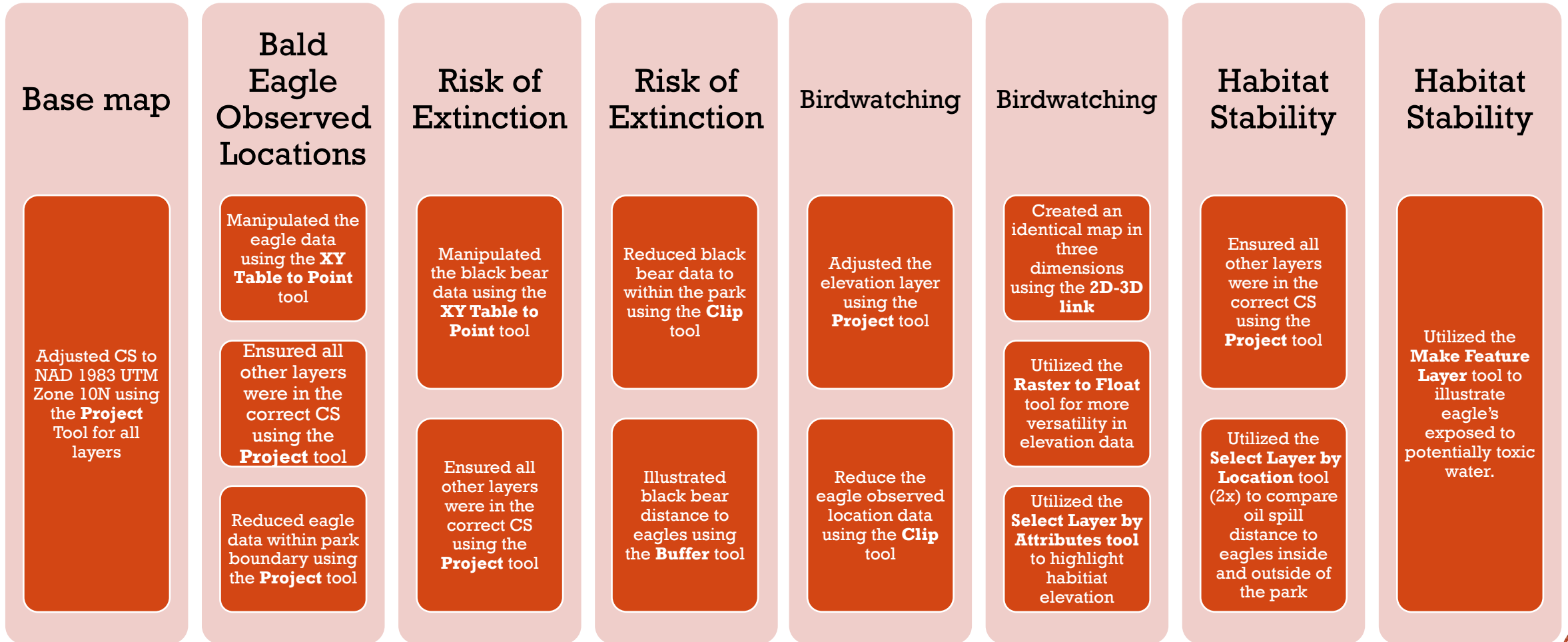
BALD EAGLE RESEARCH QUESTIONS

COORDINATE SYSTEM

- NAD 1983 UTM Zone 10N
- I chose this coordinate system because it covers around 2/3^{rds} of the state of Washington, which encompasses the Olympic Peninsula and a decent amount of Olympic National Parks offshore waters. I believe it will be important for me to preserve direction and shape throughout my project because I want to identify data on habitat stability, species occurrences, and elevation.



WORKFLOW DIAGRAM



BASE MAP WITH GLACIERS

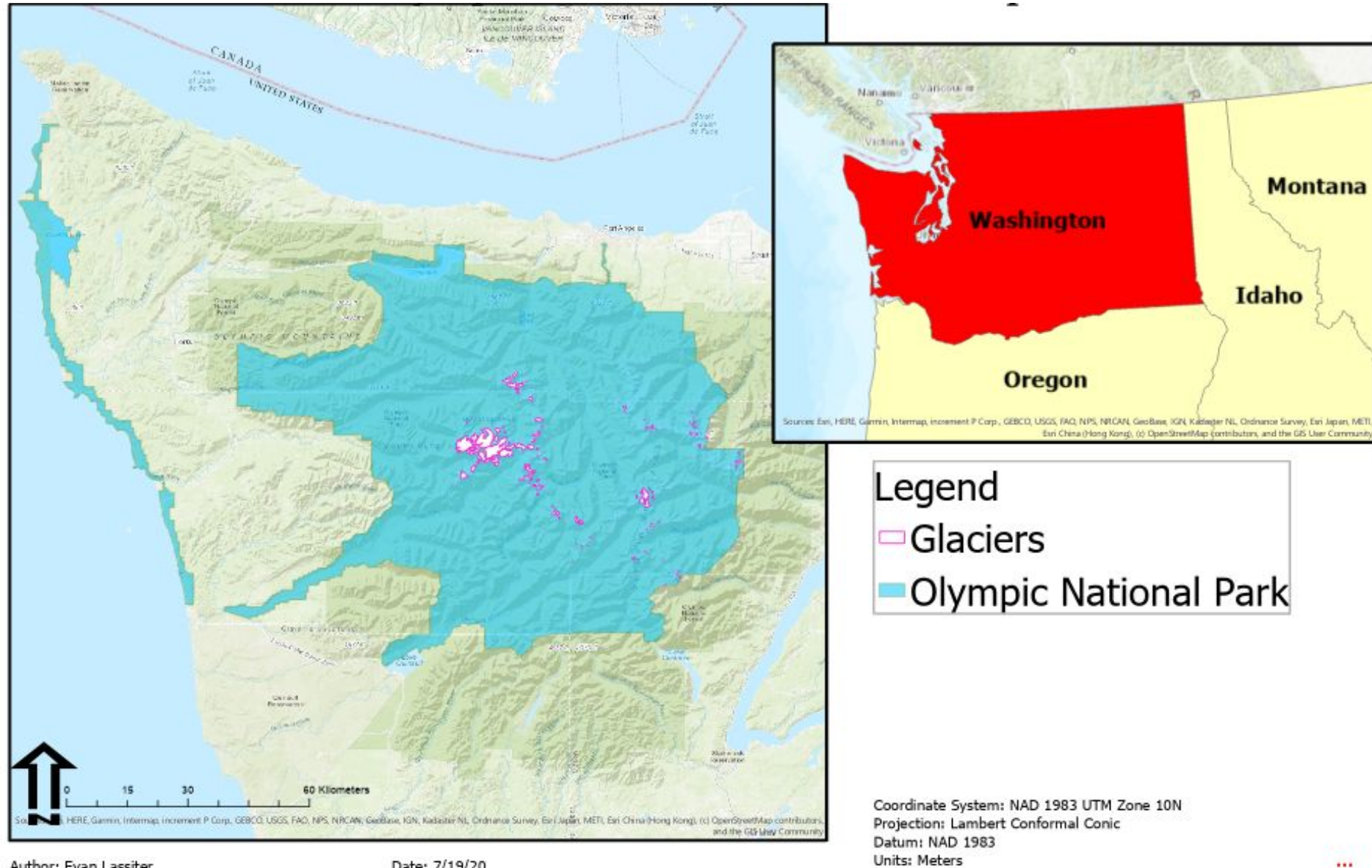
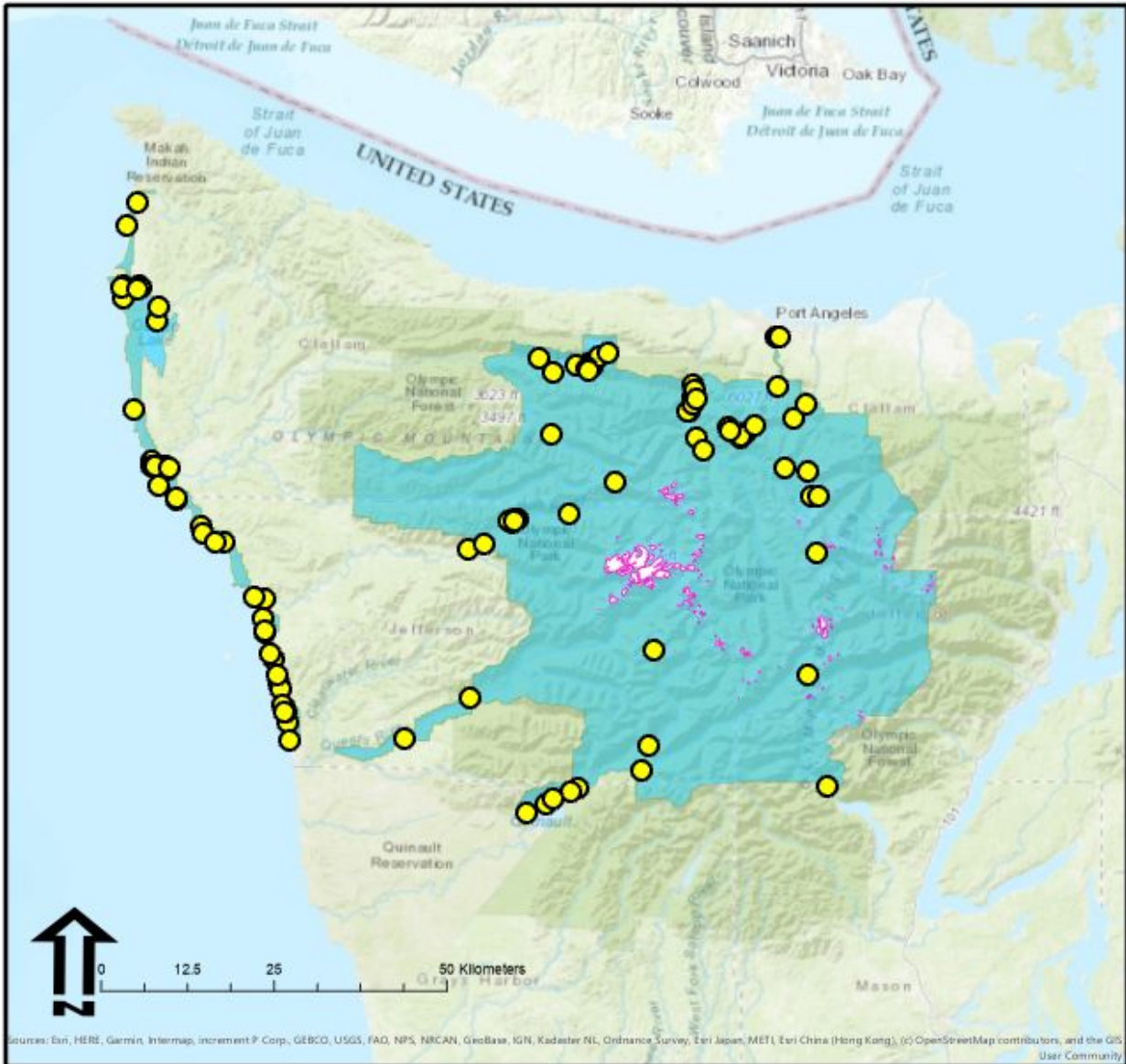


Figure 1: Base map showing the park boundary and the state of Washington

Sources:
1. Mastering ArcGIS 1st Edition (2020)
[E-book] Maribeth Price. McGraw-Hill Higher Education. Dubuque, Iowa.



TABULAR DATA MAP: BALD EAGLE OBSERVED LOCATIONS



Coordinate System:
NAD 1983 UTM
Zone 10N
Projection: Lambert
Conformal Conic
Datum: NAD 1983
Units: Meters

Legend

- BaldEagleSpottings_Olymp
- Glaciers
- Olympic National Park

Sources:

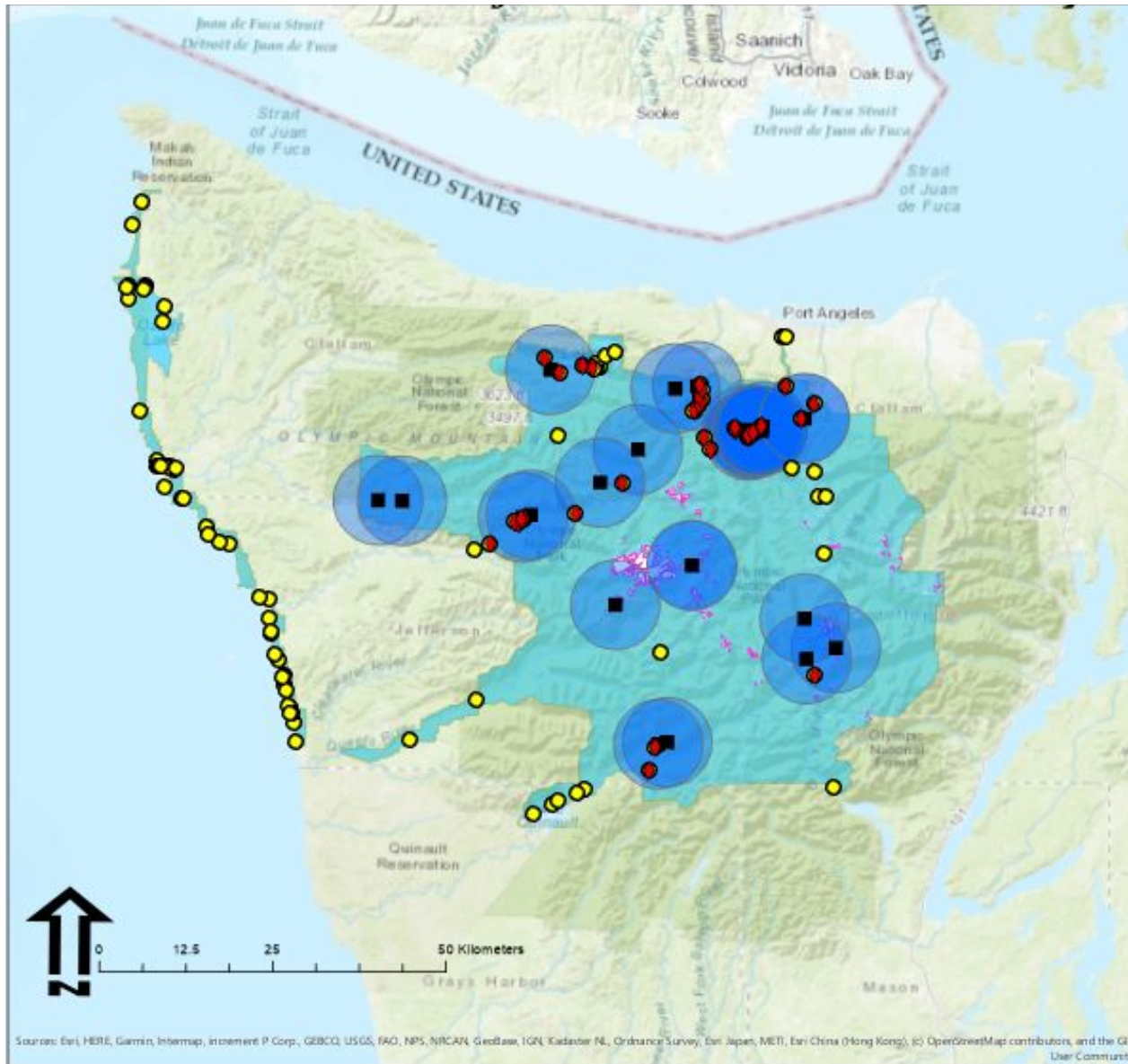
1. Mastering ArcGIS 1st Edition (2020) [E-book]
Maribeth Price. McGraw-Hill Higher Education.
Dubuque, Iowa.
2. *Haliaeetus leucocephalus* (2019) [standalone table].
Gbif. Gbif.org.
https://www.gbif.org/occurrence/search?taxon_key=2480446 [Accessed 6 July 2020].

Author: Evan Lassiter
Date: 7/9/20

Figure 2: Thematic map using tabular data to show sightings of bald eagles



THEMATIC MAP #2 – RISK OF EXTINCTION



Legend

- BlackBears_Olymp
- BaldEagleSpotting_Olymp
- BlackBears_Olymp_Buffer
- Glaciers
- Olympic National Park
- ◆ BlackBears_Climb

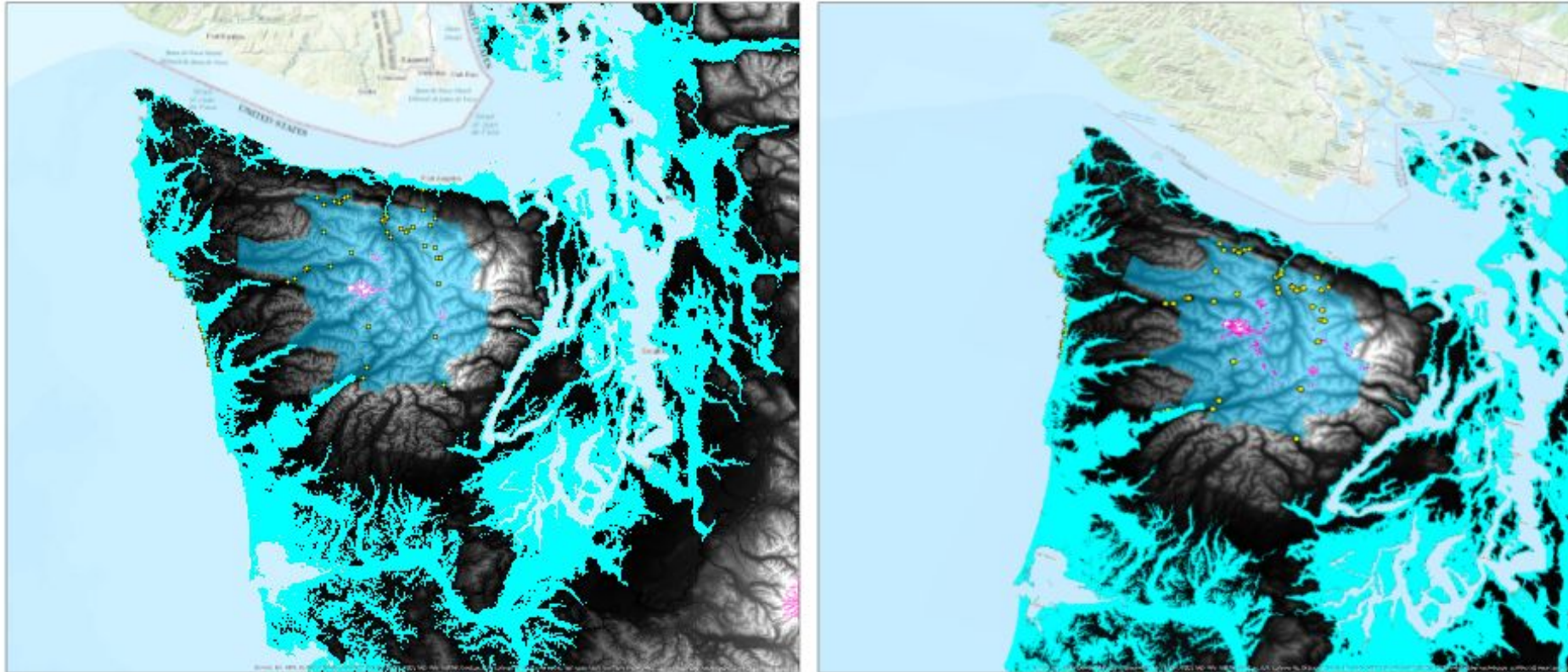
Sources:

1. Mastering ArcGIS 1st Edition (2020) [E-book]
Maribeth Price. McGraw-Hill Higher Education.
Dubuque, Iowa.
2. Haliaeetus leucocephalus (2019) [standalone table].
Gbif. Gbif.org.
https://www.gbif.org/occurrence/search?taxon_key=2480446 [Accessed 6 July 2020].
3. Ursus americanus Pallas (1780) [shapefile].
<https://www.gbif.org/dataset/96ca66b4-f762-11e1-a439-00145eb45e9a> [Accessed 19 July 2020].

Coordinate System:
NAD 1983 UTM
Zone 10N
Projection: Lambert
Conformal Conic
Datum: NAD 1983
Units: Meters



THEMATIC MAP #3 – BIRDWATCHING



Author: Evan Lassiter
Date: 7/19/2020



Coordinate System: NAD 1983 UTM
Zone 10N
Projection: Lambert Conformal Conic
Datum: NAD 1983
Units: Meters

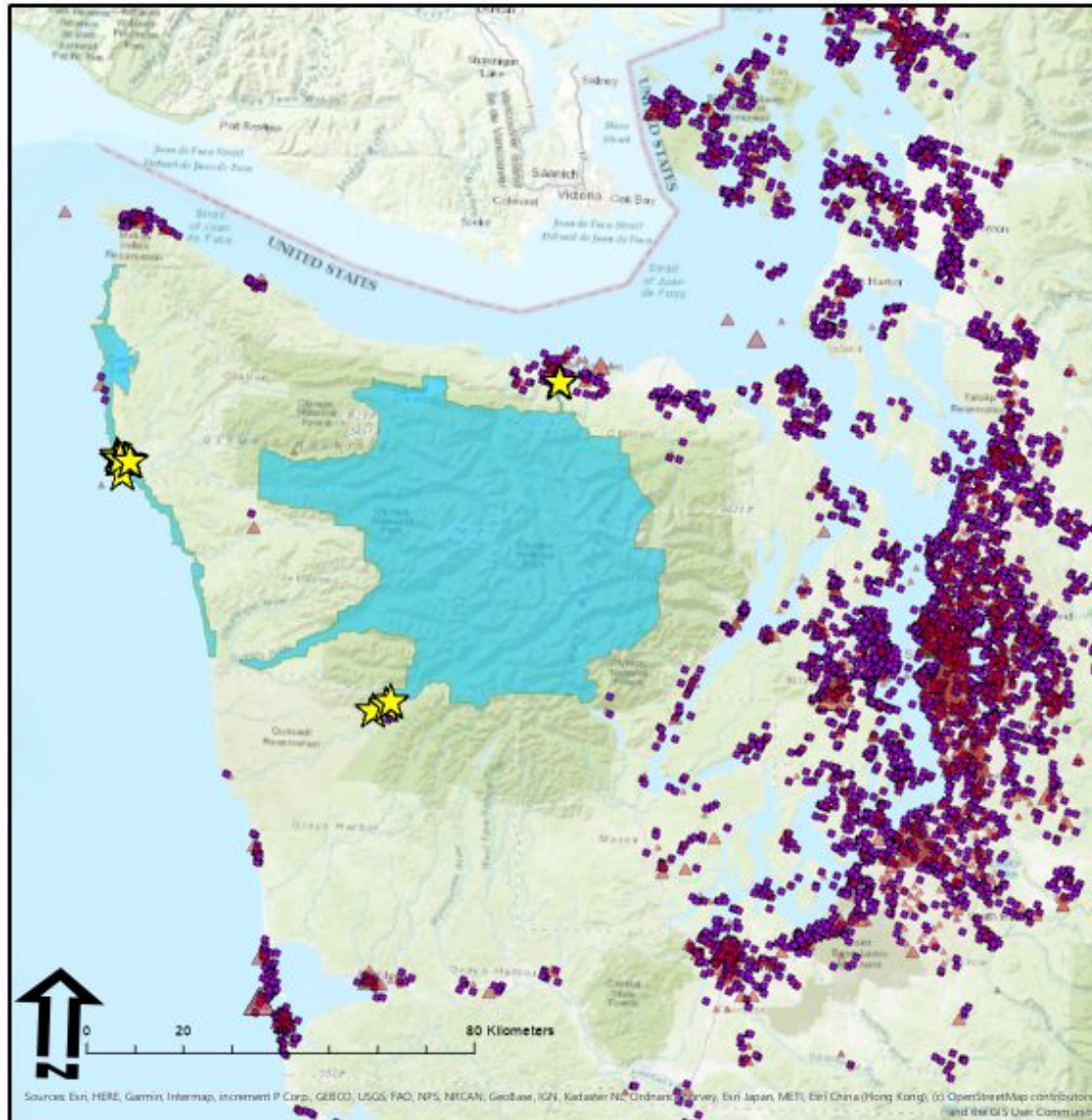
Sources:

1. Mastering ArcGIS 1st Edition (2020) [E-book] Maribeth Price. McGraw-Hill Higher Education. Dubuque, Iowa.
2. Haliaeetus leucocephalus (2019) [standalone table]. Gbif. Gbif.org.
https://www.gbif.org/occurrence/search?taxon_key=2480446 [Accessed 6 July 2020].
3. Washington 10-meter Data (2001) [raster shapefile]. USGS.
<http://gis.ess.washington.edu/data/raster/tenmeter/> [Accessed 19 July 2020].

Figure 4: 2D and 3D maps of Olympic National Parks elevation for easy birdwatching



THEMATIC MAP #4 – HABITAT STABILITY



Legend

- ★ BaldEagleSpottings_Olymp Diet Risk
- Oil Spills in Water
- Quantity_t
 - ≤10
 - ▲ ≤100
 - ▲ ≤1000
 - ▲ >1000
- BaldEagleSpottings_Puget Diet Risk
- Olympic National Park

Sources:

1. Mastering ArcGIS 1st Edition (2020) [E-book] Maribeth Price. McGraw-Hill Higher Education. Dubuque, Iowa.
2. Haliaeetus leucocephalus (2019) [standalone table]. Gbif. Gbif.org.
https://www.gbif.org/occurrence/search?taxon_key=2480446
 [Accessed 6 July 2020].

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Date: 7/19/20

Coordinate System: NAD 1983 UTM Zone 10N
 Projection: Lambert Conformal Conic
 Datum: NAD 1983
 Units: Meters

Figure 5: Thematic map showing comparative water quality between the Olympic National Park and the Puget Sound

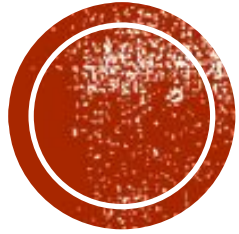


DATA SOURCES

Data Title	Source	Existing Coordinate System	Why you need this data	Data Type
Bald Eagle Observed Locations	Global Diversity Information Facility https://www.gbif.org/occurrence/search?taxon_key=2480446	NAD 1983 UTM Zone 10N	To illustrate where Bald Eagle habitats are common in the Olympic National Park	Shapefile
Glaciers	ArcGIS Pro. Esri.com	NAD 1983 UTM Zone 10N	Depicts a unique niche native to the park and aids in answering research question	Shapefile
Olympic National Park Borders	ArcGIS Pro. Esri.com	NAD 1983 UTM Zone 10N	To represent the parameters of my research project	Shapefile
Black bear Observed Locations	Global Diversity Information Facility https://www.gbif.org/occurrence/download/0019226-200613084148143	NAD 1983 UTM Zone 10N	To represent an invader of bald eagle nests	Shapefile
U.S. States (Generalized)	ArcGIS Pro. Esri.com	NAD 1983 UTM Zone 10N	To highlight the state of Washington for my inset map	Shapefile
Oil Spills	ArcGIS Pro. Esri.com	NAD 1983 UTM Zone 10N	To depicts potentially toxic waters	Shapefile

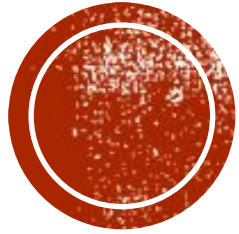


- The selected species (bald eagle) is considered the Least Concern (LC) by the IUCN Red List.
 - Therefore, no precise migration data at the level of the individual is available.



- The Olympic National Park boundary creates a small population of bald eagles studied comparative to their global range.

LIMITATIONS



- More data, whether recreational or paid, in geospatial analysis for biological conservation of species, ornithology, and apex predator tracking.
- Working with national parks that we've progressively established to conserve the endemic, endangered species within them would provide incredibly precise data. This is because the land they are occupying is likely the only area they exist in and is intended to protect them.
- Geospatial analysis to track, target, and prevent future poaching incidents.

FUTURE WORK

METADATA



METADATA:

Type File Geodatabase Feature Class



Tags polygon, area, population, households, demographics, society, boundaries, farming, United States, U.S. States, States, 2002, 2010, 2012, 1992, 2011, 2013, 2014

Summary

U.S. States (Generalized) provides 2010 U.S. Census demographic information and generalized state boundaries to improve draw performance and be used effectively at a national level.

Description

U.S. States (Generalized) represents the 50 states and the District of Columbia of the United States.

Credits

ESRI Data and Maps (ESRI, Inc., Redlands, CA)

Use limitations

See Resource Constraints > legal constraints.

Extent

West -180.000000 East 180.000000
North 79.259527 South 8.995616

Scale Range

Maximum (zoomed in) 1:500,000
Minimum (zoomed out) 1:50,000,000

zone10

Type Raster Dataset

Tags elevation, raster, Olympic Peninsula, Washington, UTM

Summary

A generalized digital elevation model of the Pacific Northwest suitable for use in GIS and other small scale mapping.

Description

A raster dataset that illustrates the drastic elevation changes using a ten-meter grid.

Credits

Washington 10-meter Data (2001) [downloaded file] USGS. Usgs.gov.
<http://gis.ess.washington.edu/data/raster/tenmeter/>. 7/18/2020.

Use limitations

There are no access and use limitations for this item.

Extent

West -124.908436 East -119.809950
North 49.038575 South 45.461224

Scale Range

Maximum (zoomed in) 1:5,000
Minimum (zoomed out) 1:150,000,000

You are currently using the Item Description metadata style. Change your metadata style in the Options dialog box to see additional metadata content.



CITATIONS

- Guillot, Jonathan. "Bald Eagle (*Haliaeetus Leucocephalus*) - Jonathan Guillot - Wildlife Photographer." *Jonathan Guillot*, Jonathan Guillot, 24 June 2012, www.jonathanguillot.com/blog/bald-eagle-haliaeetus-leucocephalus. Accessed July 10, 2020.
- Kwak-Hefferan, Elisabeth. "Autumn in Olympic National Park." *My Olympic Park*, 4 Sept. 2019, www.myolympicpark.com/park/autumn. Accessed July 10, 2020.
- "Olympic National Park (U.S. National Park Service)." *National Parks Service*, U.S. Department of the Interior, 3 Oct. 2019, www.nps.gov/olym/index.htm. Accessed July 10, 2020.
- Siciliano Martina, L. 2013. "Haliaeetus leucocephalus" (On-line), Animal Diversity Web. Accessed July 09, 2020 at https://animaldiversity.org/accounts/Haliaeetus_leucocephalus/

