

ALASKA RAILROAD

BOARDING

MENDENHALL GLACIER



EXPEDITIONS

Visit nature's thousand year-old wonder!

In Beautiful
MENDENHALL LAKE
TOURS HOURLY FROM JUNEAU

4C

Visit
JUNEAU
CAPITAL OF ALASKA

- BY AUTO
- o o o o BY SHIP
- BY PLANE




WHITEHORSE ALASKA HIGHWAY JUNEAU



SCENIC and RECREATION CENTER OF ALASKA

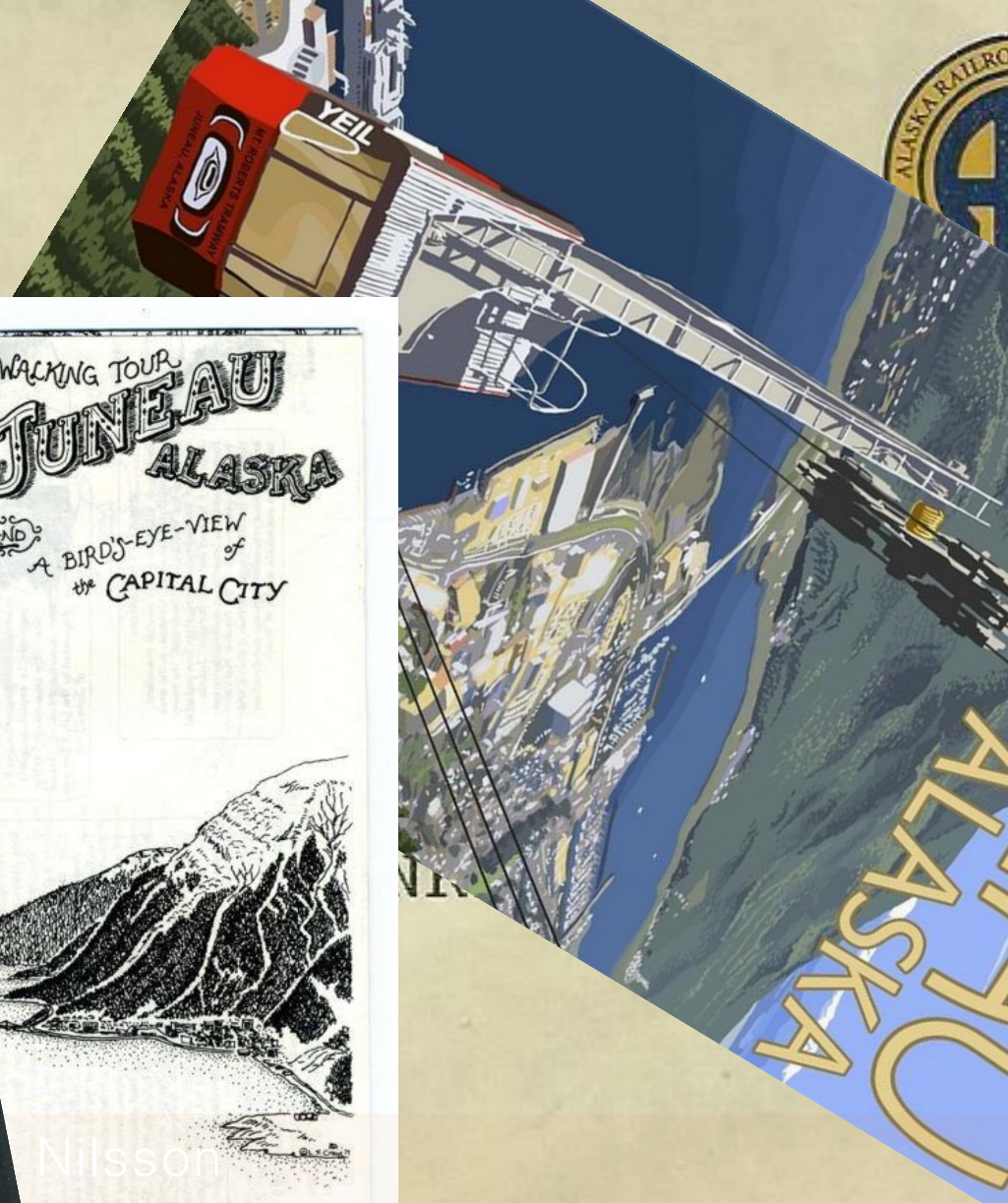
A WALKING TOUR
of **JUNEAU**
ALASKA

AND A BIRD'S-EYE-VIEW
of
the CAPITAL CITY



Nilsson

Support from the City & Borough of Juneau, the Alaska Division of the Southeast Alaska Empire for the Greater Juneau Chamber of Commerce, 10 N. Franklin St., Juneau, Ak., 99801 by Laurie Ferguson Craig '79



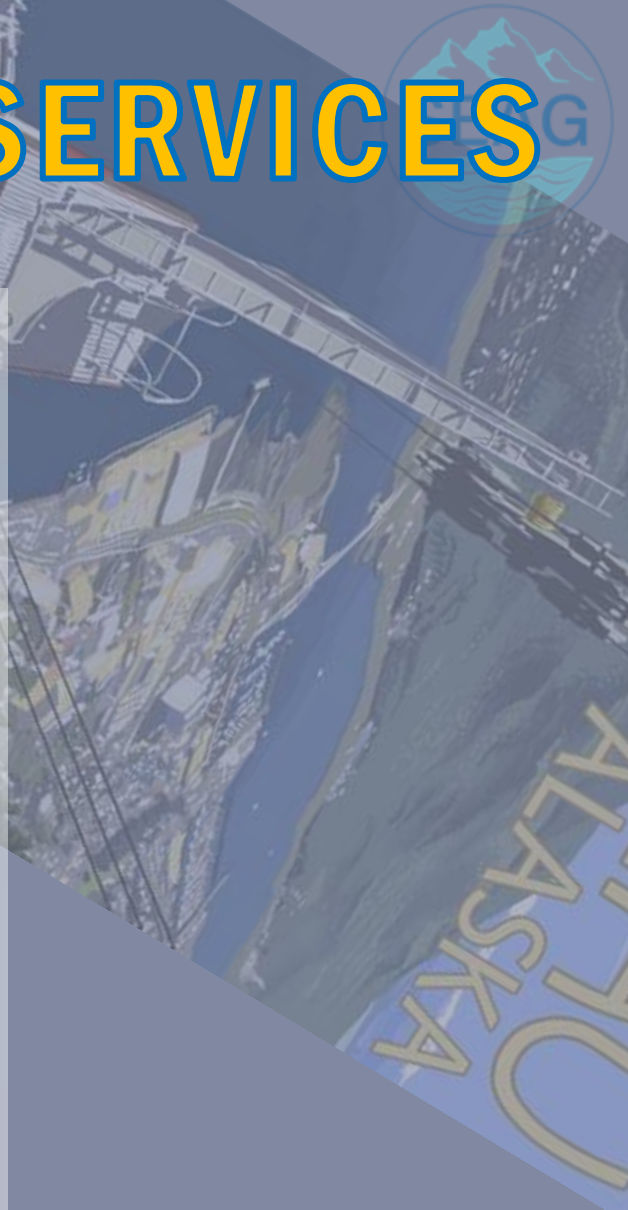
ALASKA RAILROAD

ALASKA

SOUTHEAST ALASKA GUIDE SERVICES



“SOURDOUGH”



MAY 2023



AGENDA



- » Introduction
- » Geographic Overview of Alaska and Juneau
- » History of Alaska and Land Occupation
- » Juneau Ethnohistory and Geography
- » Juneau Geology and Glaciology & Tidal Effects
- **BREAK**
- » Common Land Species (Flora and Fauna)
- » Common Marine Species (Flora and Fauna)
- » Local Landmarks and Services
- » Attractions

INTRODUCTION



Juneau Consists of:

- Approximately 32,000 Residents
- 3,255 Miles² (1,23 miles² Land, 928 miles² Ice Field, 704 miles² Waterway)
- 53 miles of Highway (42 miles from Juneau to Echo Cove)
- 5,224 Watercraft
- 39,860 Cars
- 132 Named Mountain Peaks
- 40 Terrestrial Glaciers & over 100 Small Valley Glaciers
- 230 Days of Precipitation Annually (92" of accumulation)



JUN

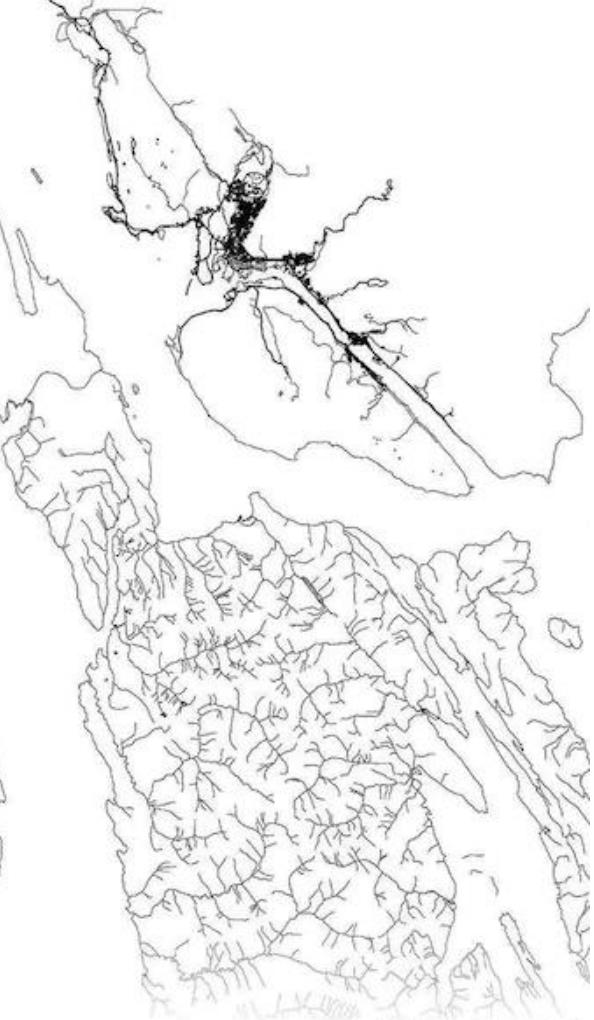
ALA

58.3019°N

“ SOURDOUGH ”

2023

INTRODUCTION



JUNEAU

ALASKA

58.3019°N 134.5200°W



JUNEAU

GEOGRAPHIC OVERVIEW



GEOGRAPHIC OVERVIEW

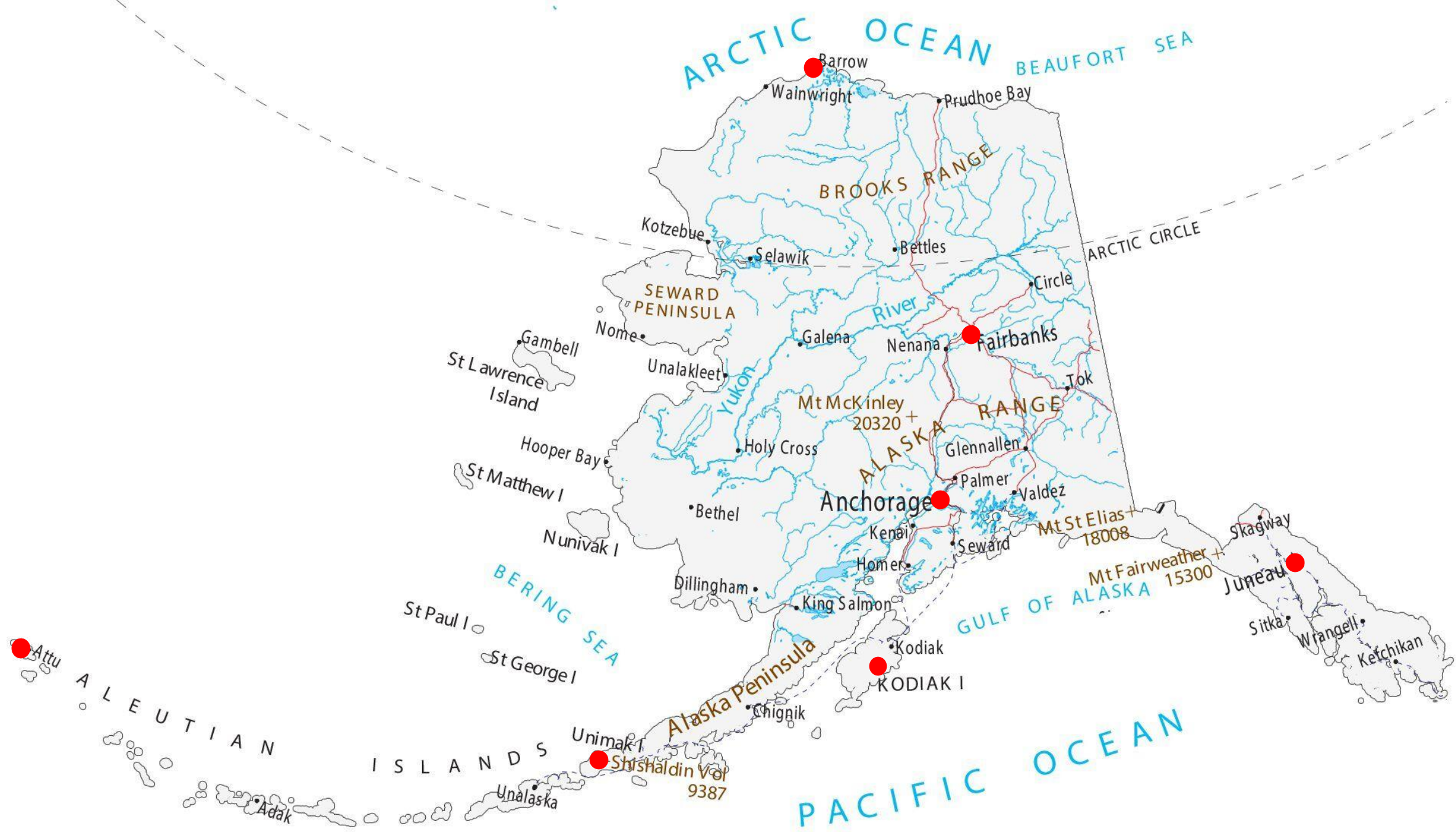


GEOGRAPHIC OVERVIEW



GEOGRAPHIC OVERVIEW







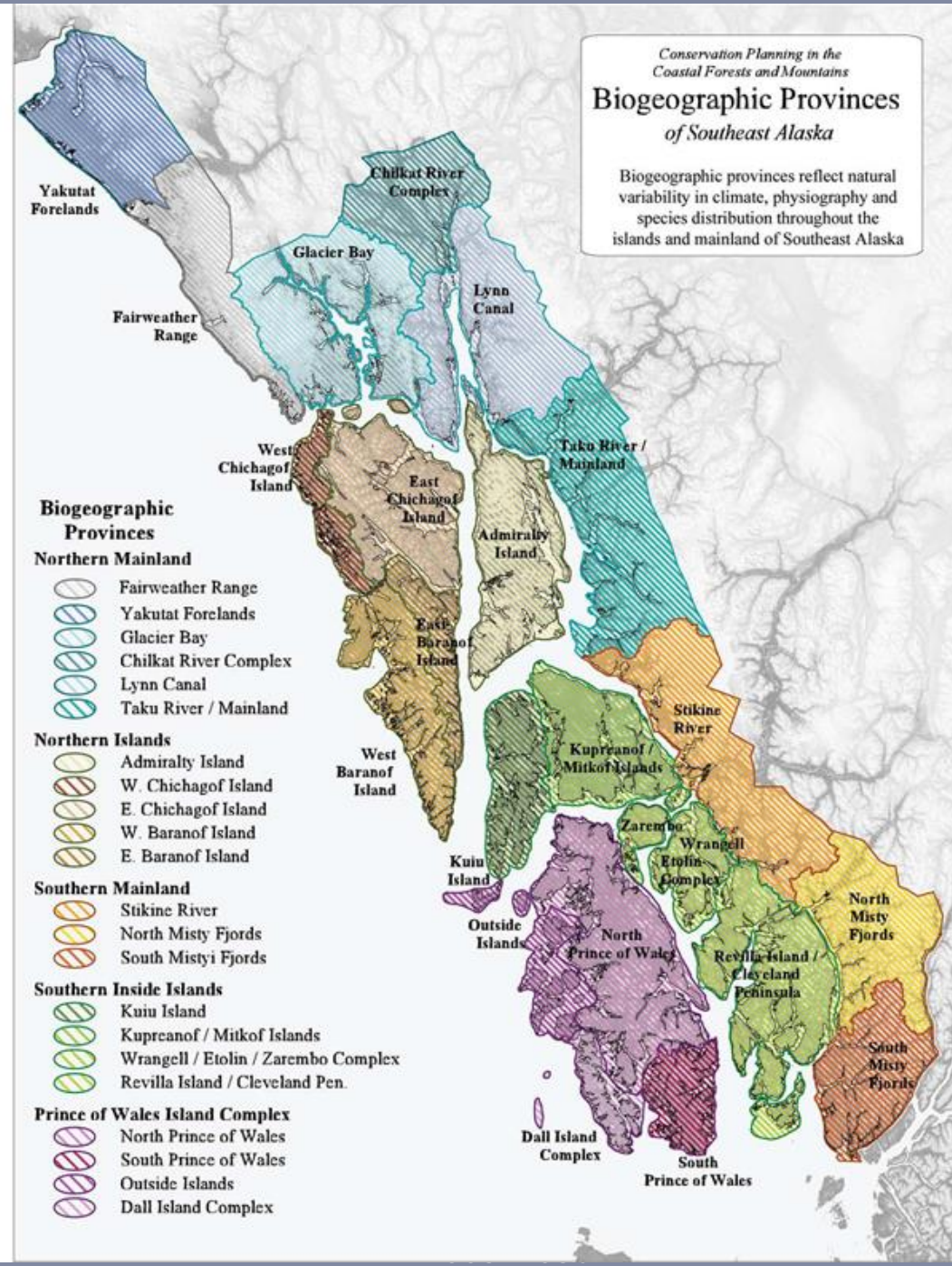
GEOGRAPHIC OVERVIEW





Conservation Planning in the Coastal Forests and Mountains
Biogeographic Provinces
of Southeast Alaska

Biogeographic provinces reflect natural variability in climate, physiography and species distribution throughout the islands and mainland of Southeast Alaska



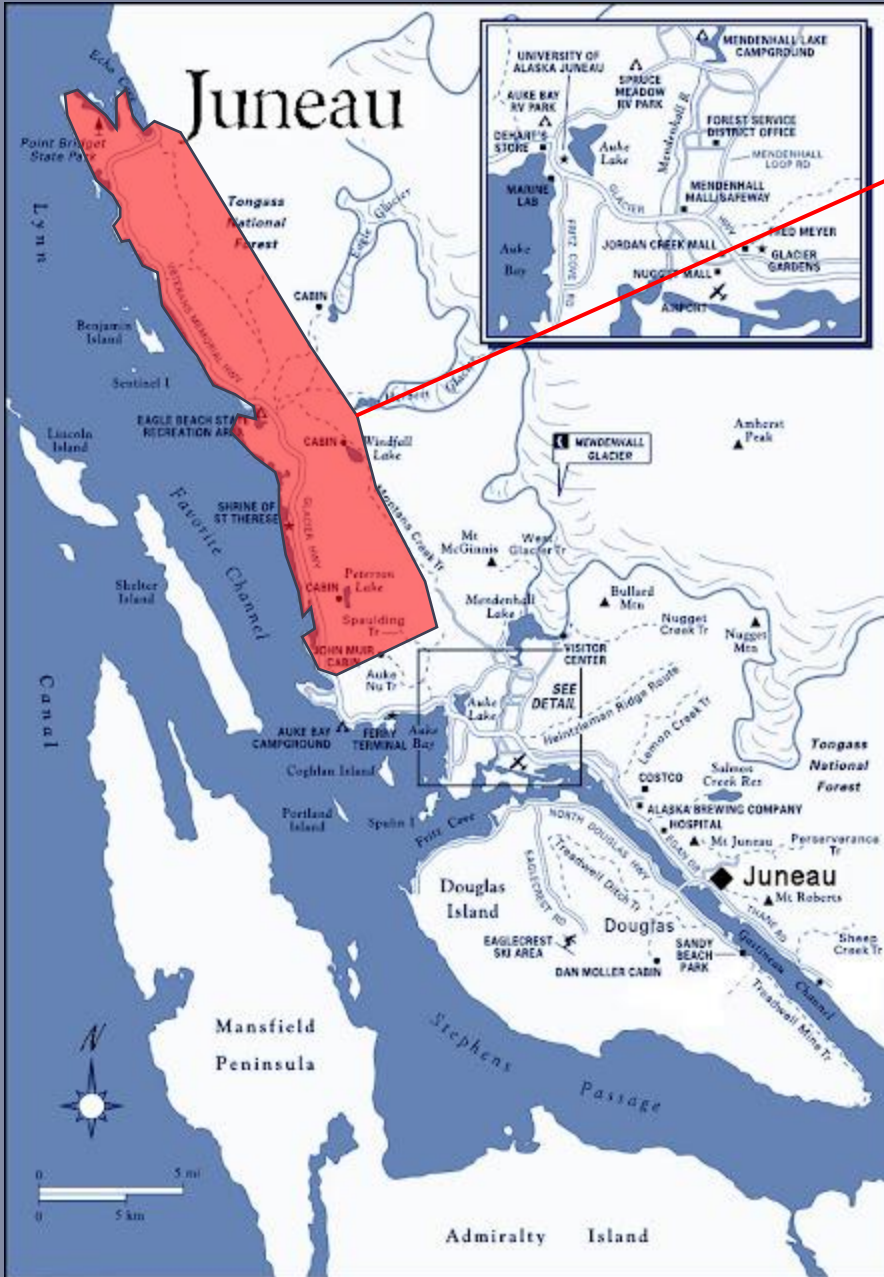
GEOGRAPHIC OVERVIEW



GEOGRAPHIC OVERVIEW

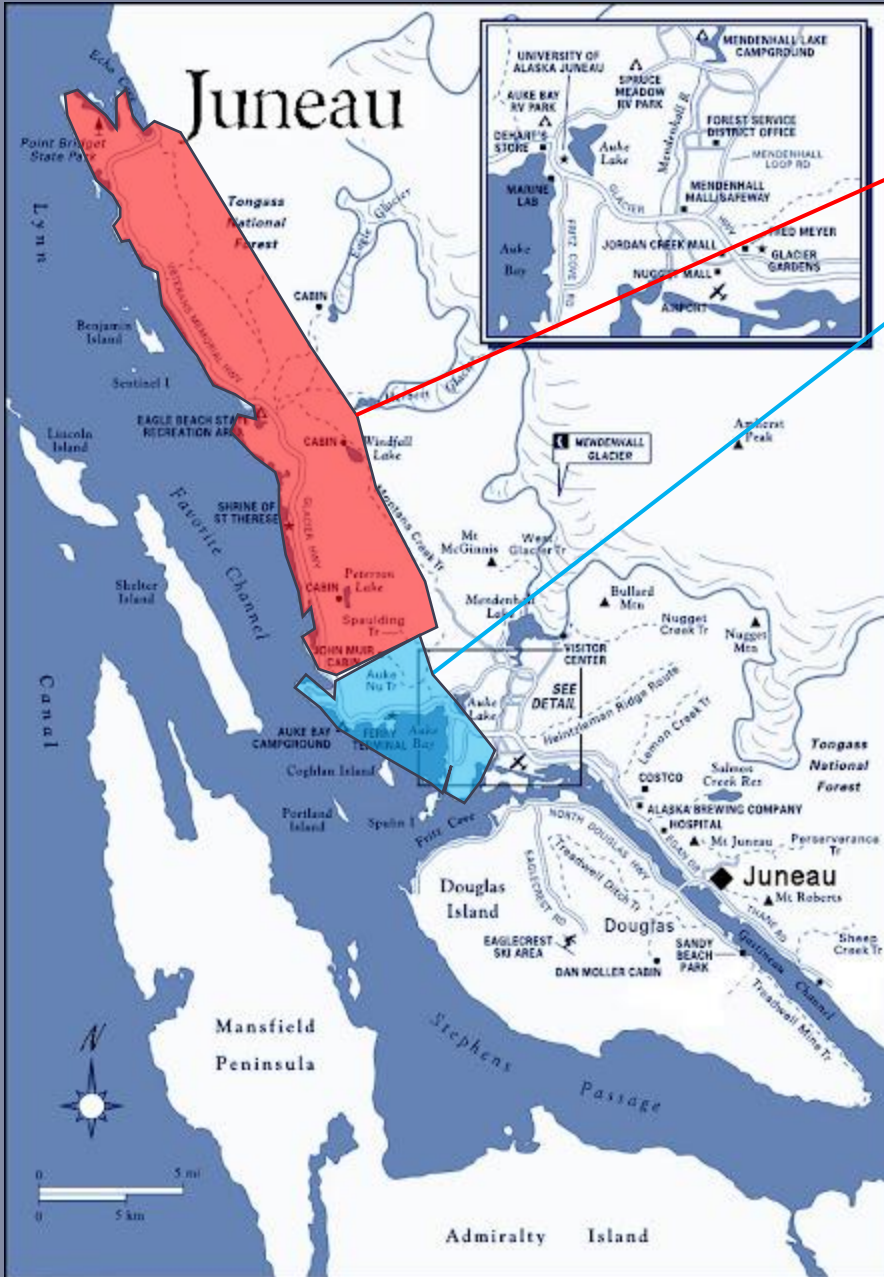


GEOGRAPHIC OVERVIEW



"Out the Road"

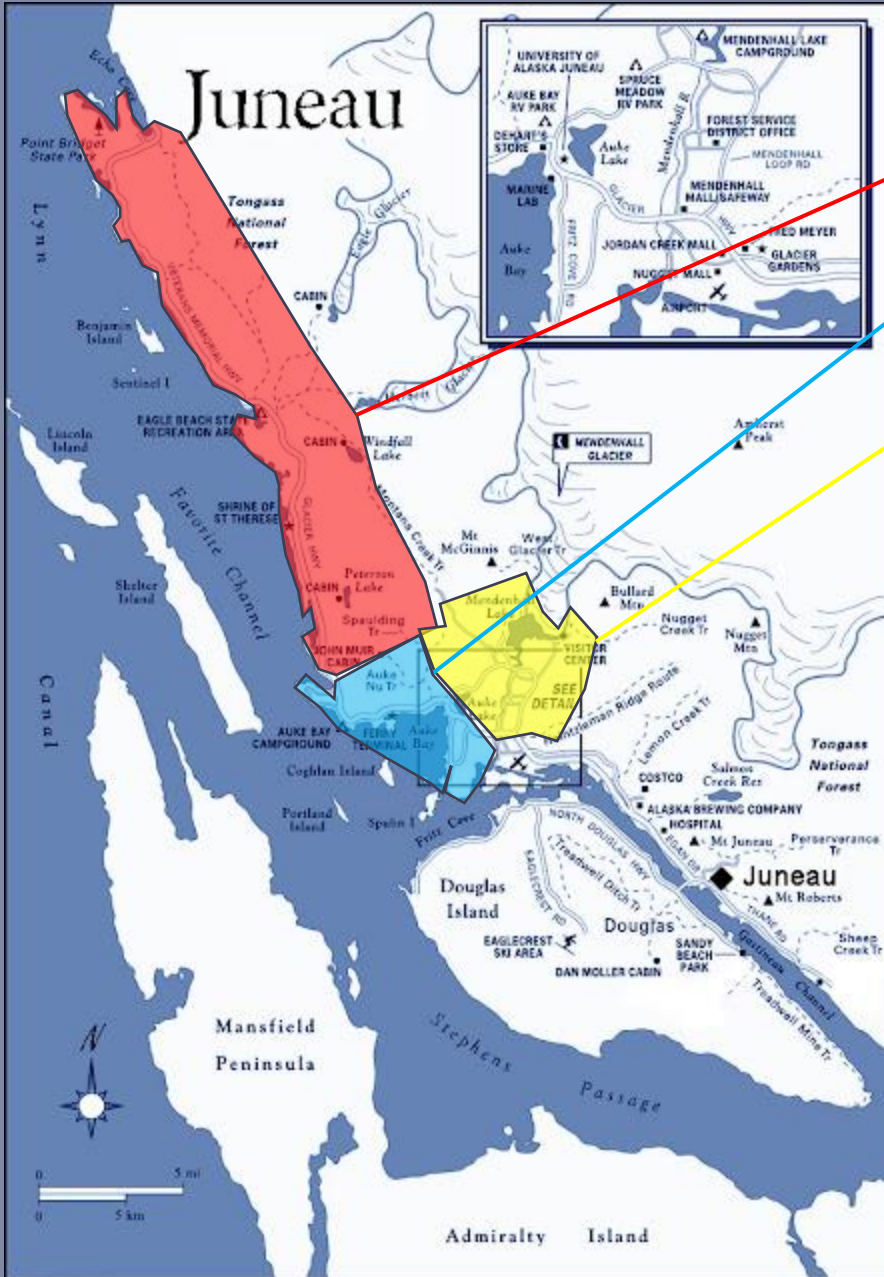
GEOGRAPHIC OVERVIEW



"Out the Road"

Auke Bay

GEOGRAPHIC OVERVIEW

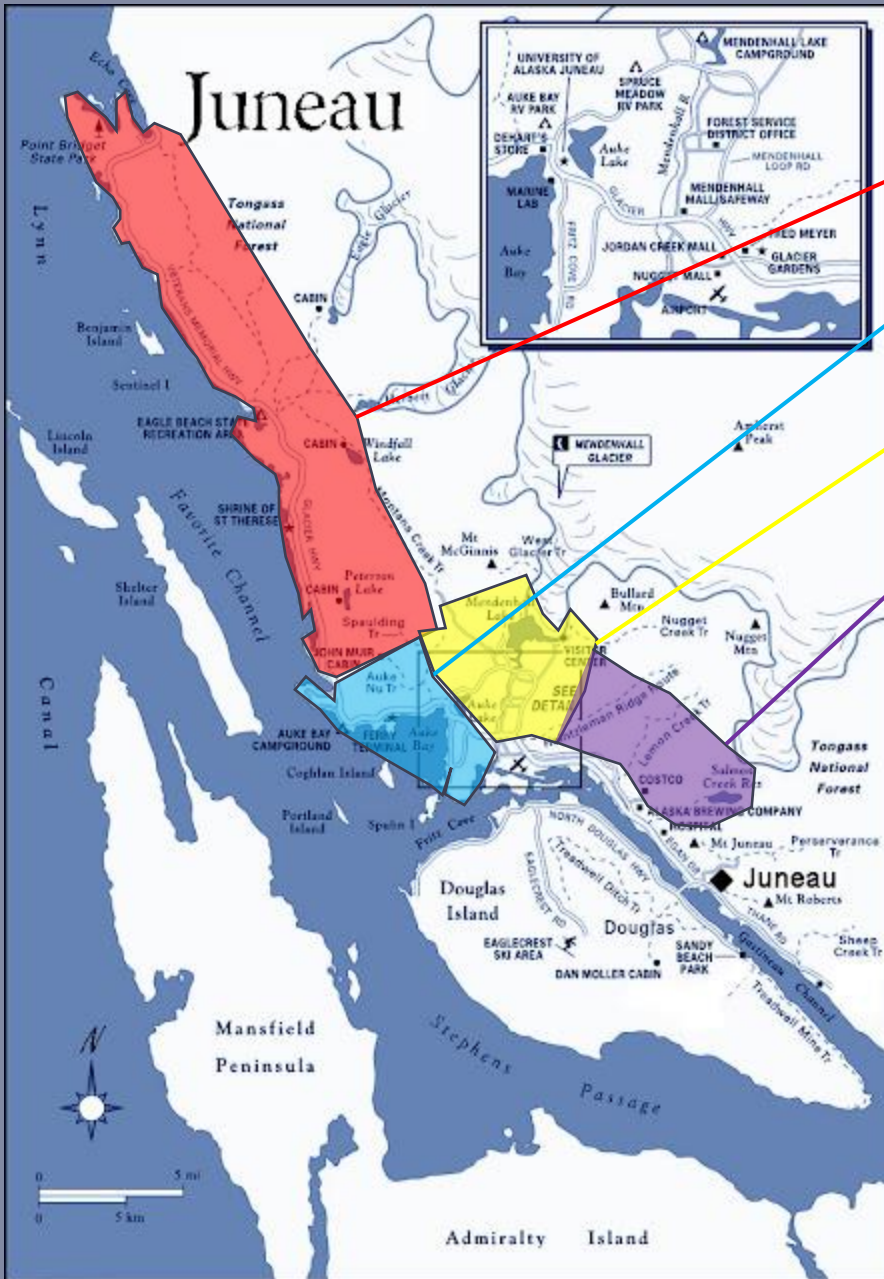


"Out the Road"

Auke Bay

Valley

GEOGRAPHIC OVERVIEW



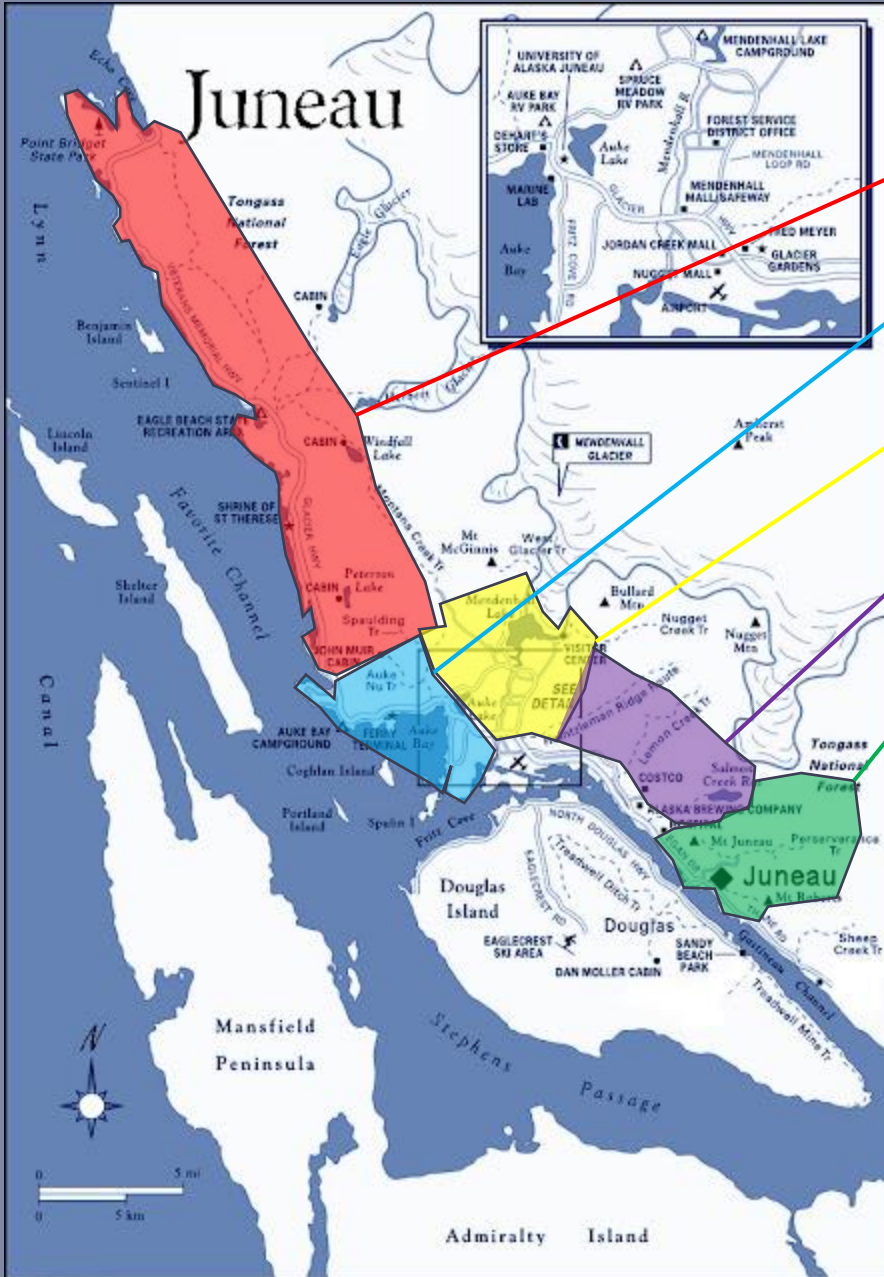
“Out the Road”

Auke Bay

Valley

Lemon Creek

GEOGRAPHIC OVERVIEW



“Out the Road”

Auke Bay

Valley

Lemon Creek

Downtown

GEOGRAPHIC OVERVIEW



"Out the Road"

Auke Bay

Valley

Lemon Creek

Downtown

Thane

GEOGRAPHIC OVERVIEW



"Out the Road"

Auke Bay

Valley

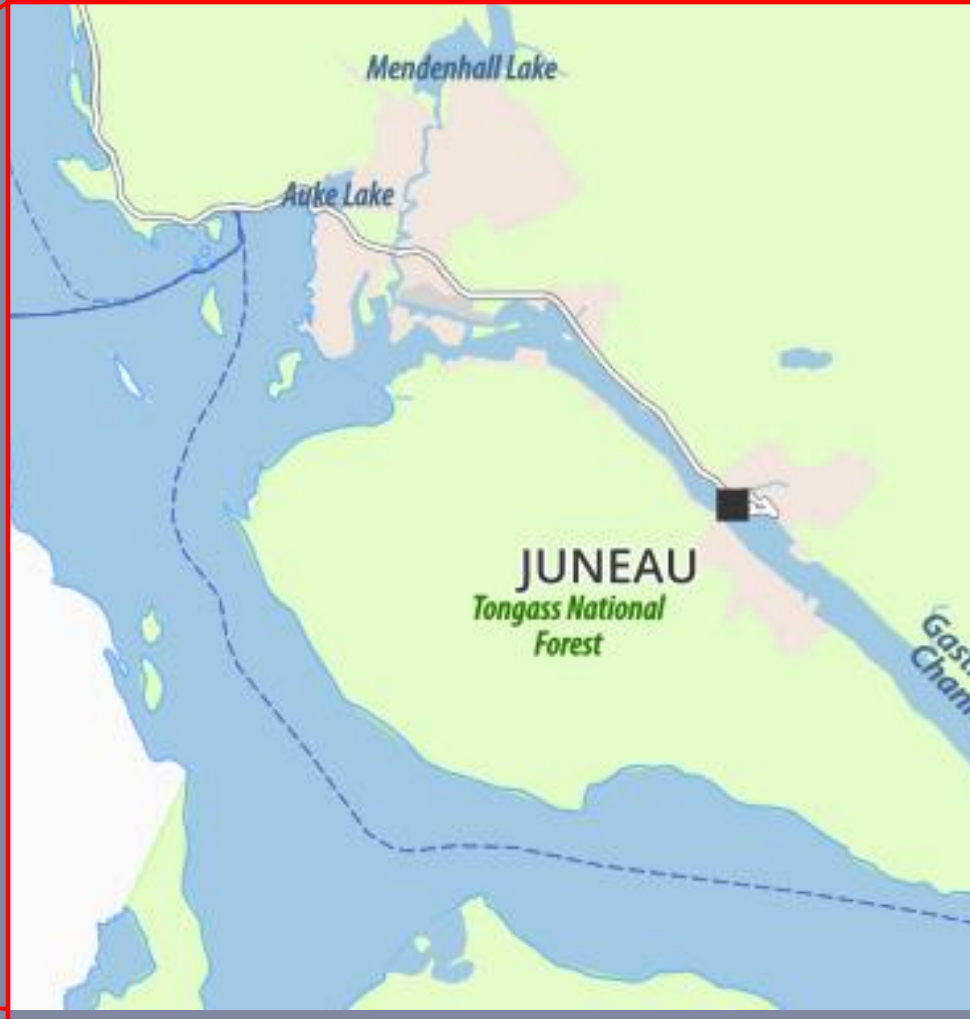
Lemon Creek

Downtown

Thane

Douglas

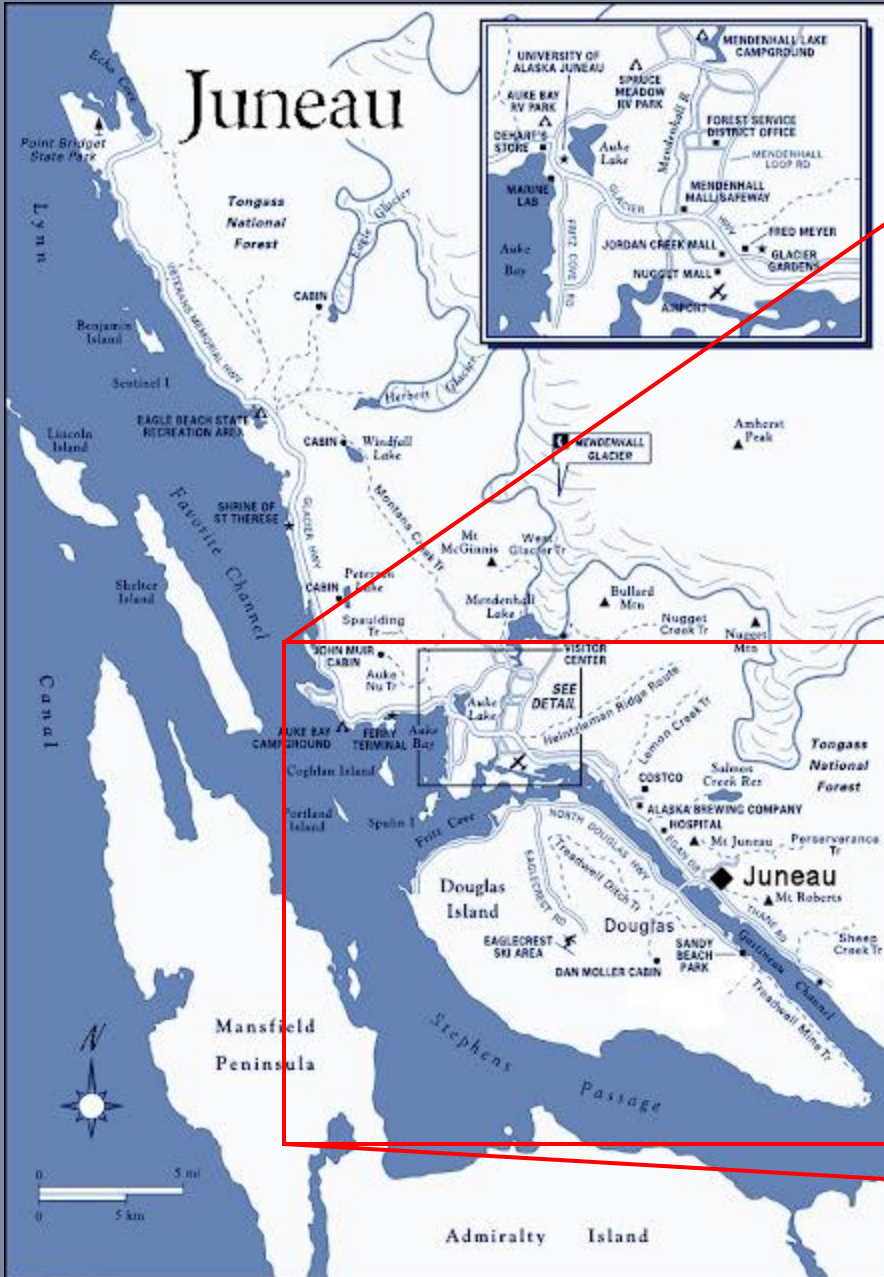
GEOGRAPHIC OVERVIEW



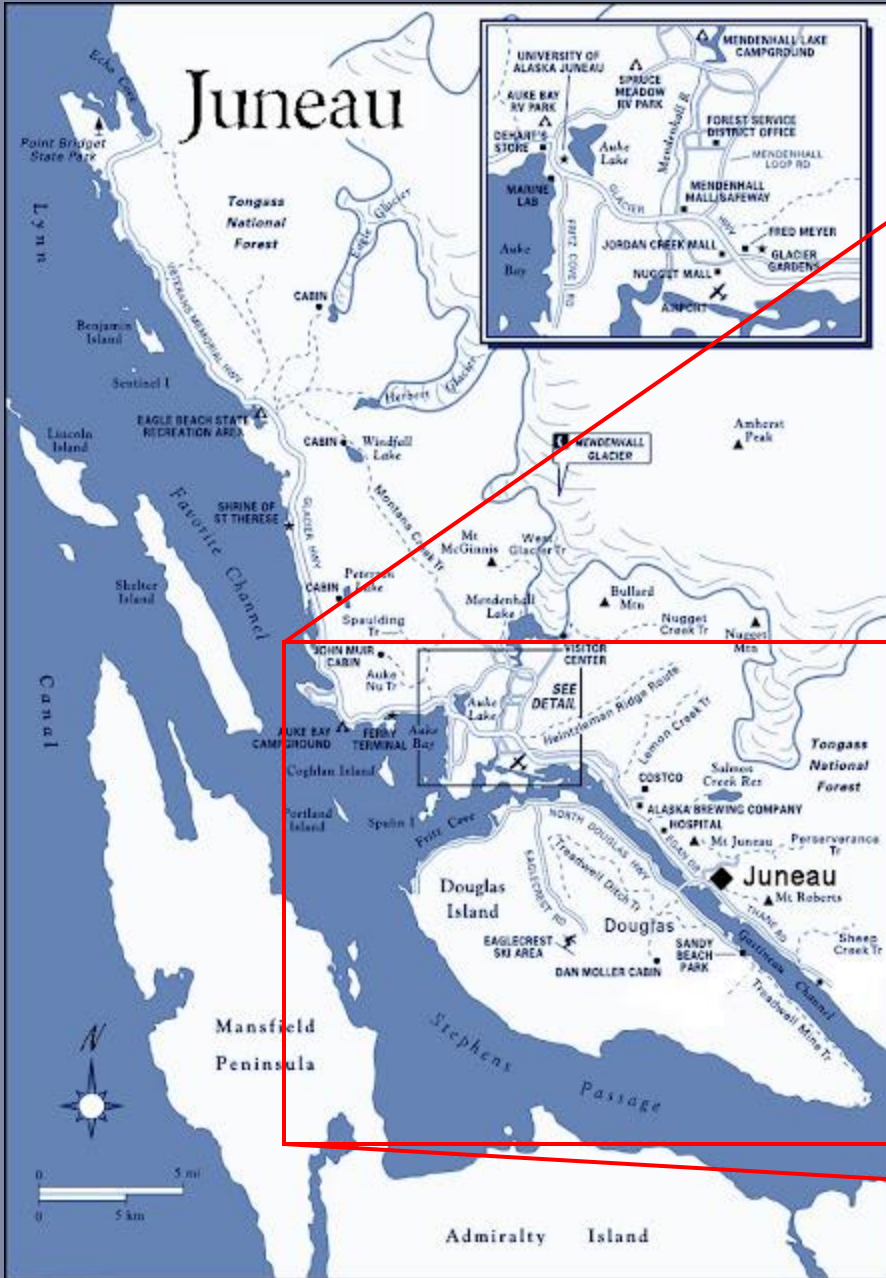
GEOGRAPHIC OVERVIEW



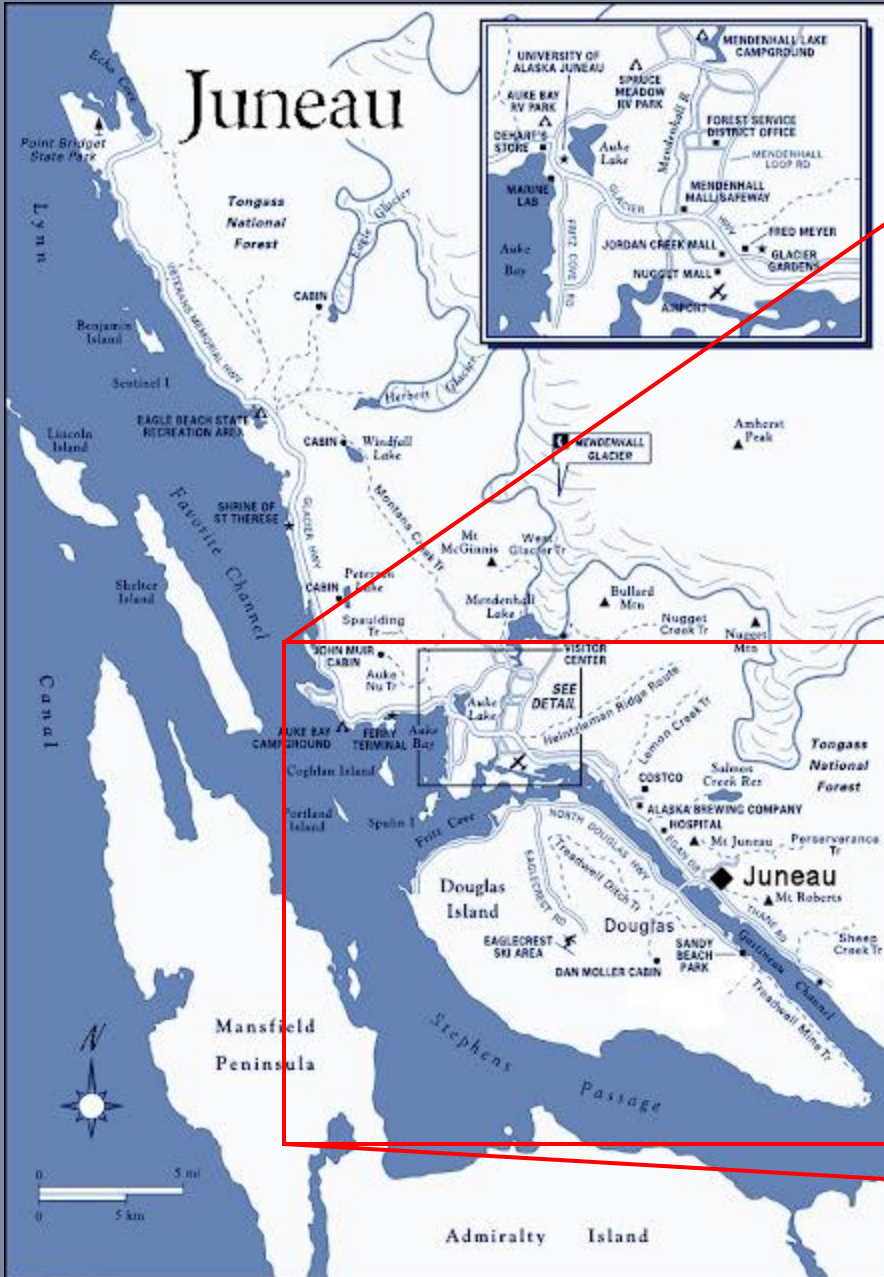
GEOGRAPHIC OVERVIEW



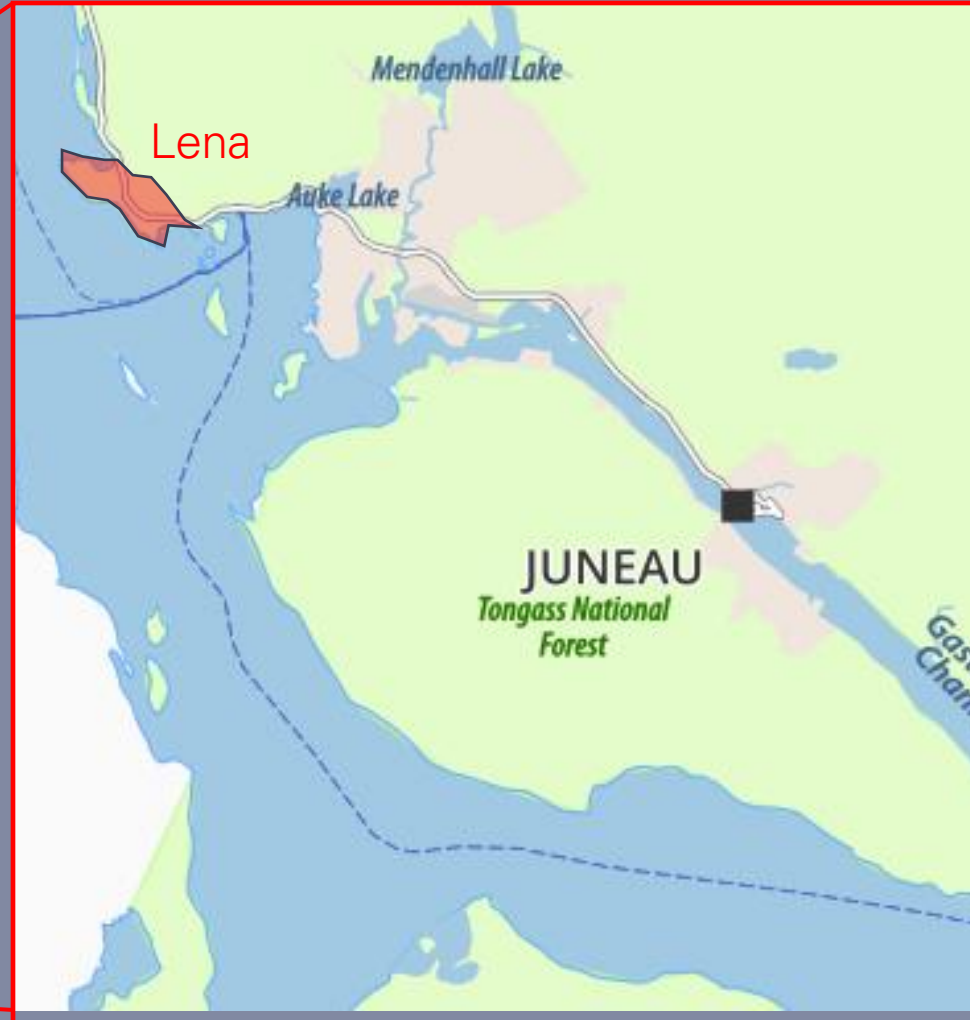
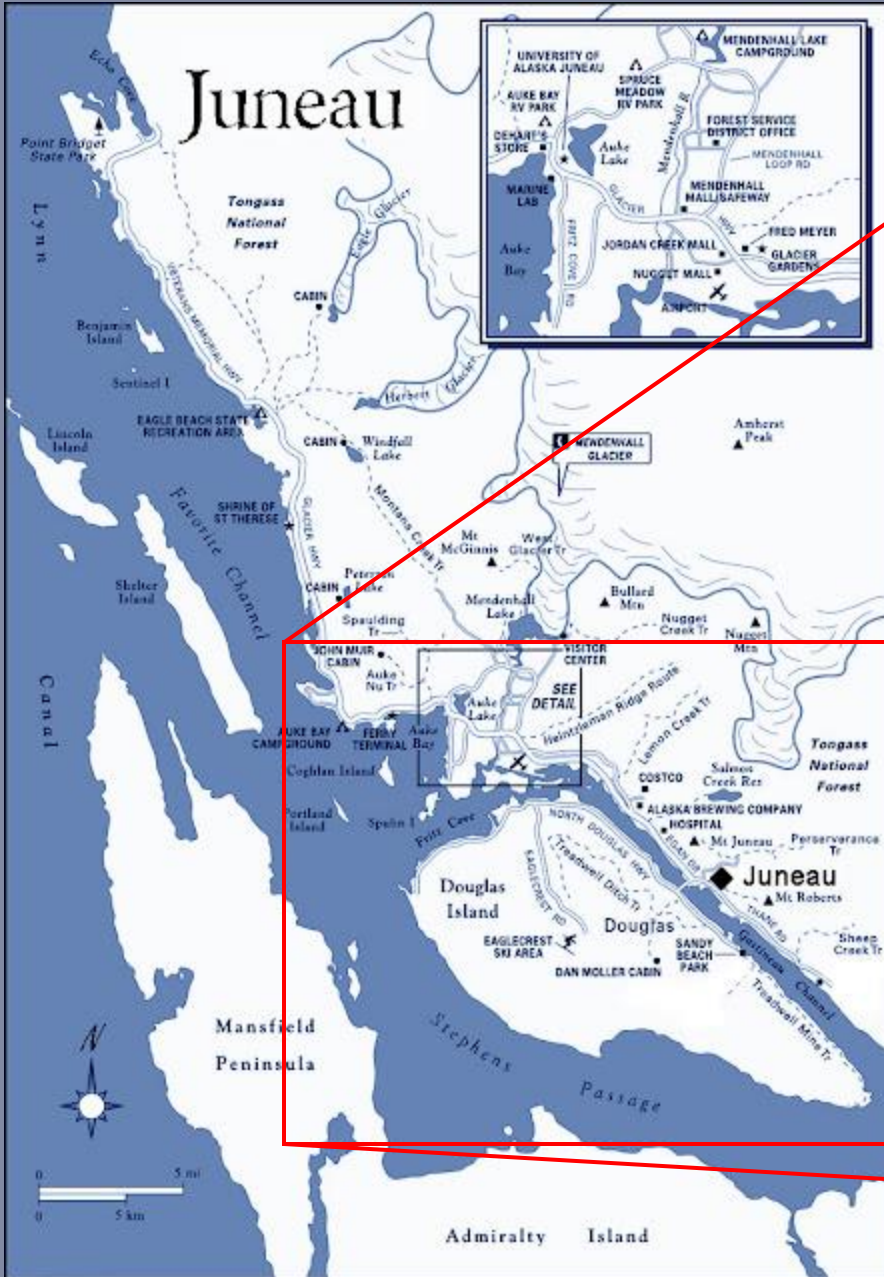
GEOGRAPHIC OVERVIEW



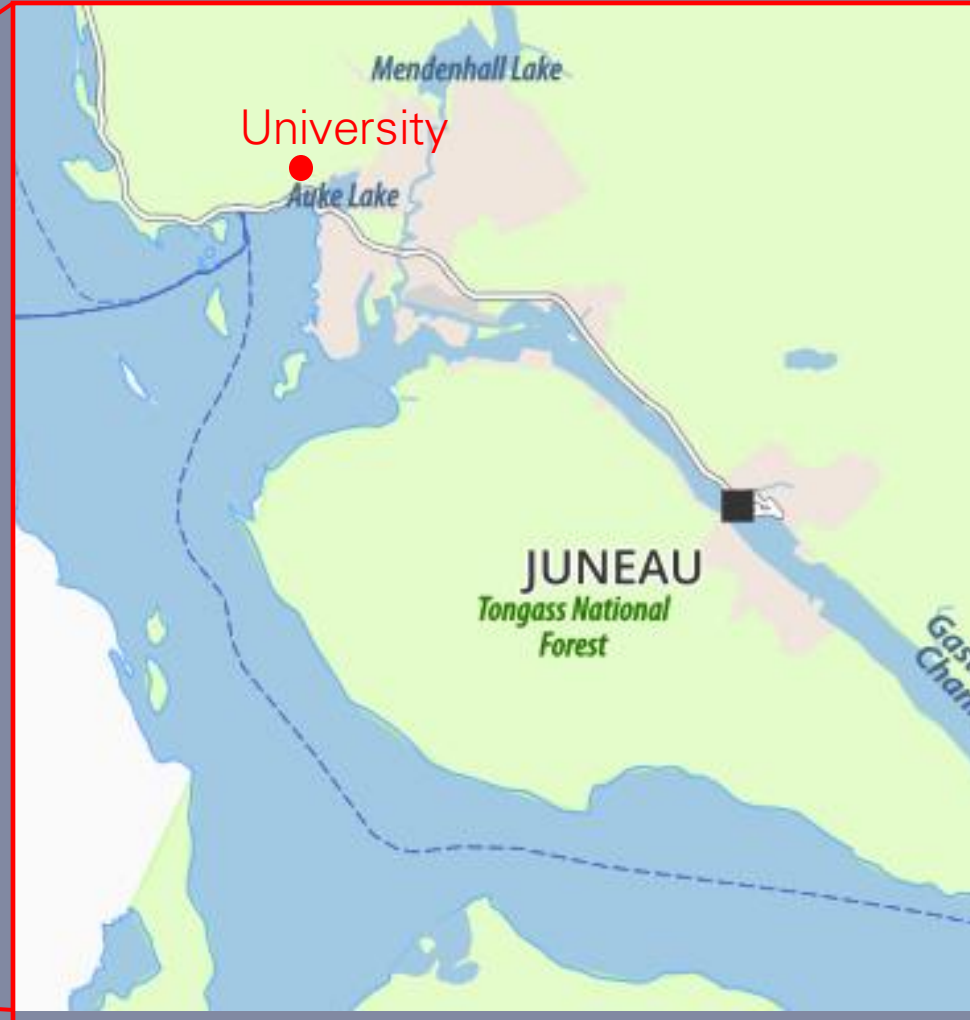
GEOGRAPHIC OVERVIEW



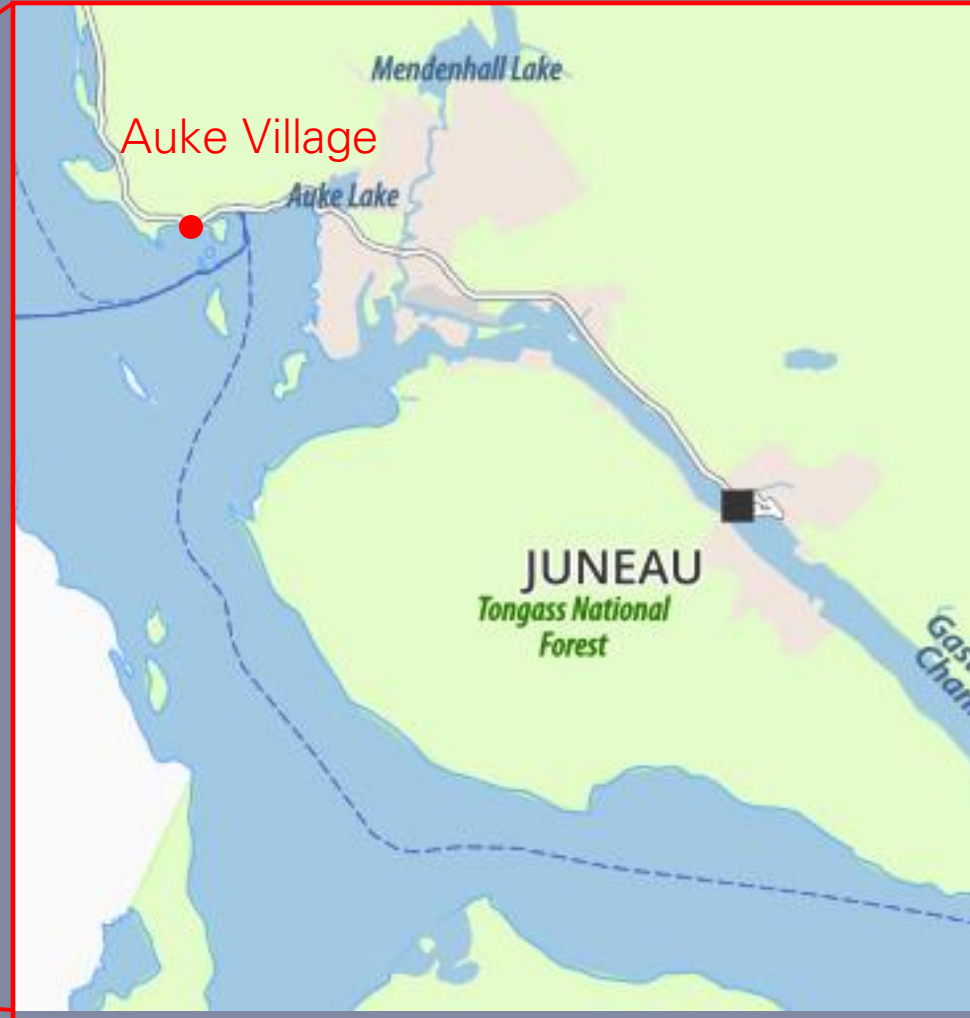
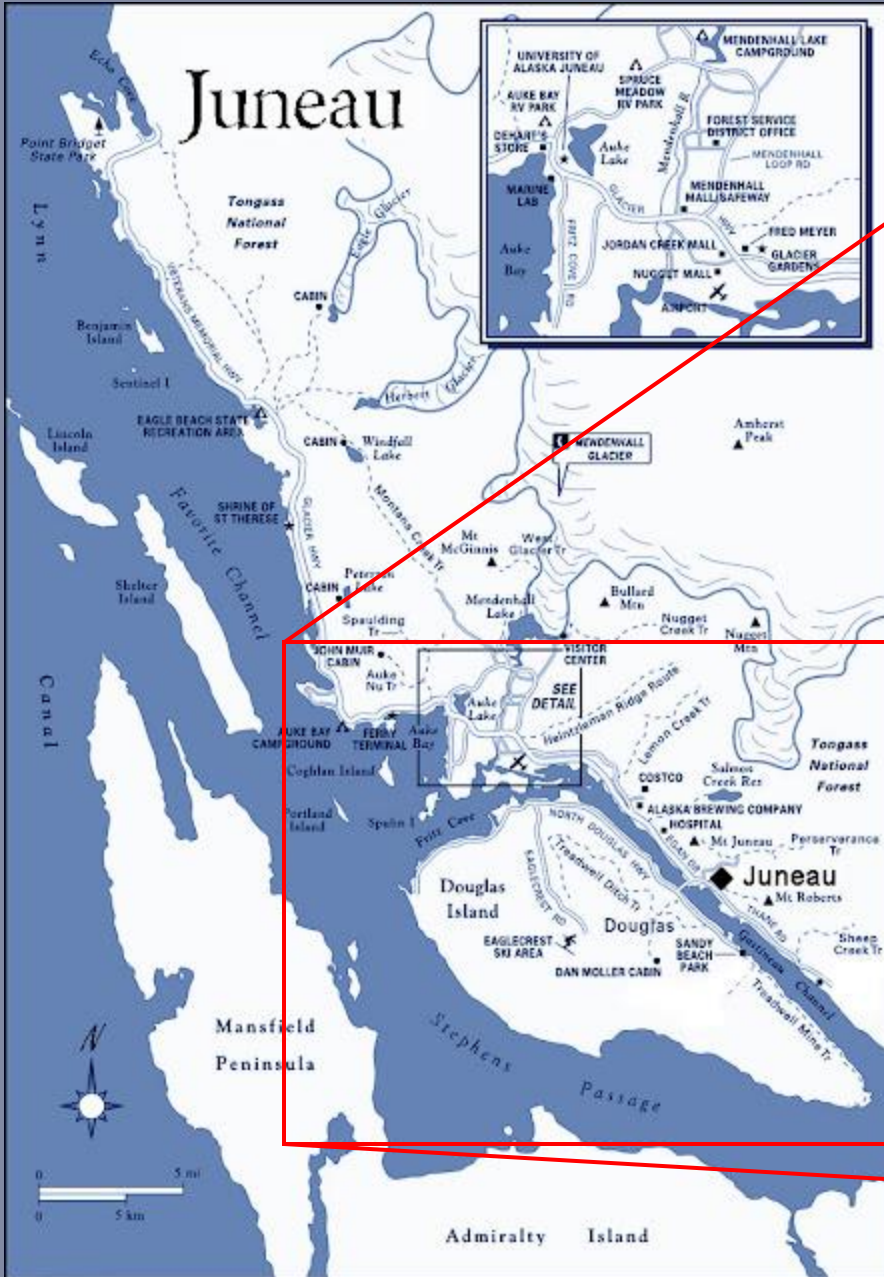
GEOGRAPHIC OVERVIEW



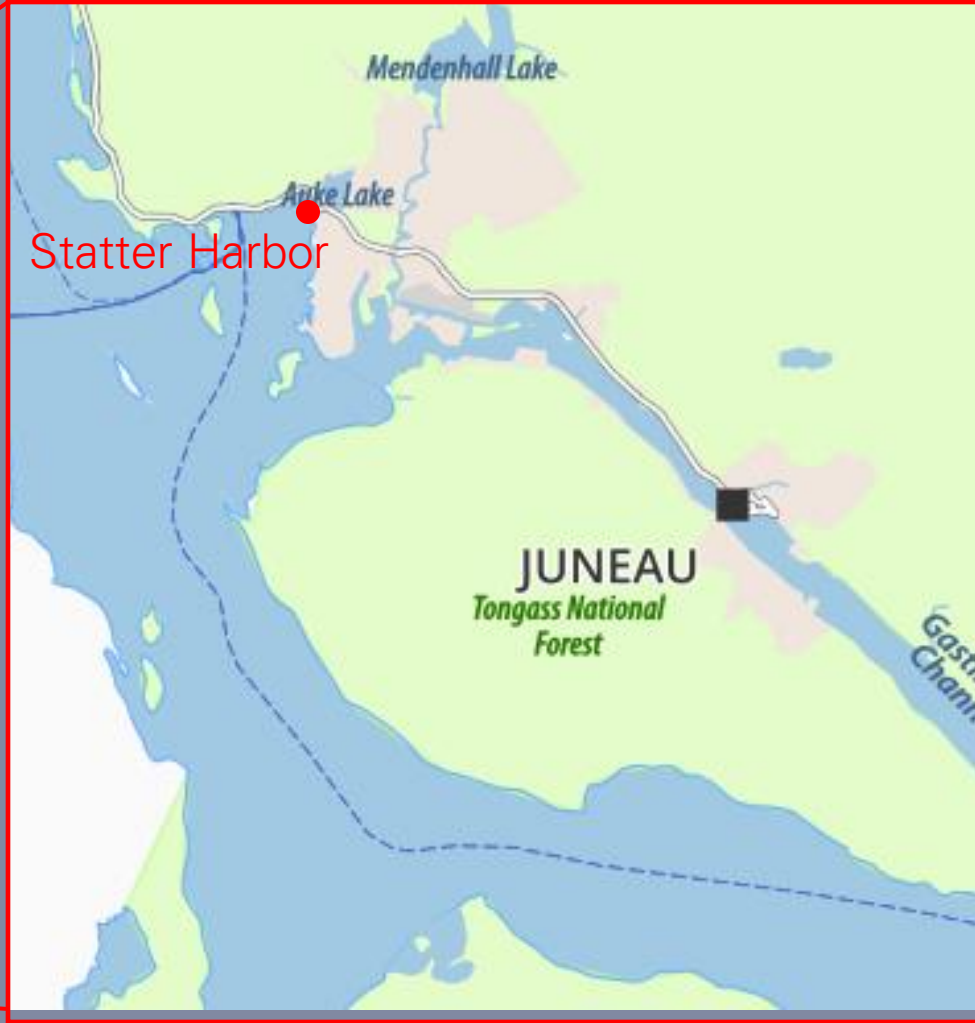
GEOGRAPHIC OVERVIEW



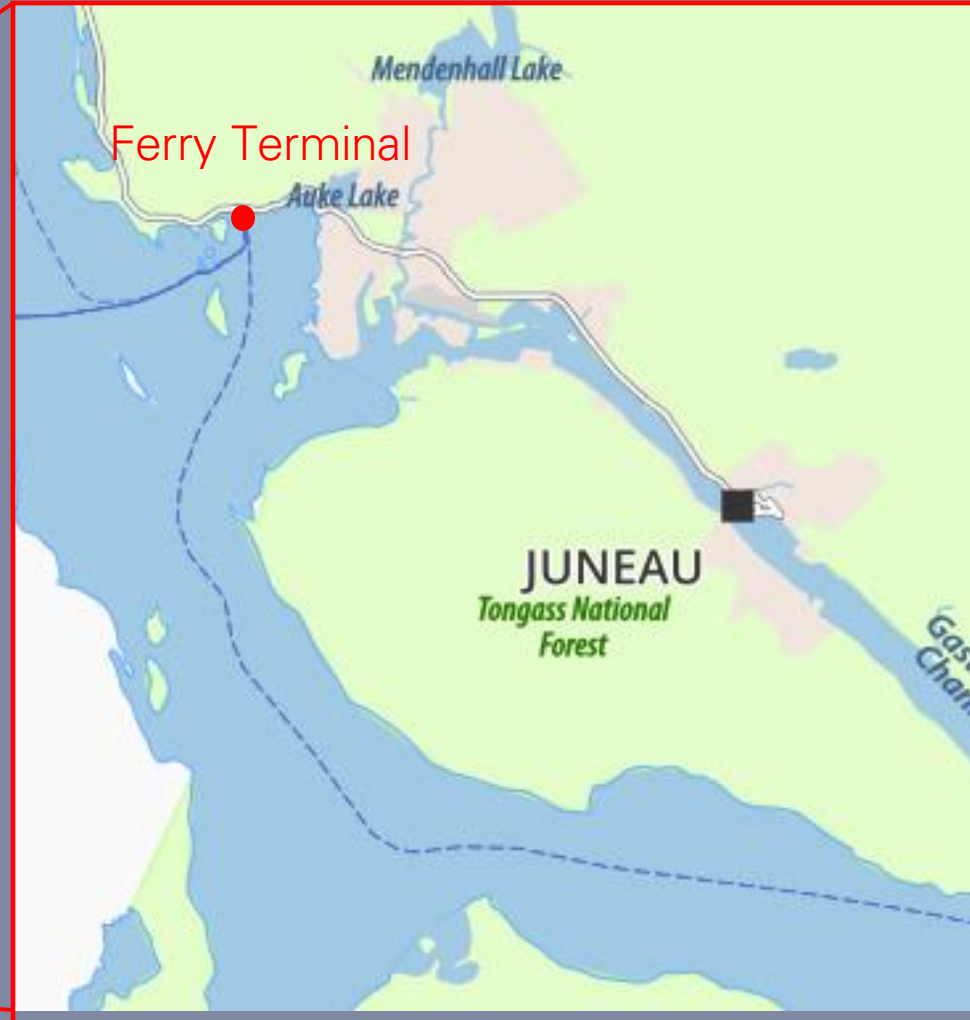
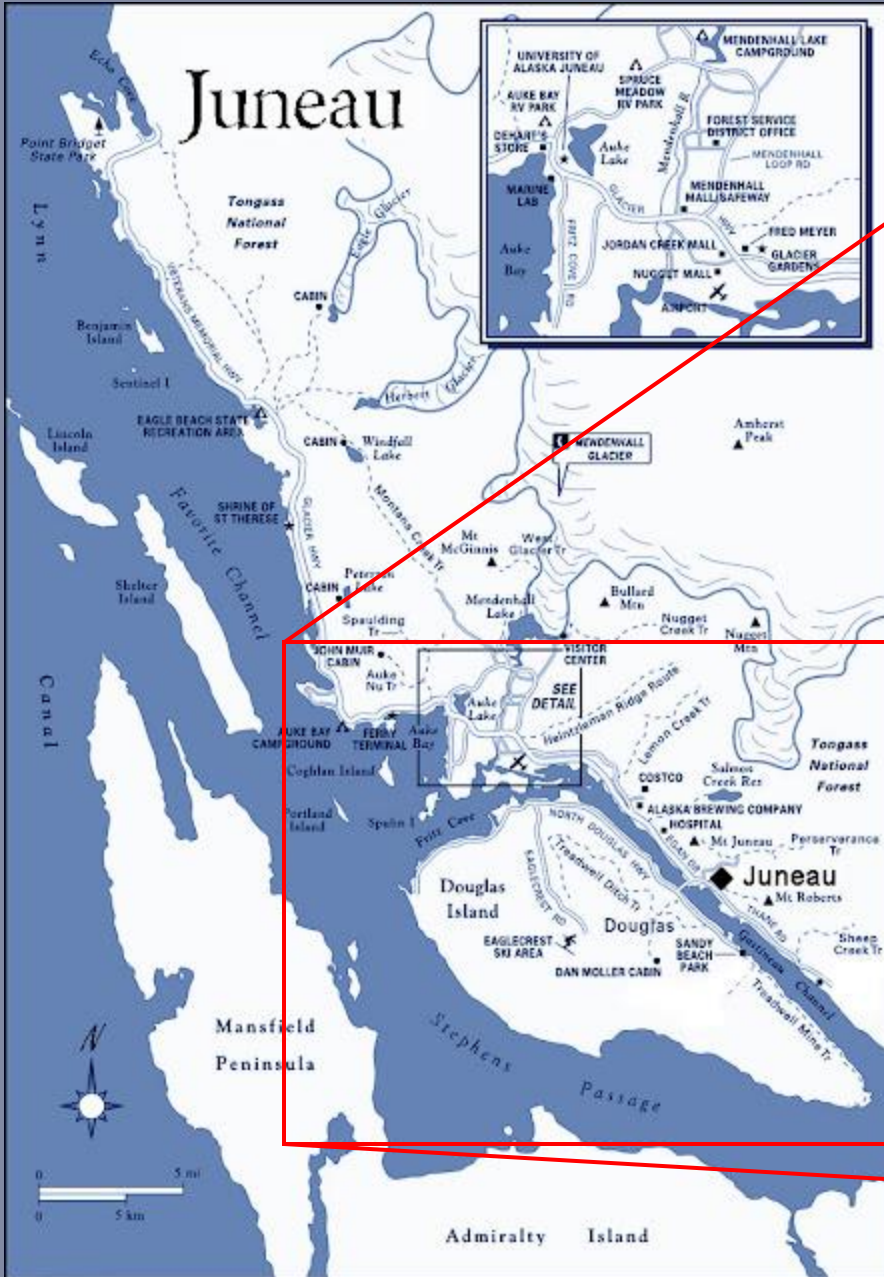
GEOGRAPHIC OVERVIEW



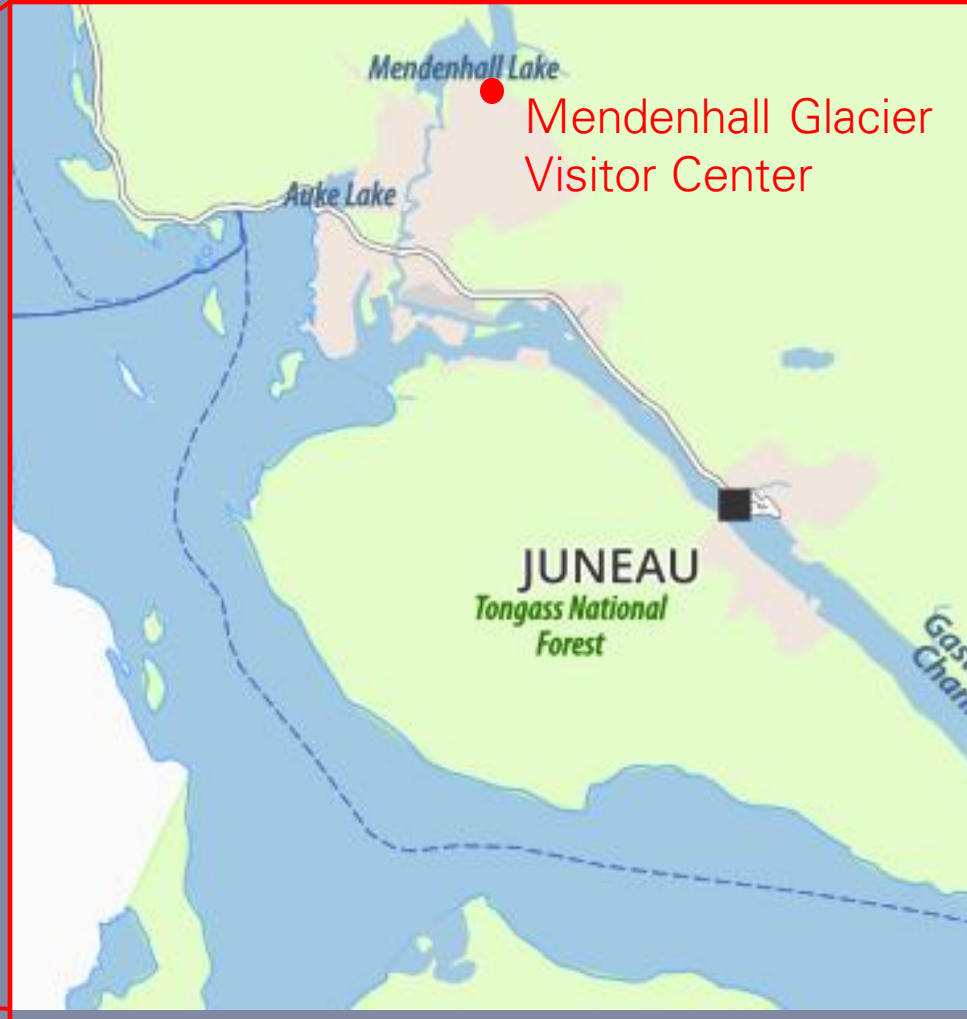
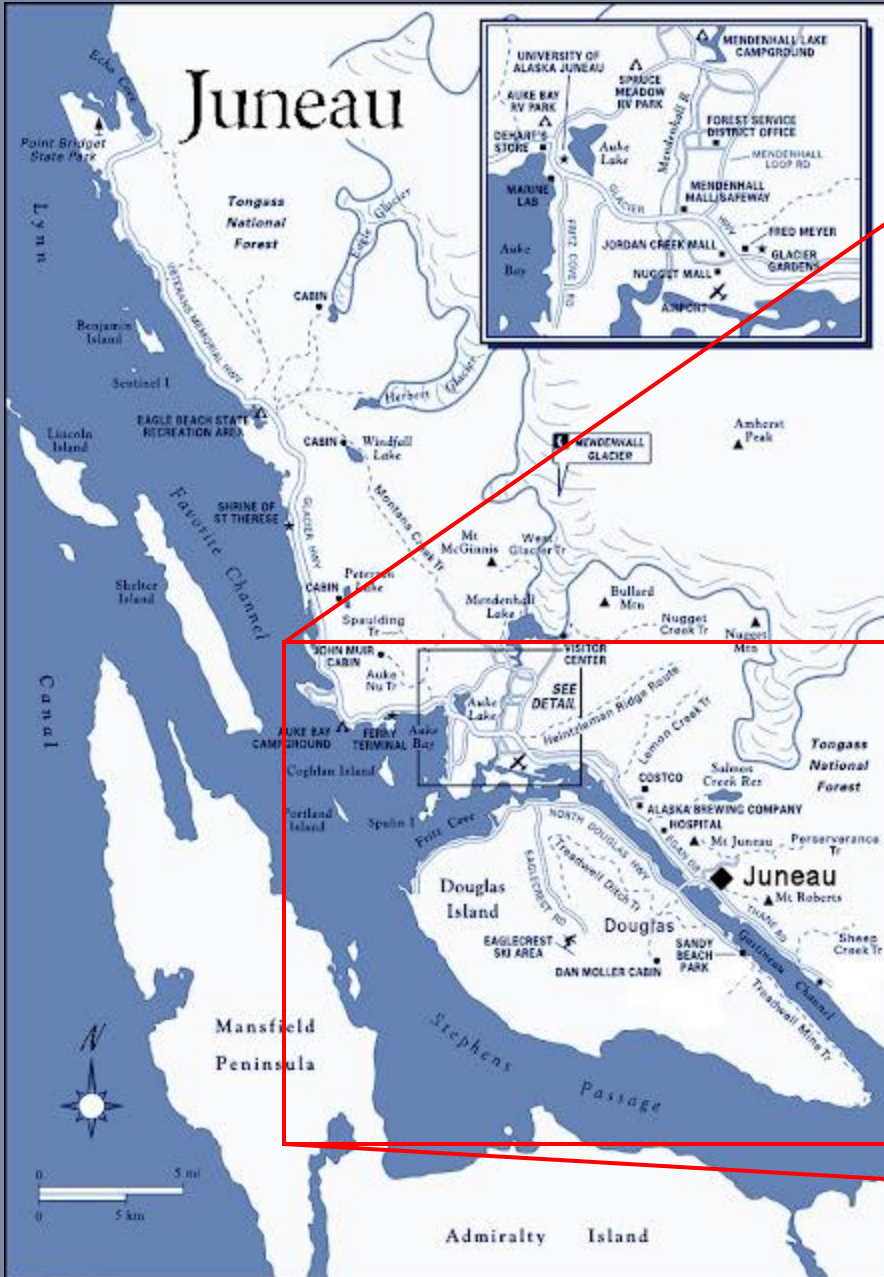
GEOGRAPHIC OVERVIEW



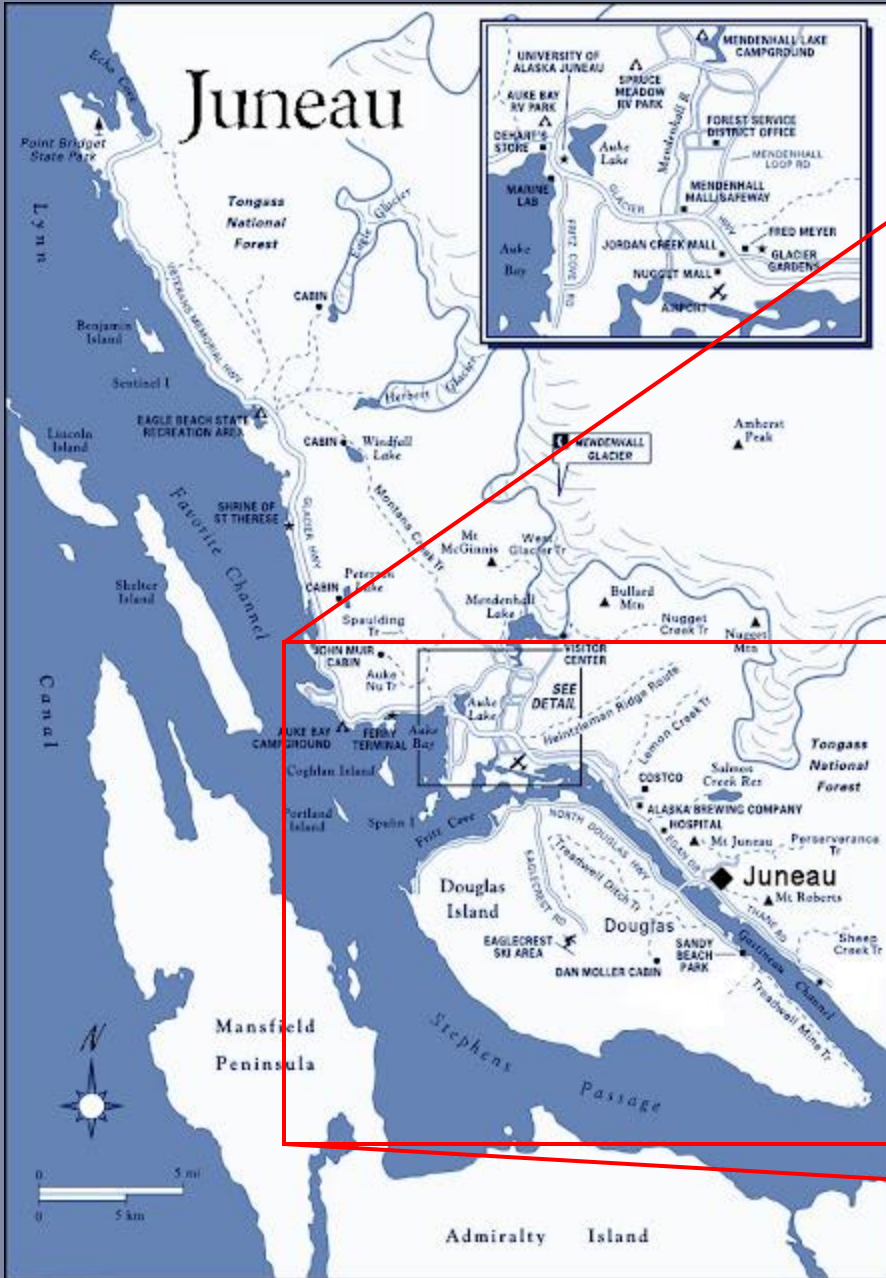
GEOGRAPHIC OVERVIEW



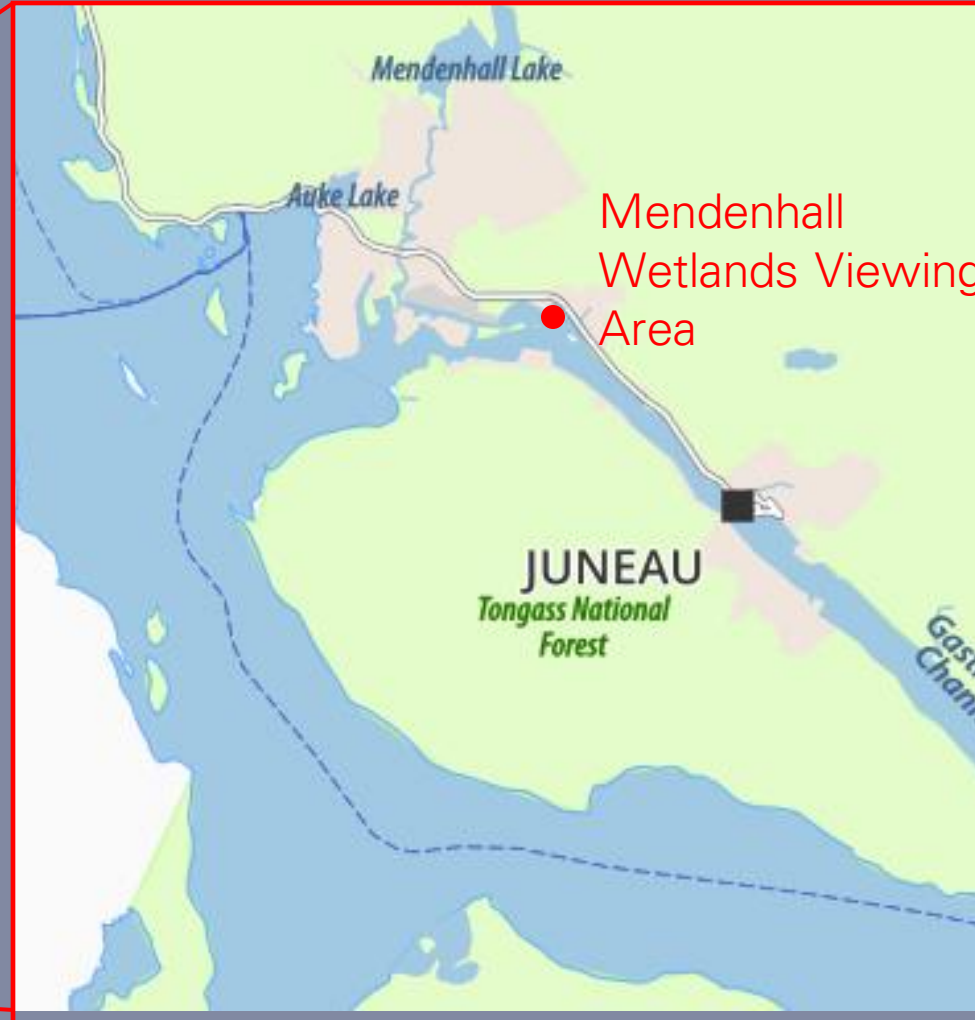
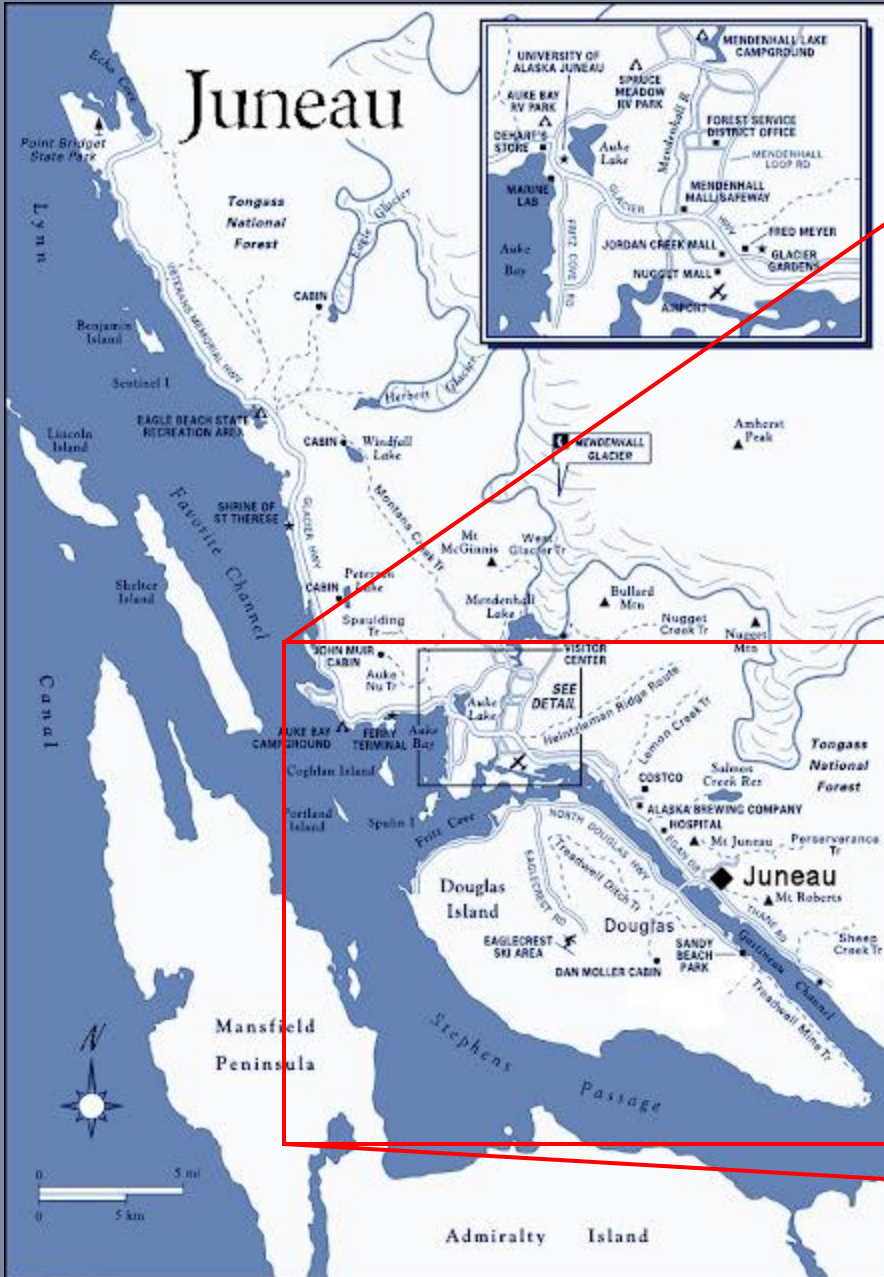
GEOGRAPHIC OVERVIEW



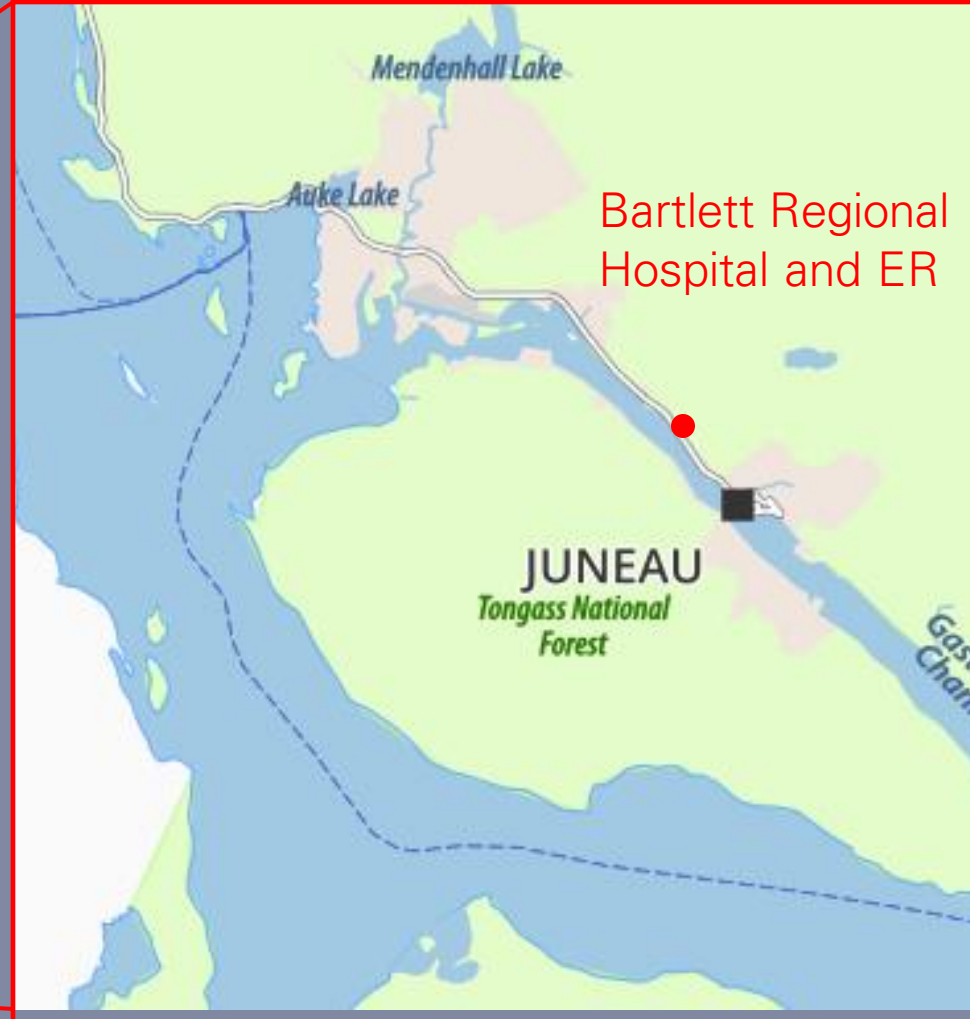
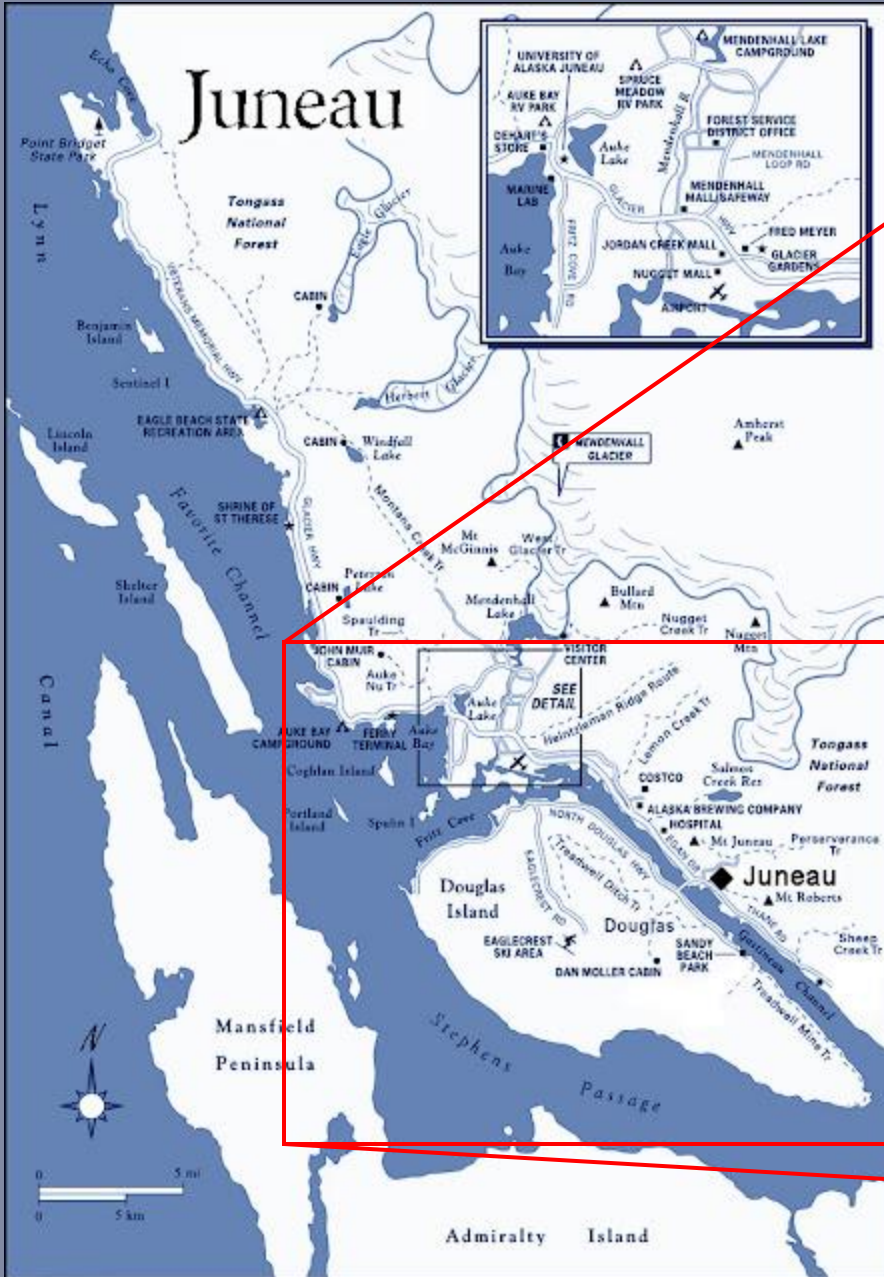
GEOGRAPHIC OVERVIEW



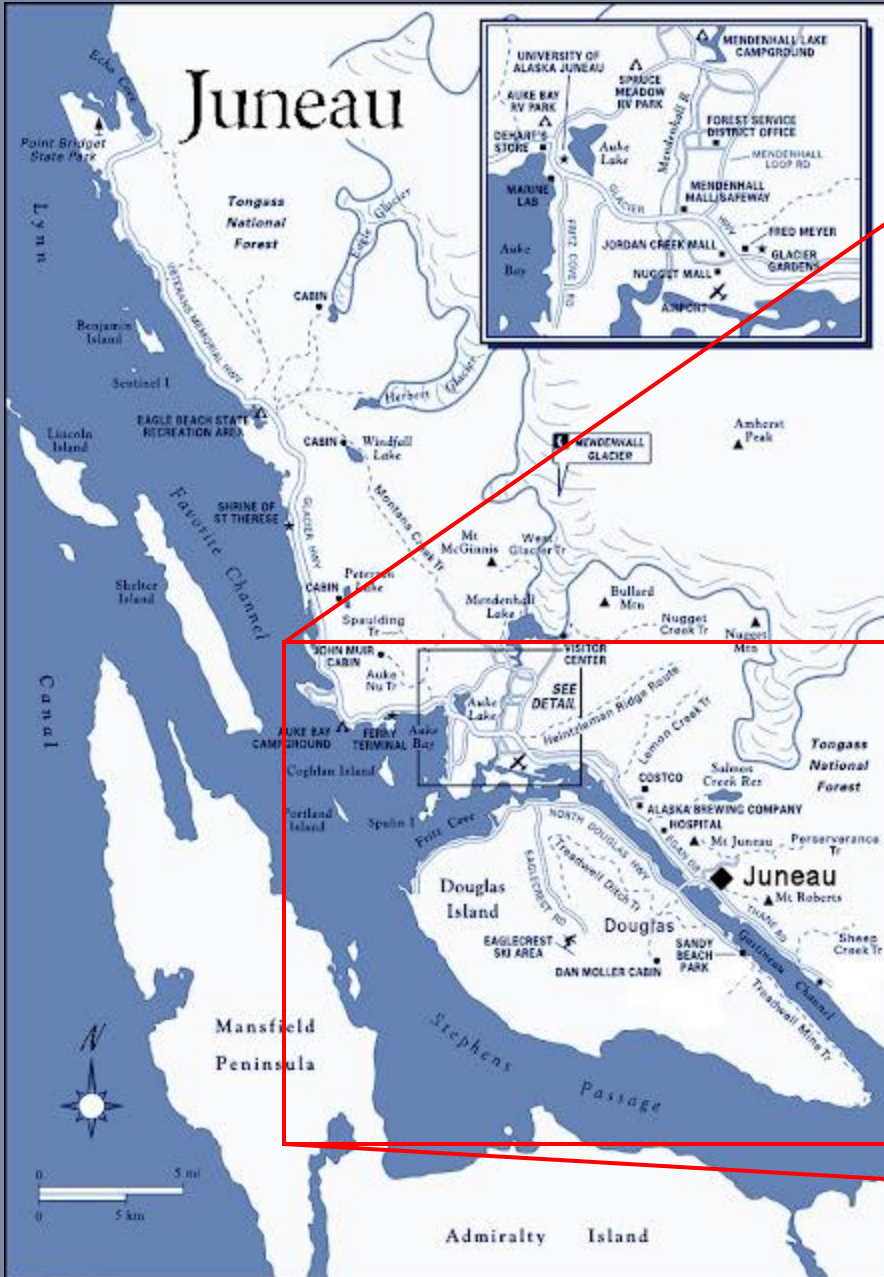
GEOGRAPHIC OVERVIEW



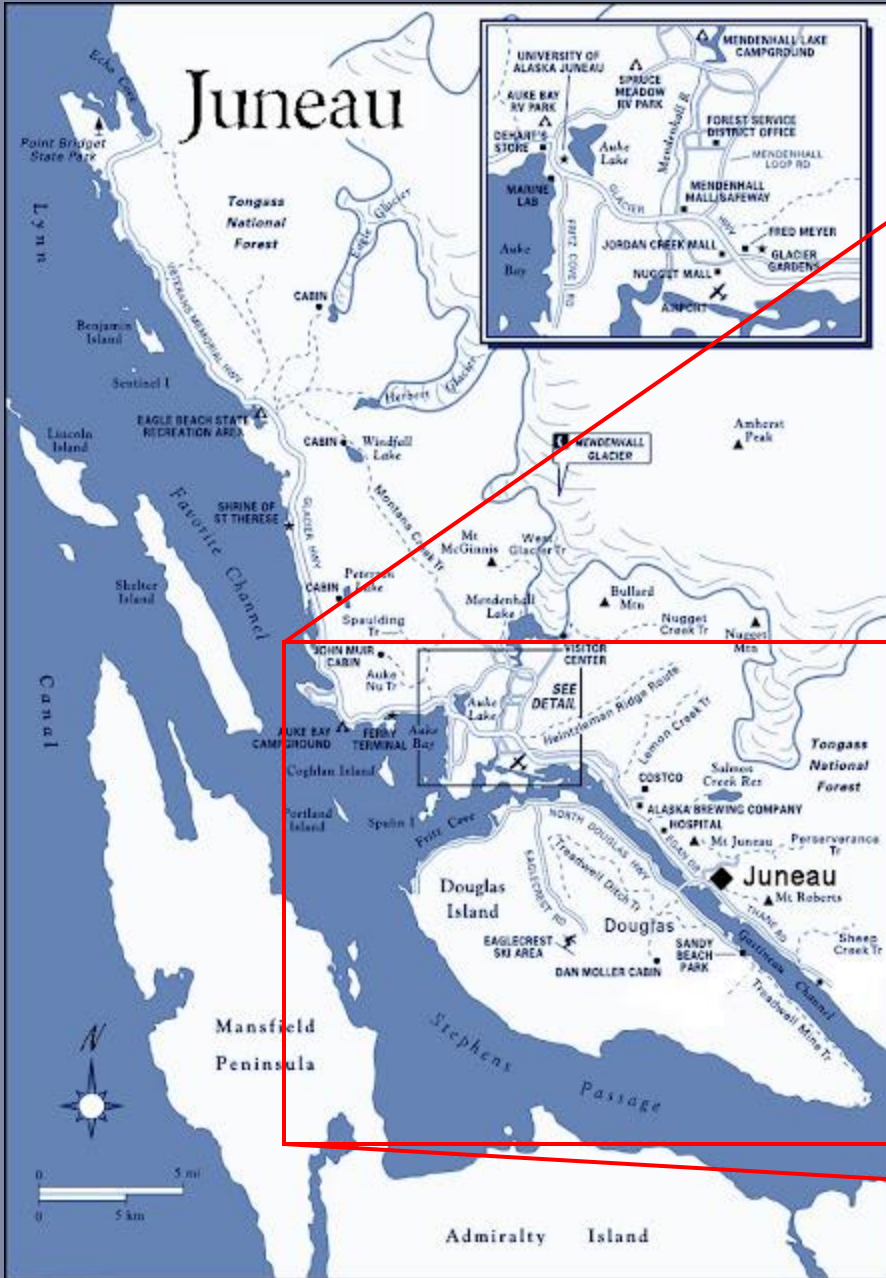
GEOGRAPHIC OVERVIEW



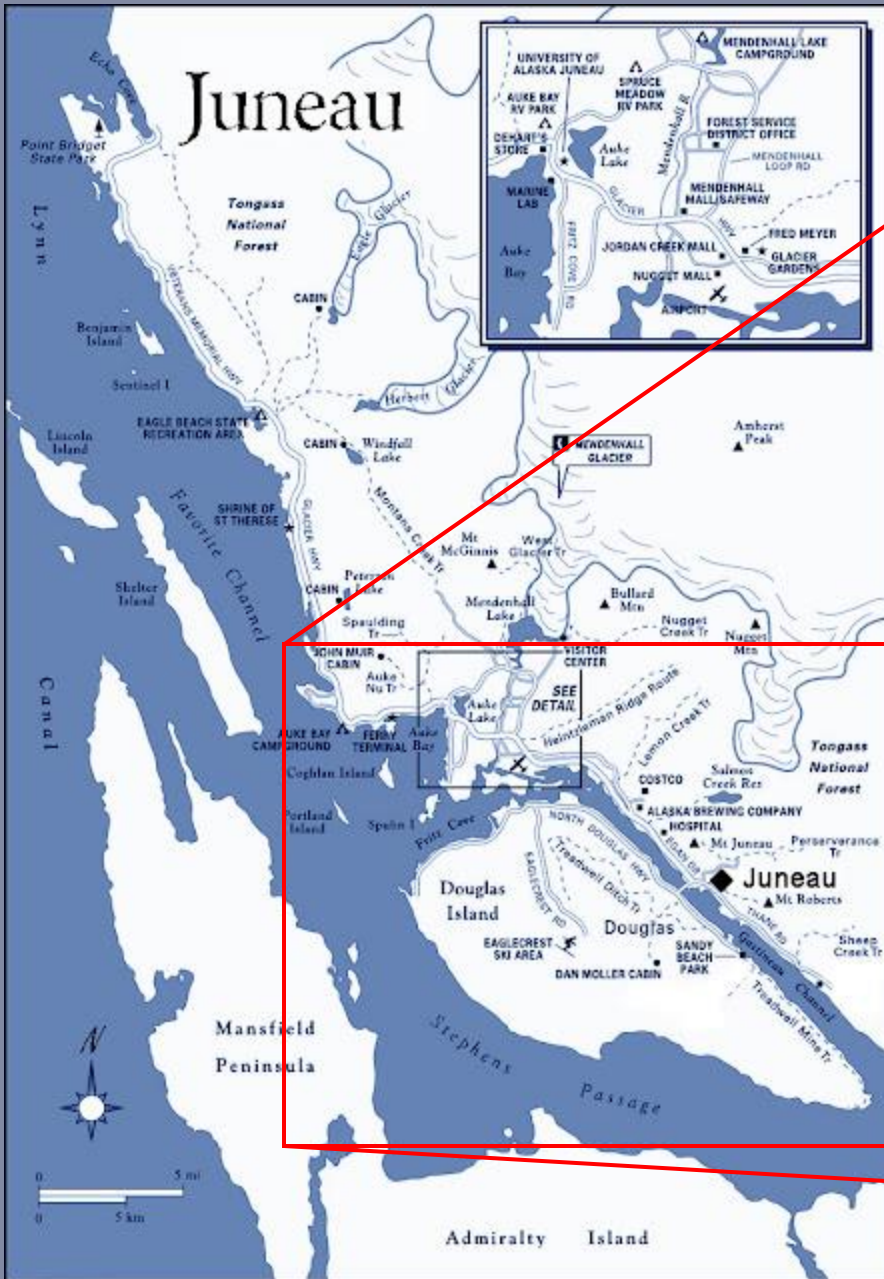
GEOGRAPHIC OVERVIEW



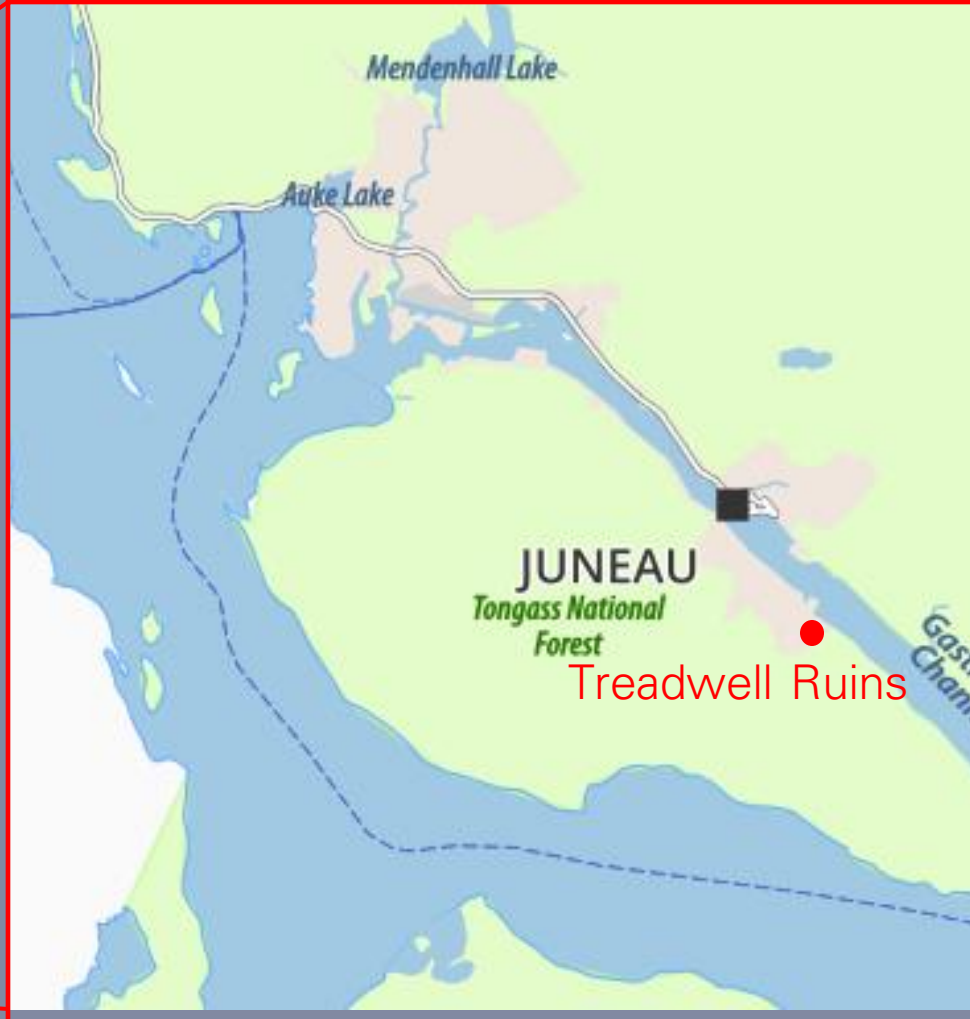
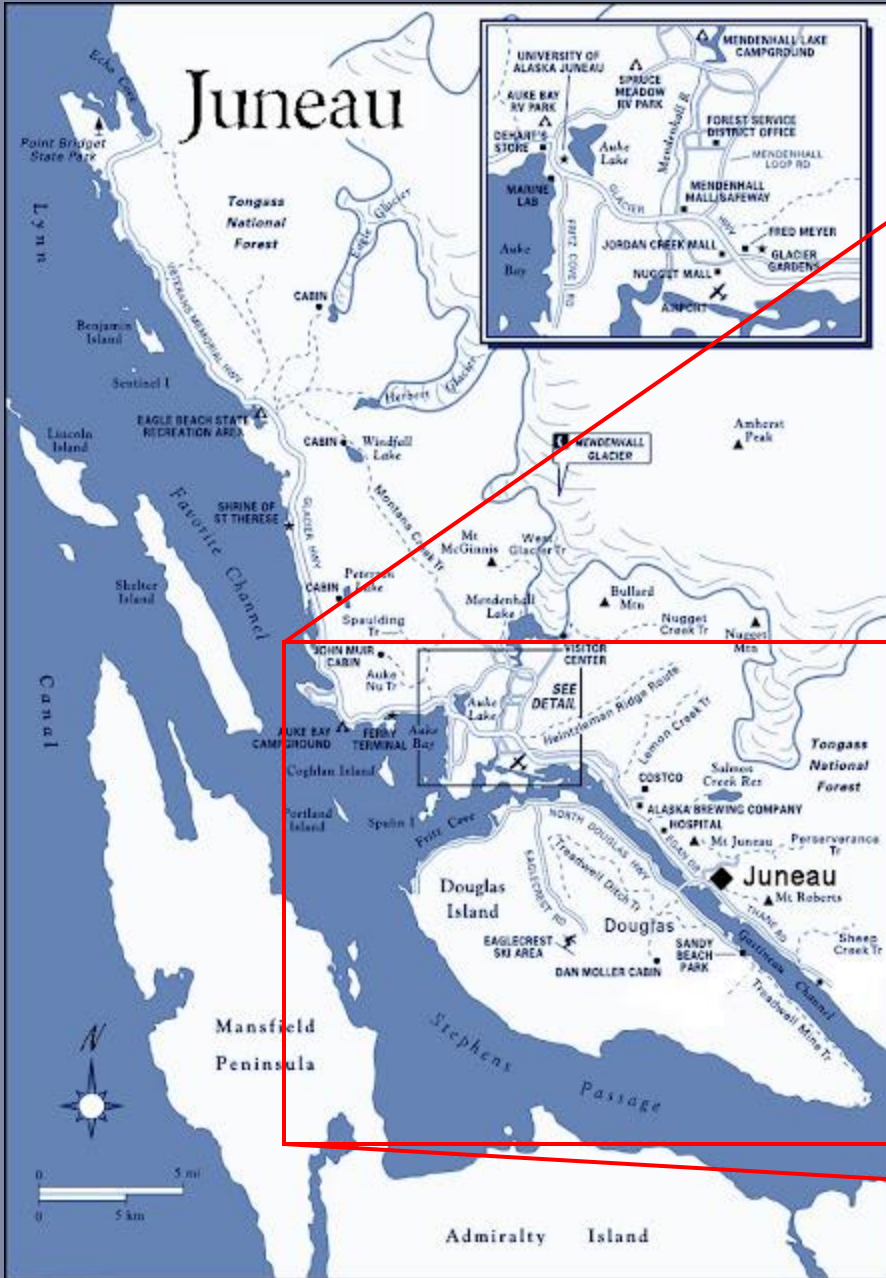
GEOGRAPHIC OVERVIEW



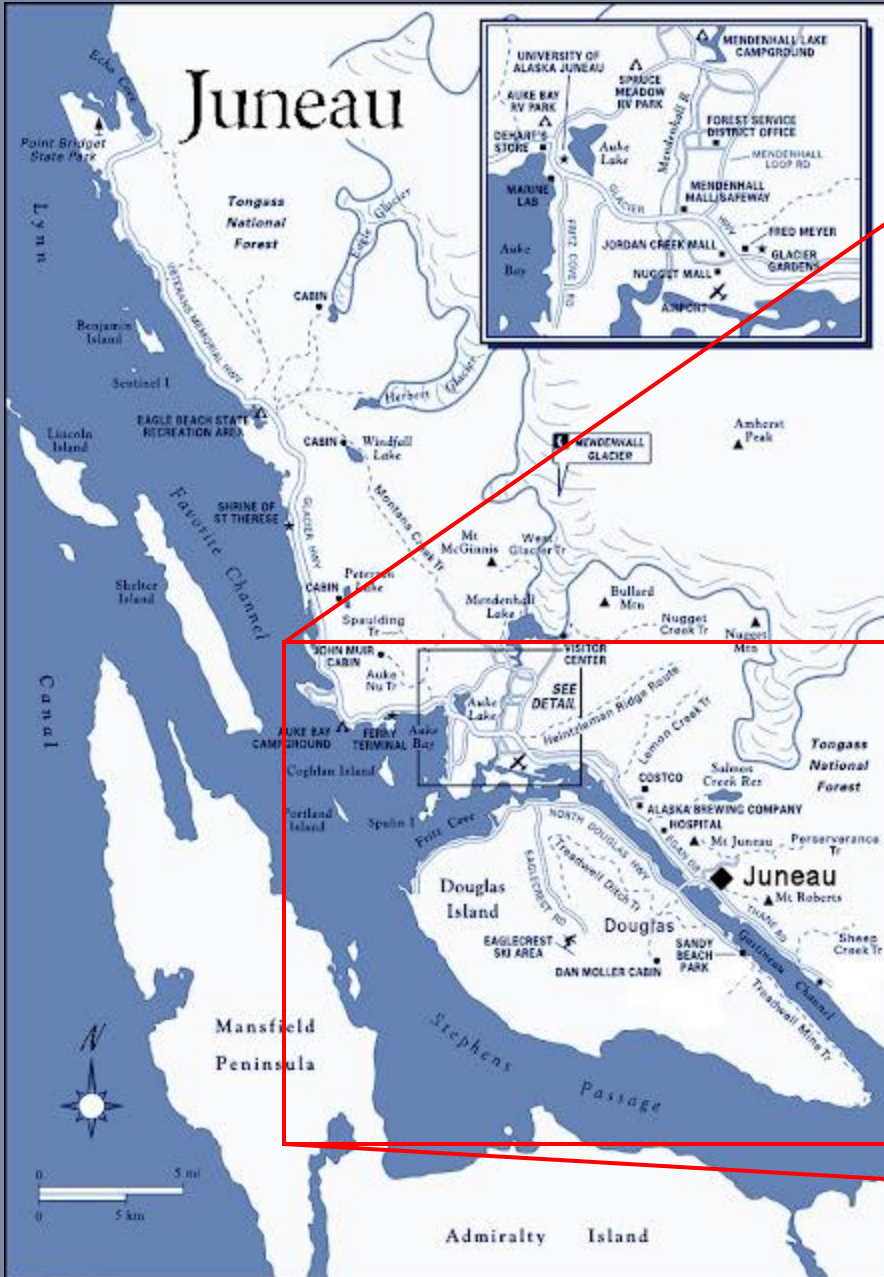
GEOGRAPHIC OVERVIEW



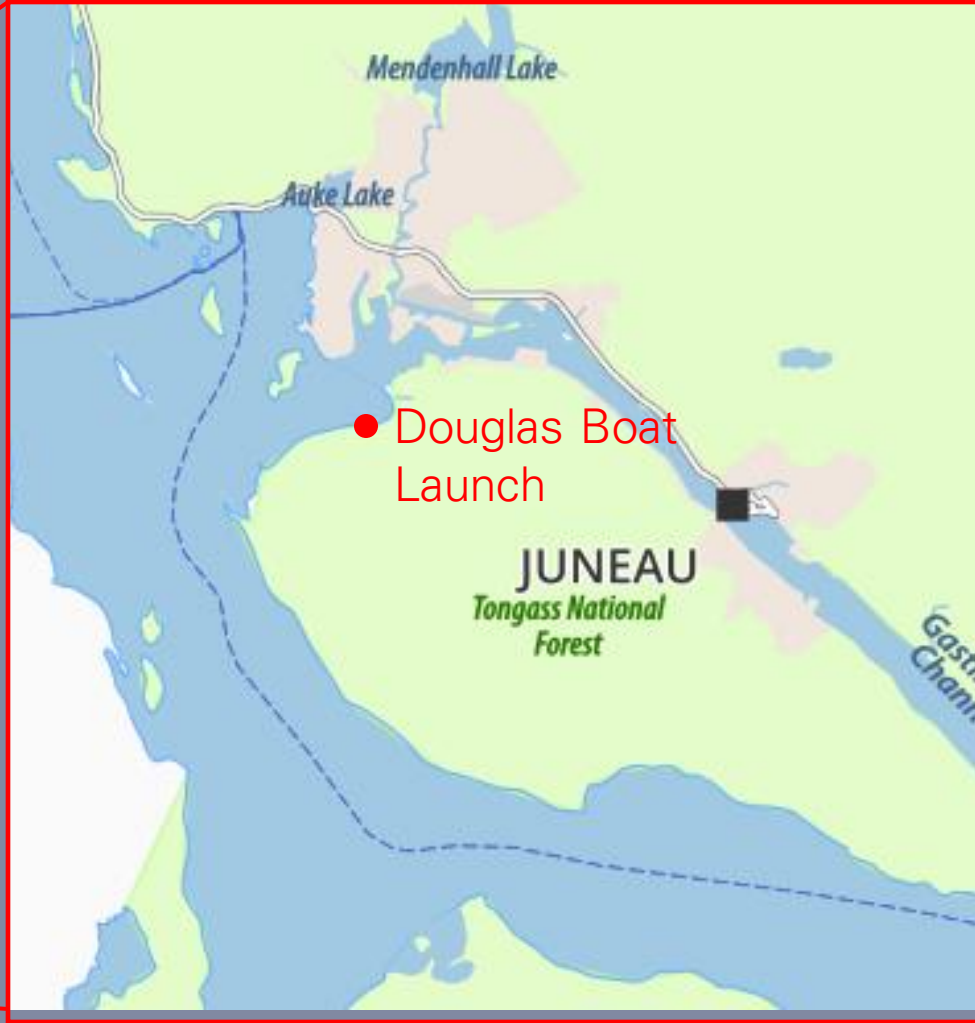
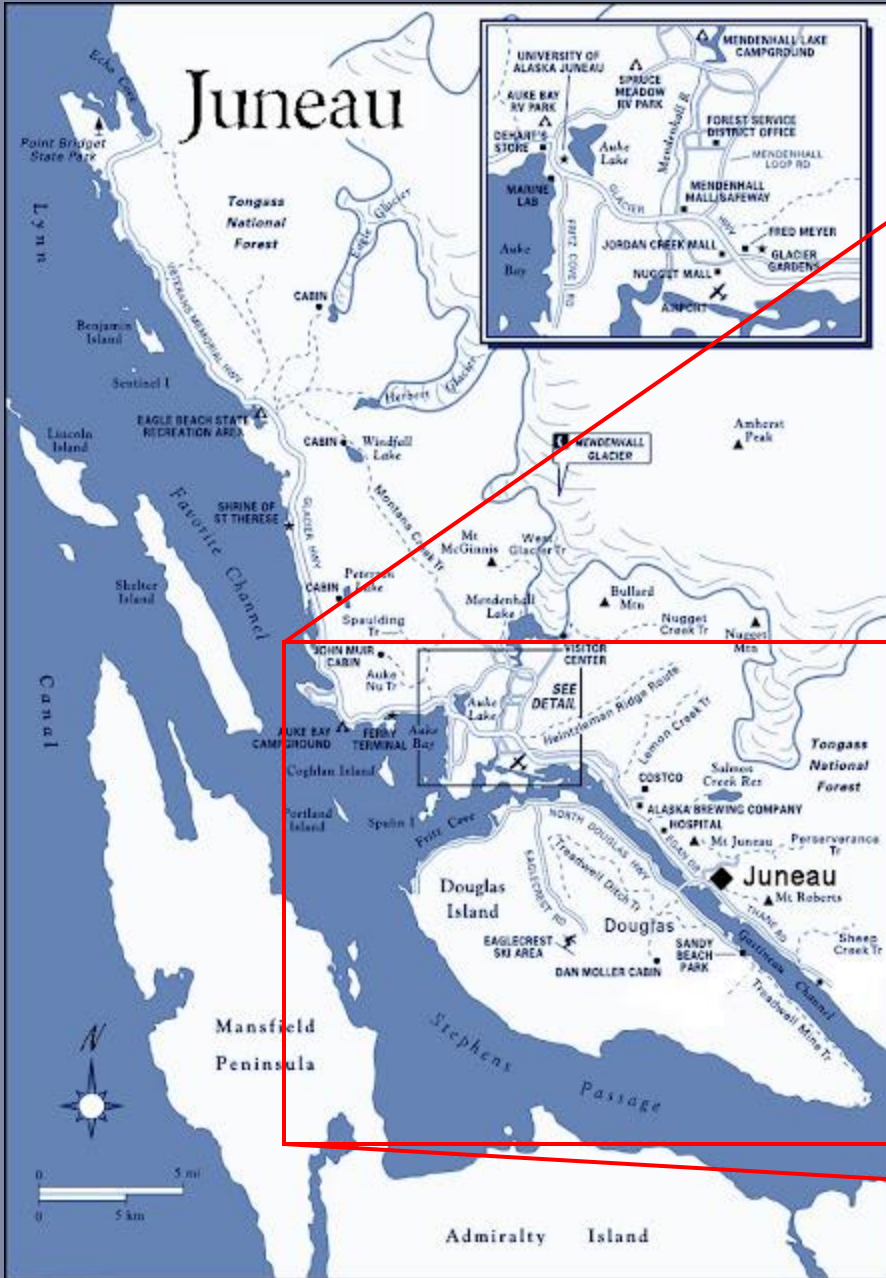
GEOGRAPHIC OVERVIEW



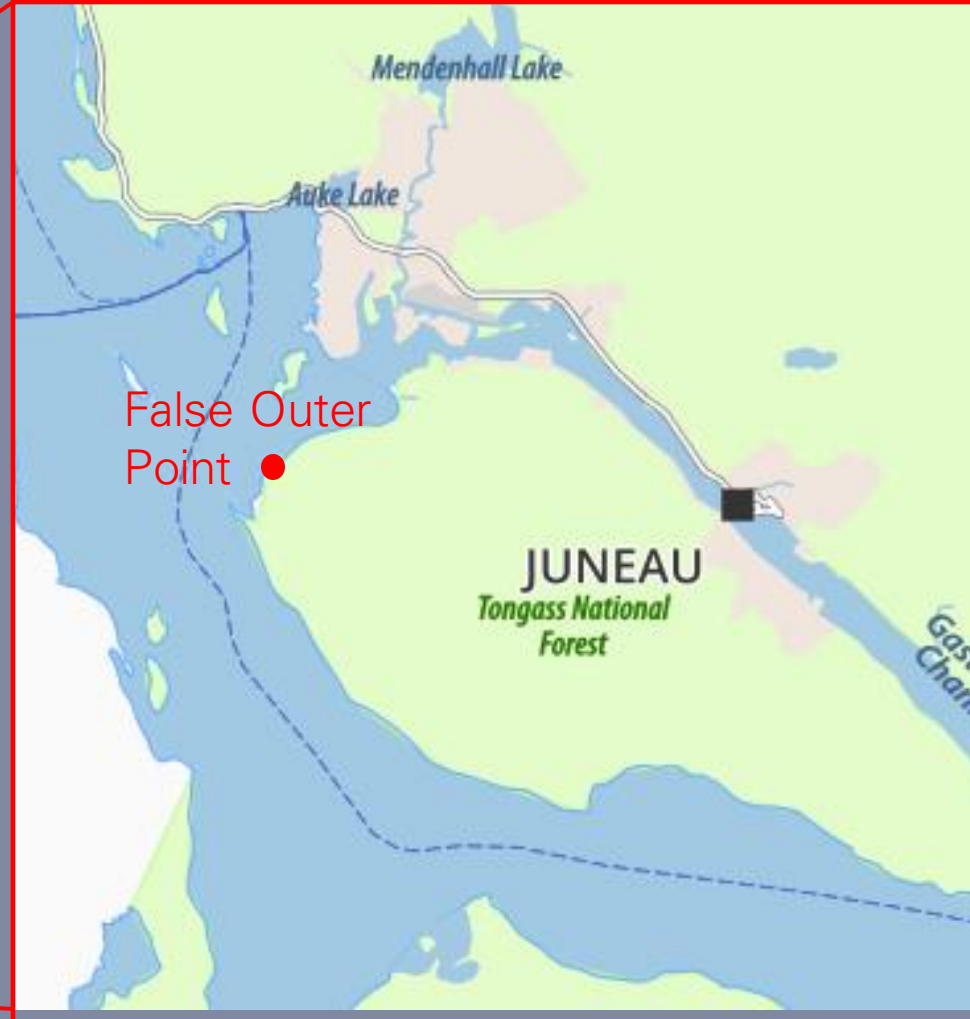
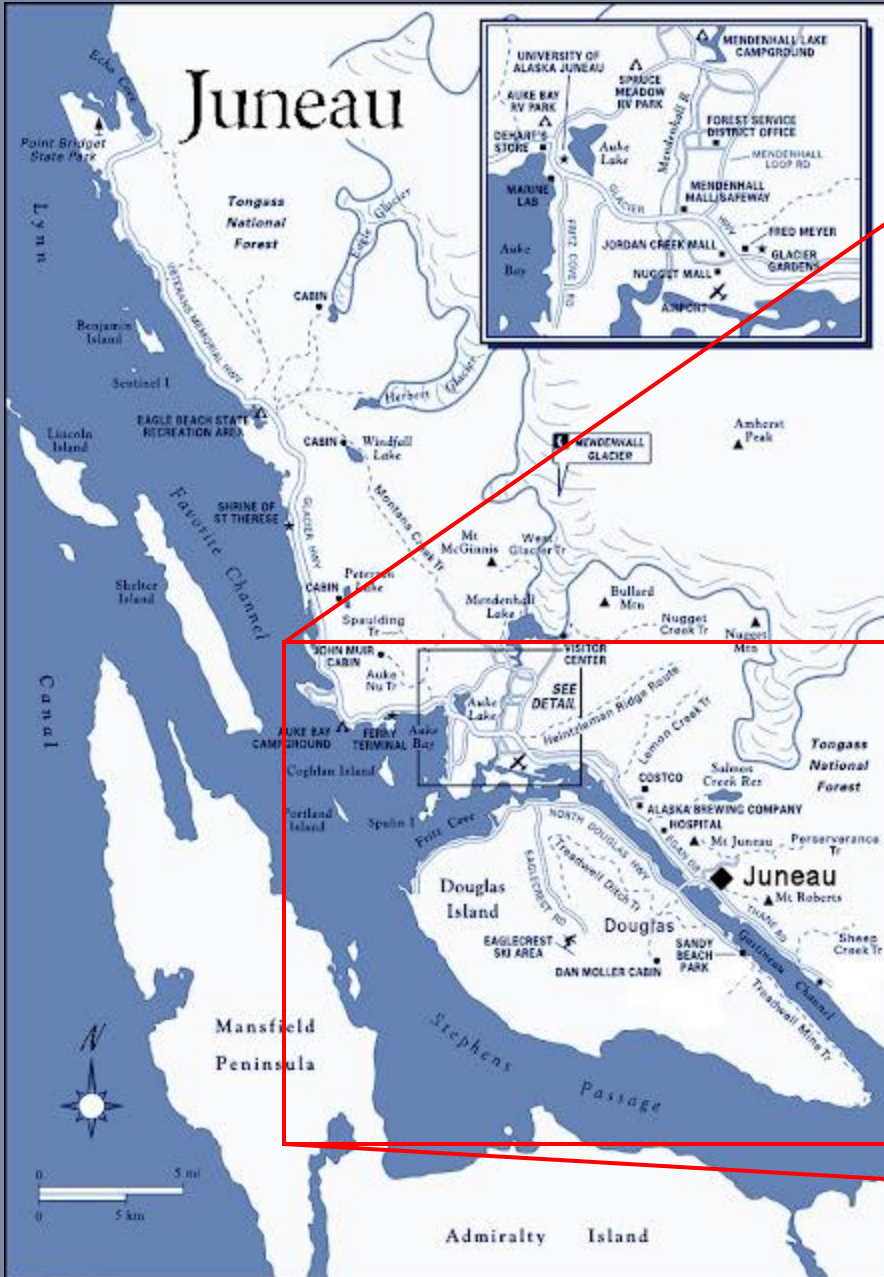
GEOGRAPHIC OVERVIEW



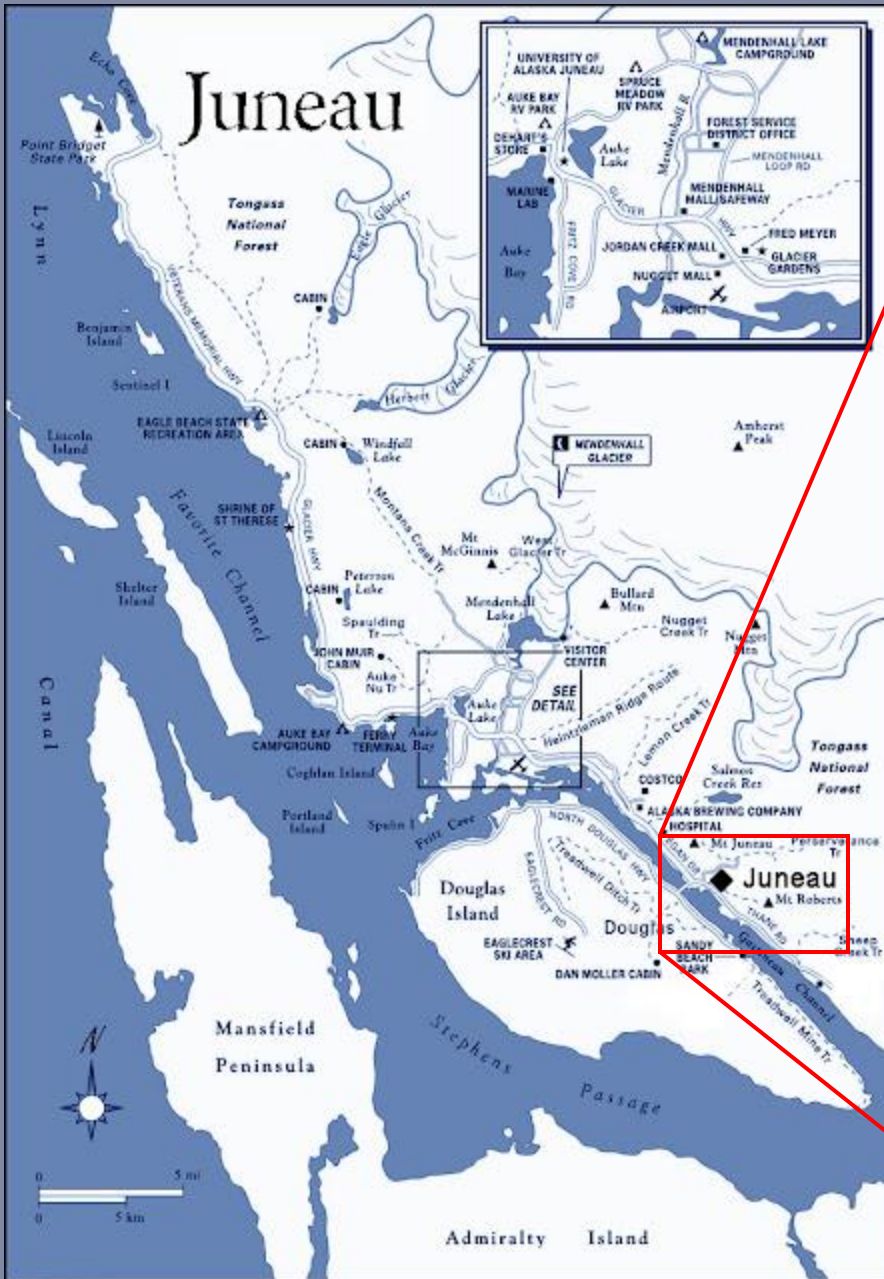
GEOGRAPHIC OVERVIEW



GEOGRAPHIC OVERVIEW



GEOGRAPHIC OVERVIEW



JUNEAU DOWNTOWN AREA MAP

POINTS OF INTEREST

- 1 Federal Building**
Main Post Office, Time Capsule and Alaska Native Exhibit.
- 2 Governor's House**
Built in 1912, this elegant residence is home to Alaska's first family.
- 3 House of Wickersham**
Home of Judge Wickersham, a leading proponent of statehood and an architect of Alaska's Territorial legal system.
- 4 St. Nicholas Orthodox Church**
Built in 1894, it's the oldest original Russian Orthodox church in Alaska.
- 5 Capitol Annex Building**
Built in 1928, this former Scottish Rite Temple now houses offices of the Legislature.
- 6 Alaska State Capitol***
Free tours throughout the summer. Houses the Governor's office, legislature and historic photos.
- 7 Juneau-Douglas City Museum**
The museum offers exhibits on Juneau history and culture.
- 8 Alaska State Museum**
Impressive exhibits of Alaska history, Native culture and wildlife. Guided tours.
- 9 State Office Building***
The eighth floor features a restored pipe organ, a totem and an observation deck with great views of Juneau and Gastineau Channel.
- 10 Windfall Fisherman**
A life-sized bronze brown bear sculpture by local artist R.T. Wallen.
- 11 Juneau Visitor Information Center**
Located in Centennial Hall. Open year round. Public phones, restrooms and displays. US Forest Service courtesy phone.
- 12 Centennial Hall Convention Center***
Offers 40,000 square feet of professional meeting space, in the heart of historic downtown. Convenient to hotels.
- 13 Municipal Building - City Hall***
The side of City Hall has a mural by former local artist Bill Ray depicting a Haida story of creation.
- 14 Marine Park Kiosk (Seasonal)**
Visitor information site offers brochures and is staffed by local volunteers.
- 15 Hard Rock Miner**
A bronze sculpture by local artist Ed Way depicts Juneau's hard rock mining origins.
- 16 Juneau Founders**
The bronze cast of Joe Juneau, Chief Kowee and Richard Harris is displayed on the front of the Marine View Building.
- 17 Patsy Ann**
In the 1930s, steamships and visitors were greeted by Juneau's most famous dog, Patsy Ann.
- 18 Library and Parking Garage***
Alaska historical reference materials, information and a stained glass mural.
- 19 USS Juneau Memorial**
This anti-aircraft cruiser was christened by the Mayor's wife in 1942 and sunk that same year in World War II combat.
- 20 Visitor Information Center (Seasonal)**
Visitor information, brochures and courtesy-phones are available here.
- 21 Archie Van Winkle Memorial**
A tribute to the first Alaskan to receive the Congressional Medal of Honor.
- 22 Fisherman's Memorial**
A monument in remembrance of those who dedicated their lives to the commercial fishing industry.
- 23 Juneau Arts & Culture Center**
Local artist exhibits and sales, event tickets, recording studio, meeting space rental for public and private events.

Legend:

- = one-way street
- = crosswalks
- = stairs
- = parking
- = cruise ship dock
- A** = AJ Dock
- B** = S. Franklin Street Dock
- C** = Intermediate Vessel Float
- D** = Cruise Ship Terminal
- E** = Alaska Steam Ship Dock
- F** = Seadrome Dock
- = Post Office
- = Historic Signage

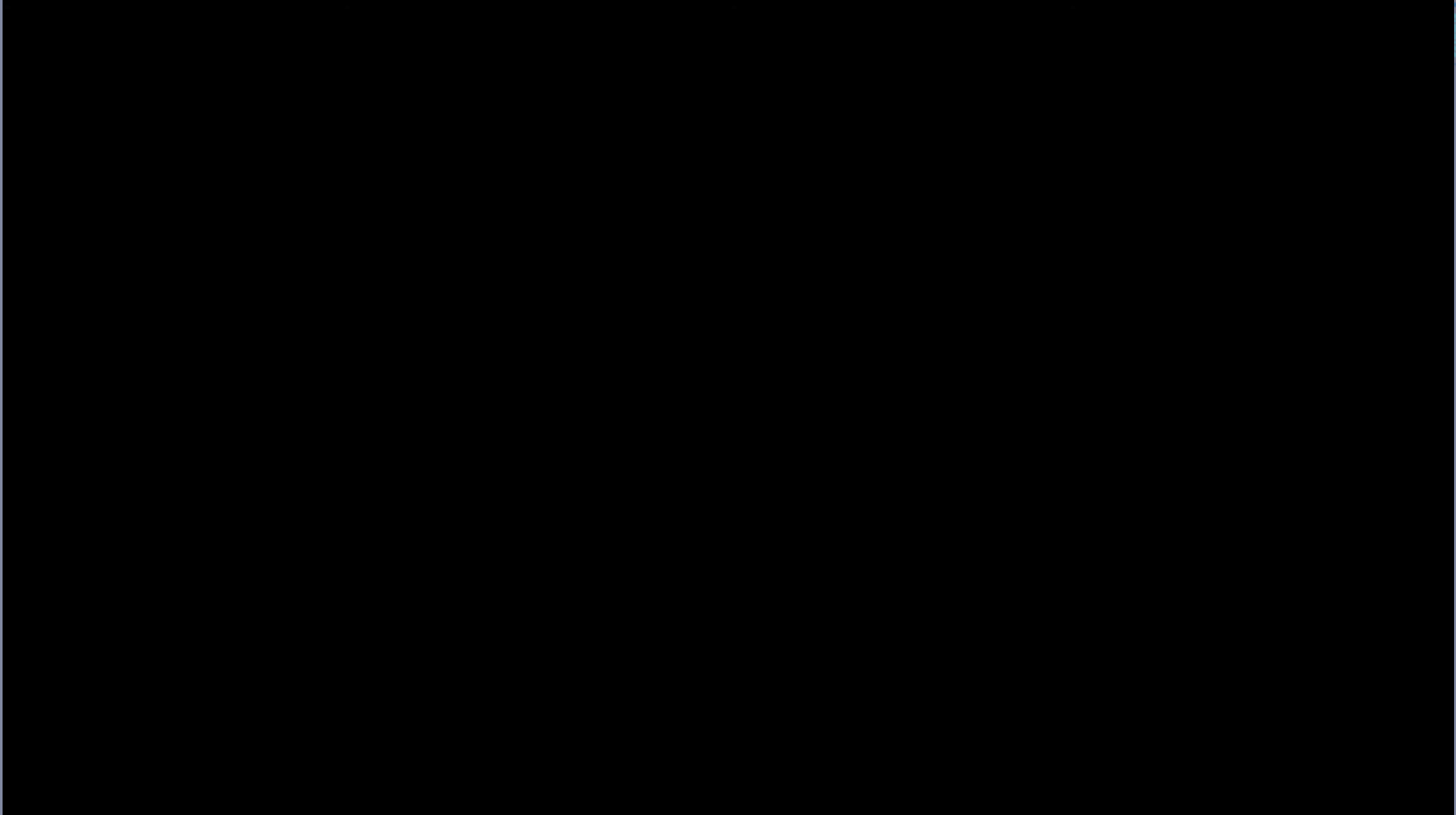
*** Public Restrooms** are available at these locations and at the lower Tram Terminal.

GEOGRAPHIC OVERVIEW

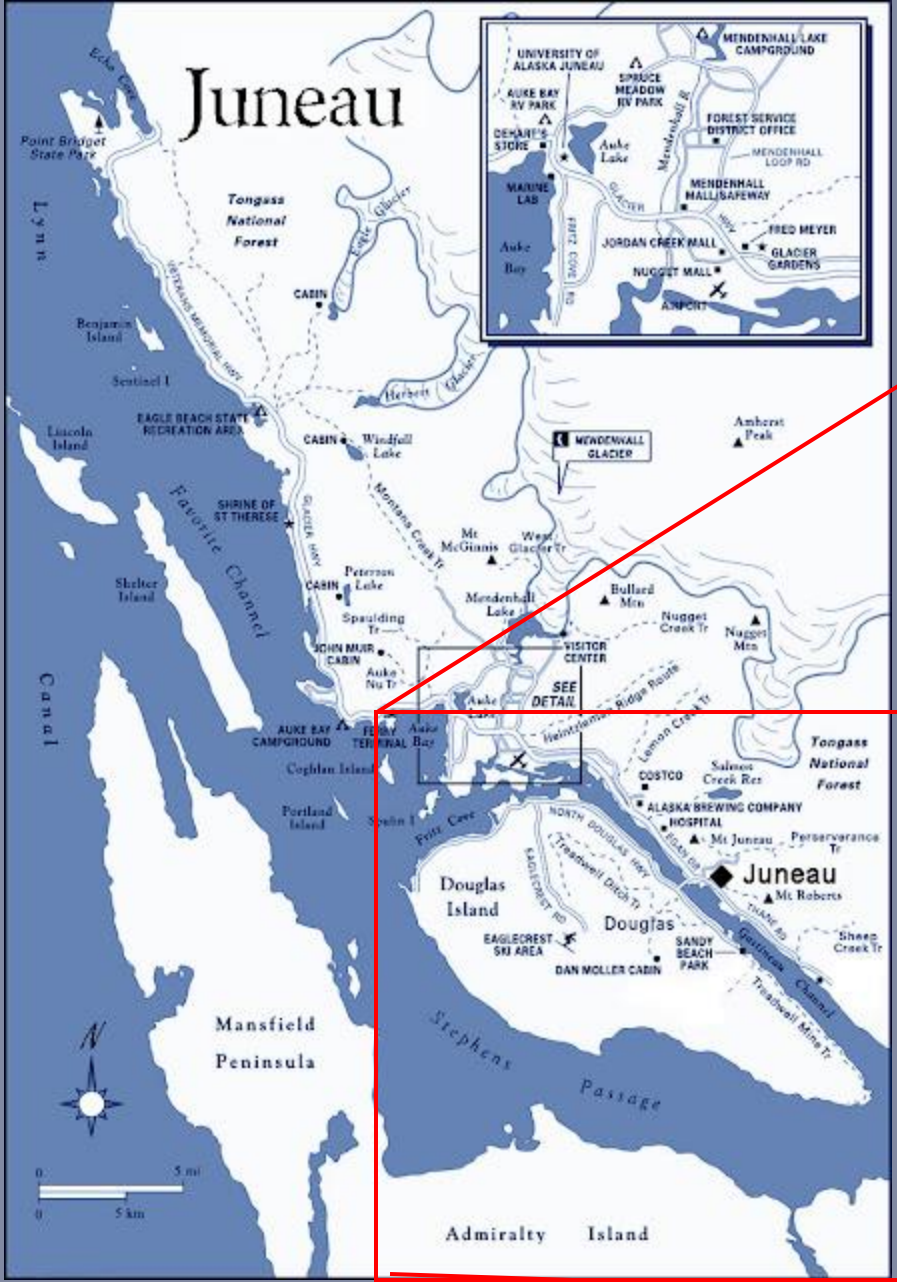


JUNEAU WATERWAYS

GEOGRAPHIC OVERVIEW



GEOGRAPHIC OVERVIEW



GEOGRAPHIC OVERVIEW



Auke Bay- Auk'e w'ta
(Backside of the Little Bay)



GEOGRAPHIC OVERVIEW



Caughlin Island- Sawd'aat X'aati
(Soldier Island)



GEOGRAPHIC OVERVIEW



Outer Point- Shikaagi Noow
(Thick Logged Fort)



GEOGRAPHIC OVERVIEW



Middle Point- Wooshdeinax Aadi
(Trails Above Eachother)



GEOGRAPHIC OVERVIEW



Young Bay- Kanak'aa Si't (Skinny Glacier)



GEOGRAPHIC OVERVIEW



Horse/Colt Island- L'aukhalage
(Shiny Beach)



GEOGRAPHIC OVERVIEW

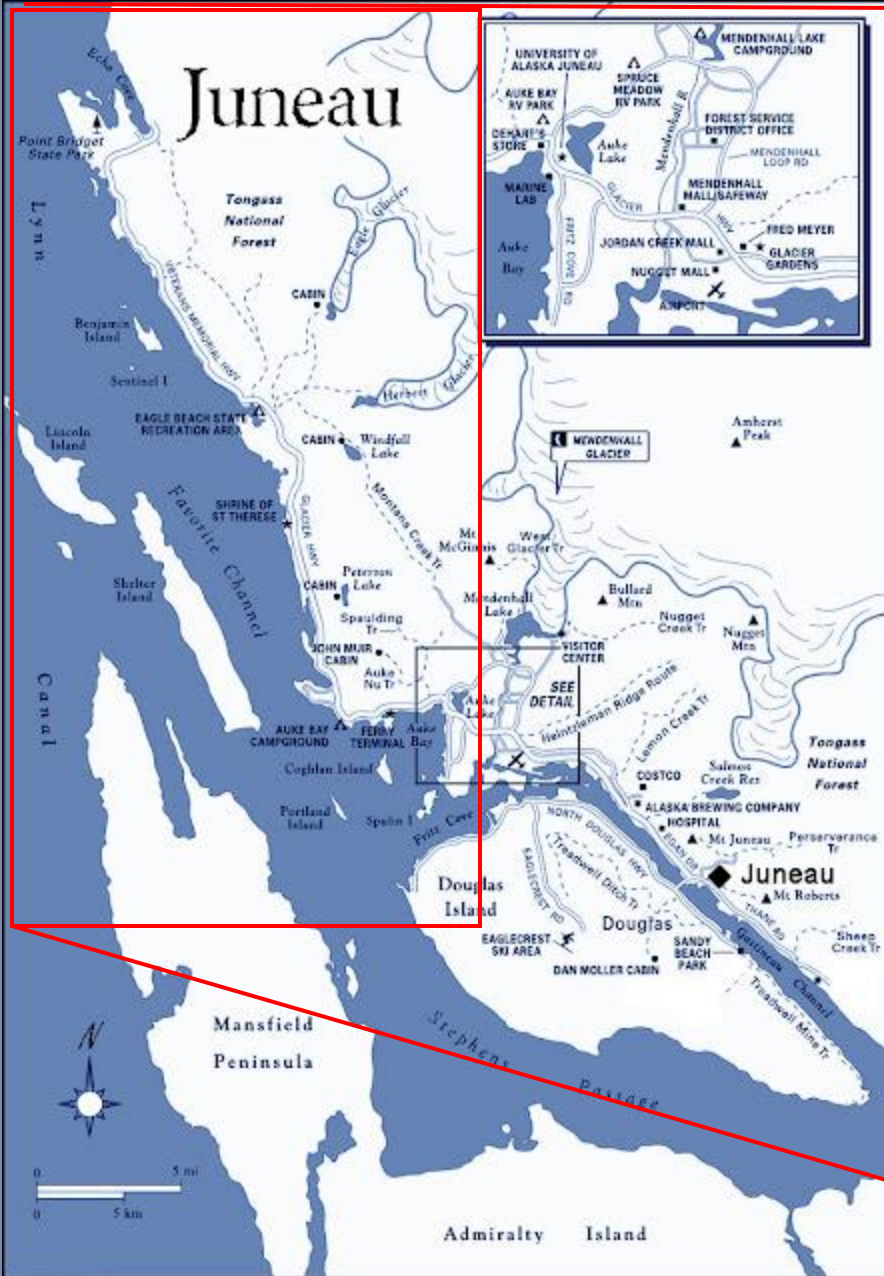


GEOGRAPHIC OVERVIEW



North Pass

GEOGRAPHIC OVERVIEW



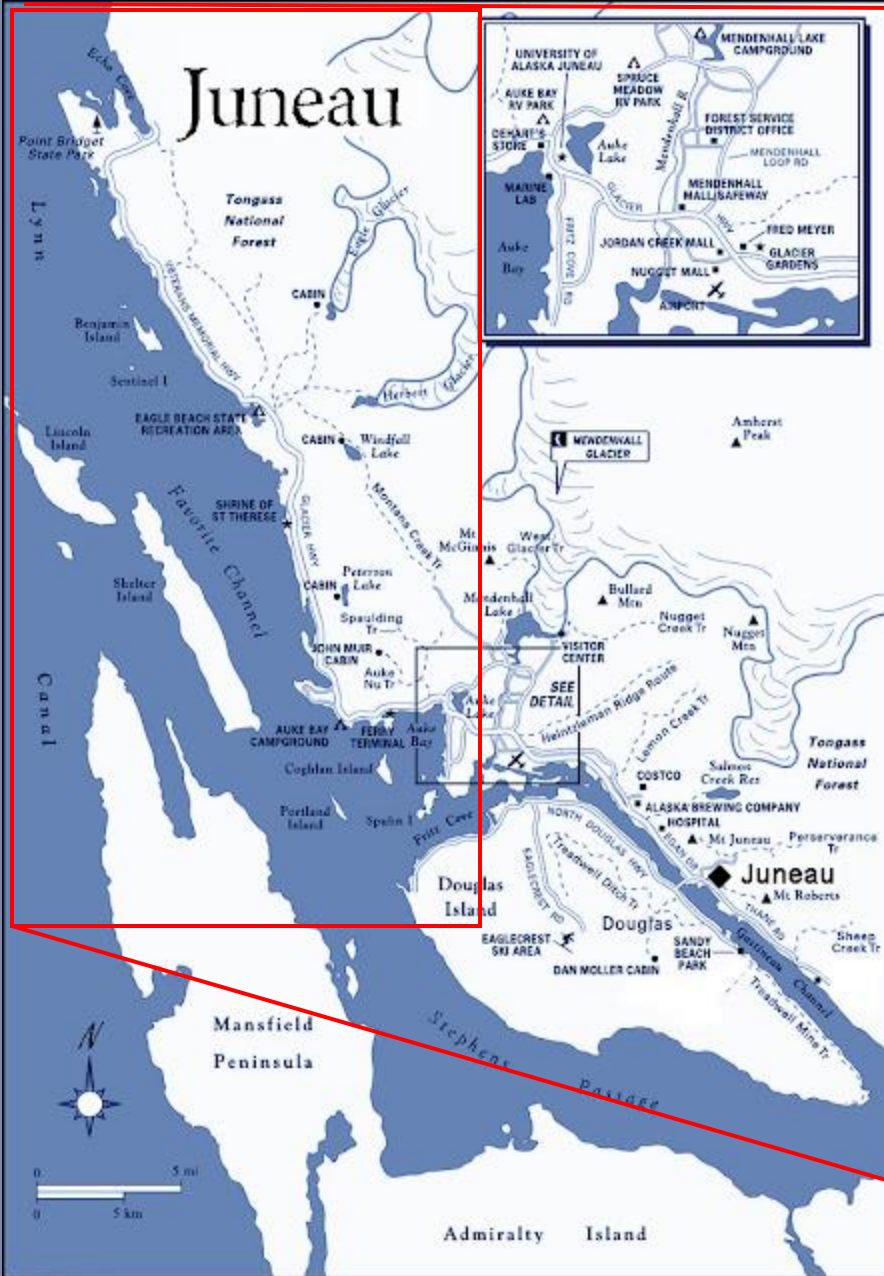
Halibut Cove

GEOGRAPHIC OVERVIEW



Amalga Harbor

GEOGRAPHIC OVERVIEW



South Shelter

GEOGRAPHIC OVERVIEW



Hand Trollers
Cove

Kichxaax
Tukye'e

(Bottom End
of Wing Island)

GEOGRAPHIC OVERVIEW



Faust Rock

GEOGRAPHIC OVERVIEW



Pt. Retreat

Kootznoowo'o
Lutu'

(Point of
Brown Bear
Fort)

GEOGRAPHIC OVERVIEW



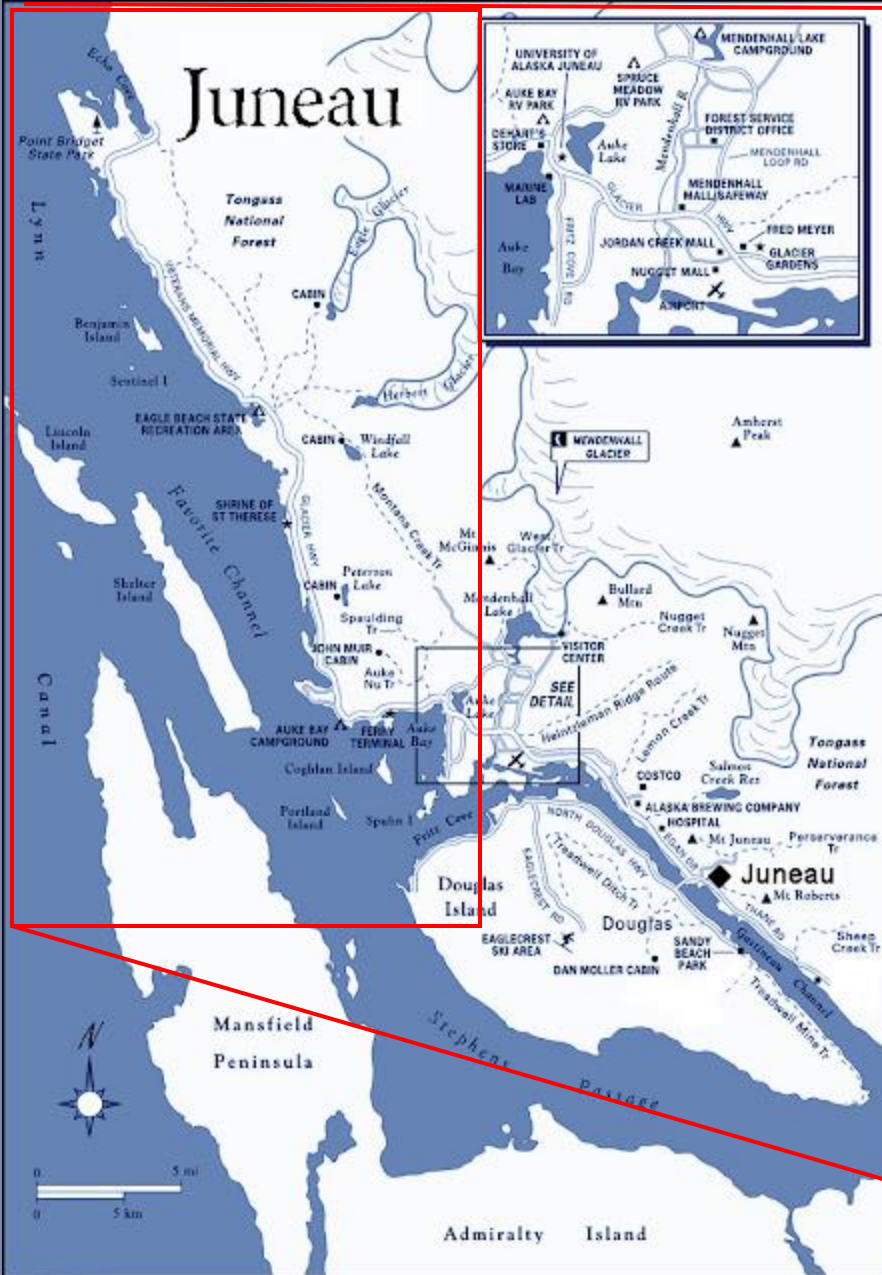
False Pt. Retreat

GEOGRAPHIC OVERVIEW



Cordwood Creek

GEOGRAPHIC OVERVIEW

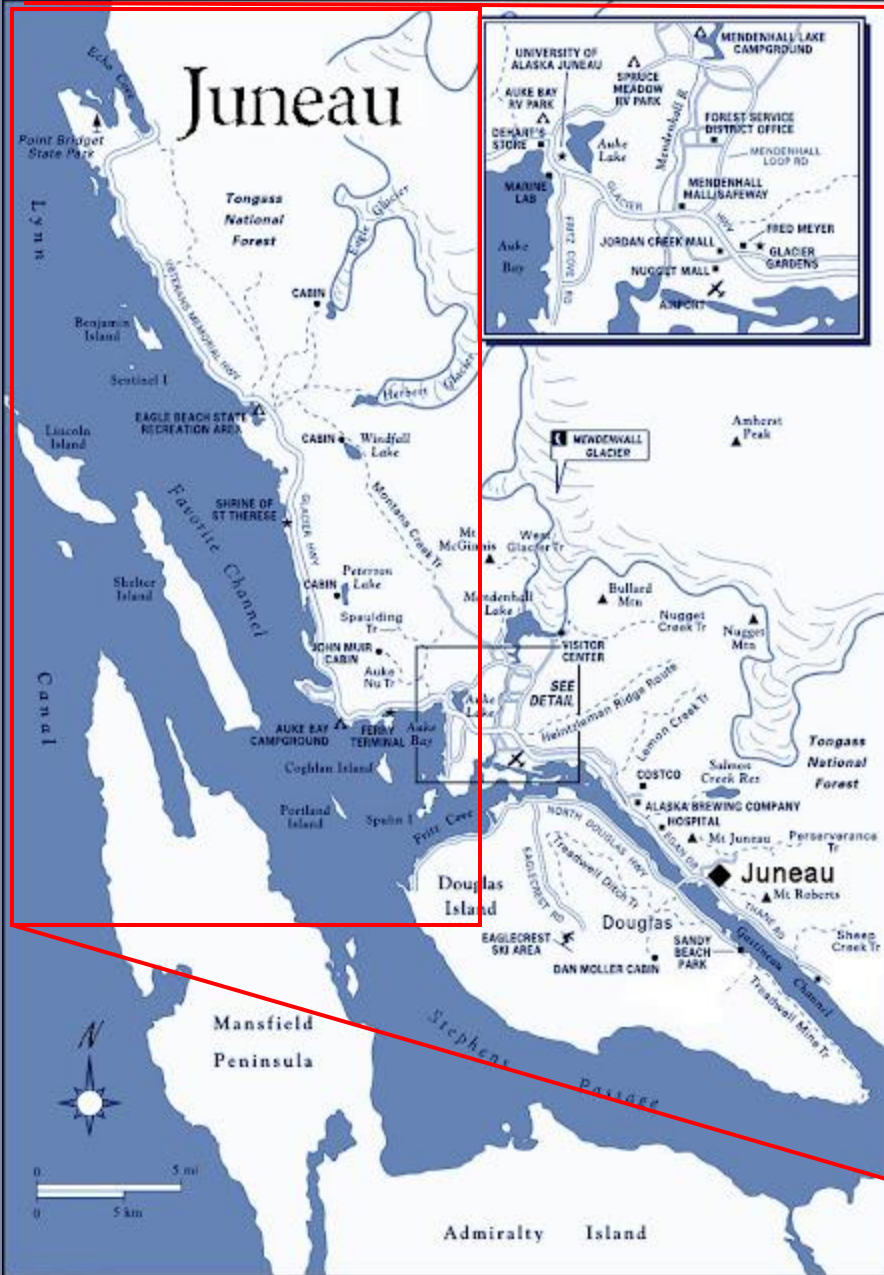


Barlow Cove

Yaxwch Kaadi
T'aak

(Bay of Sea Otters)

GEOGRAPHIC OVERVIEW



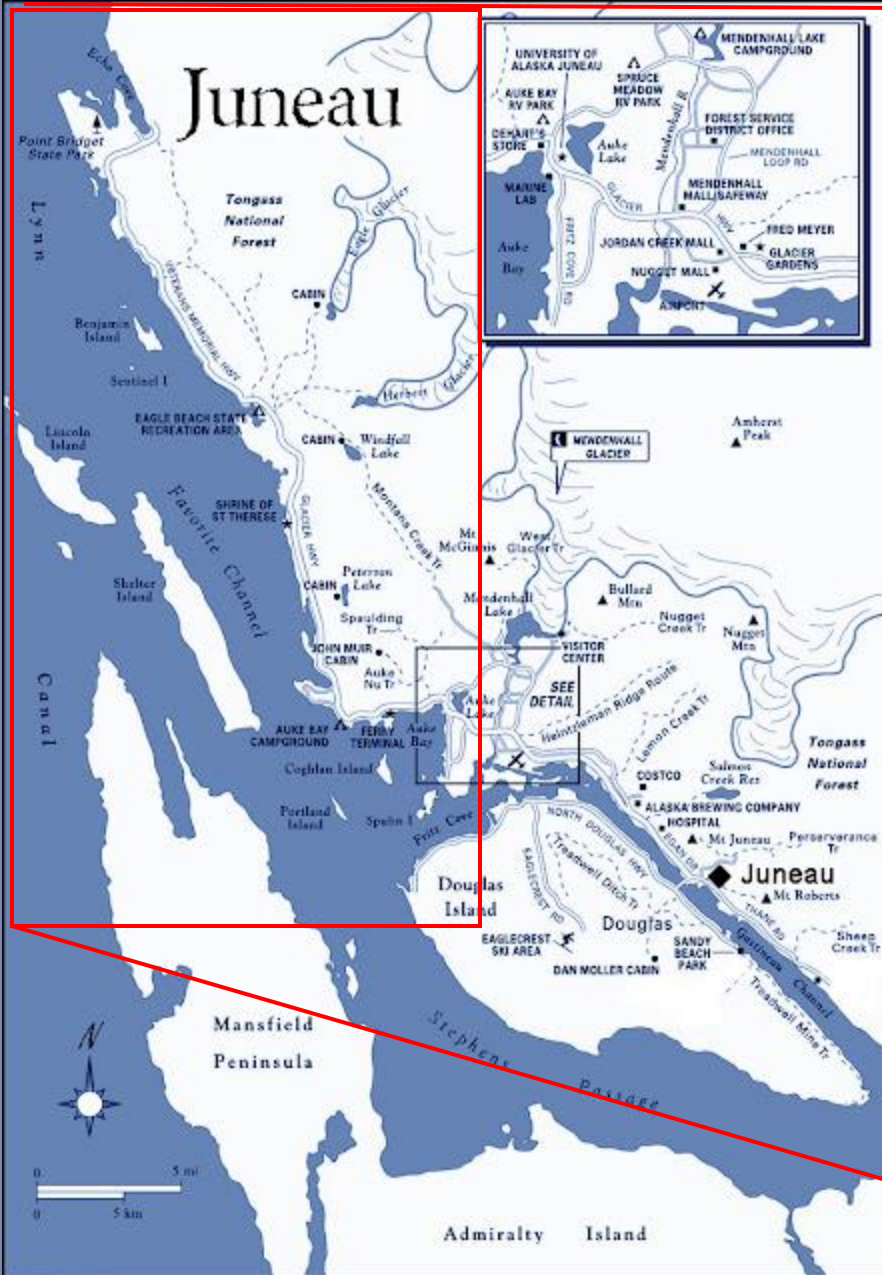
Hump Island

GEOGRAPHIC OVERVIEW



Little Island

GEOGRAPHIC OVERVIEW



Benjamin Island

Taan X'aat'I

(Sea Lion Island)

GEOGRAPHIC OVERVIEW



Sentinel Island

GEOGRAPHIC OVERVIEW



Aaron Island

GEOGRAPHIC OVERVIEW

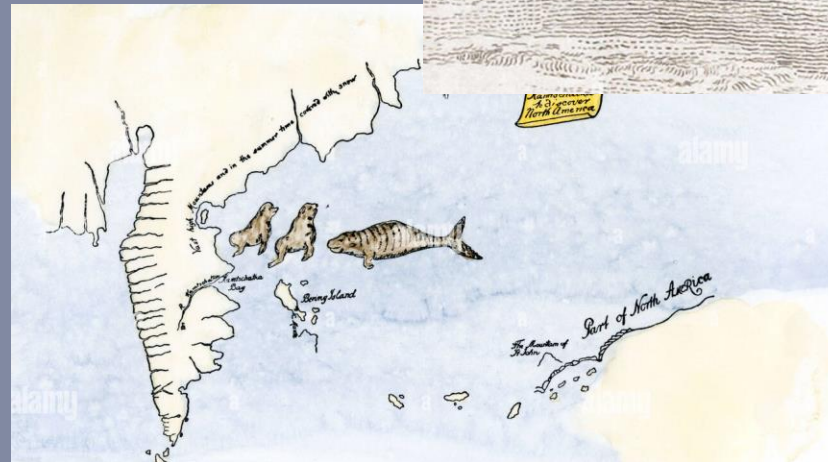


Lena Point

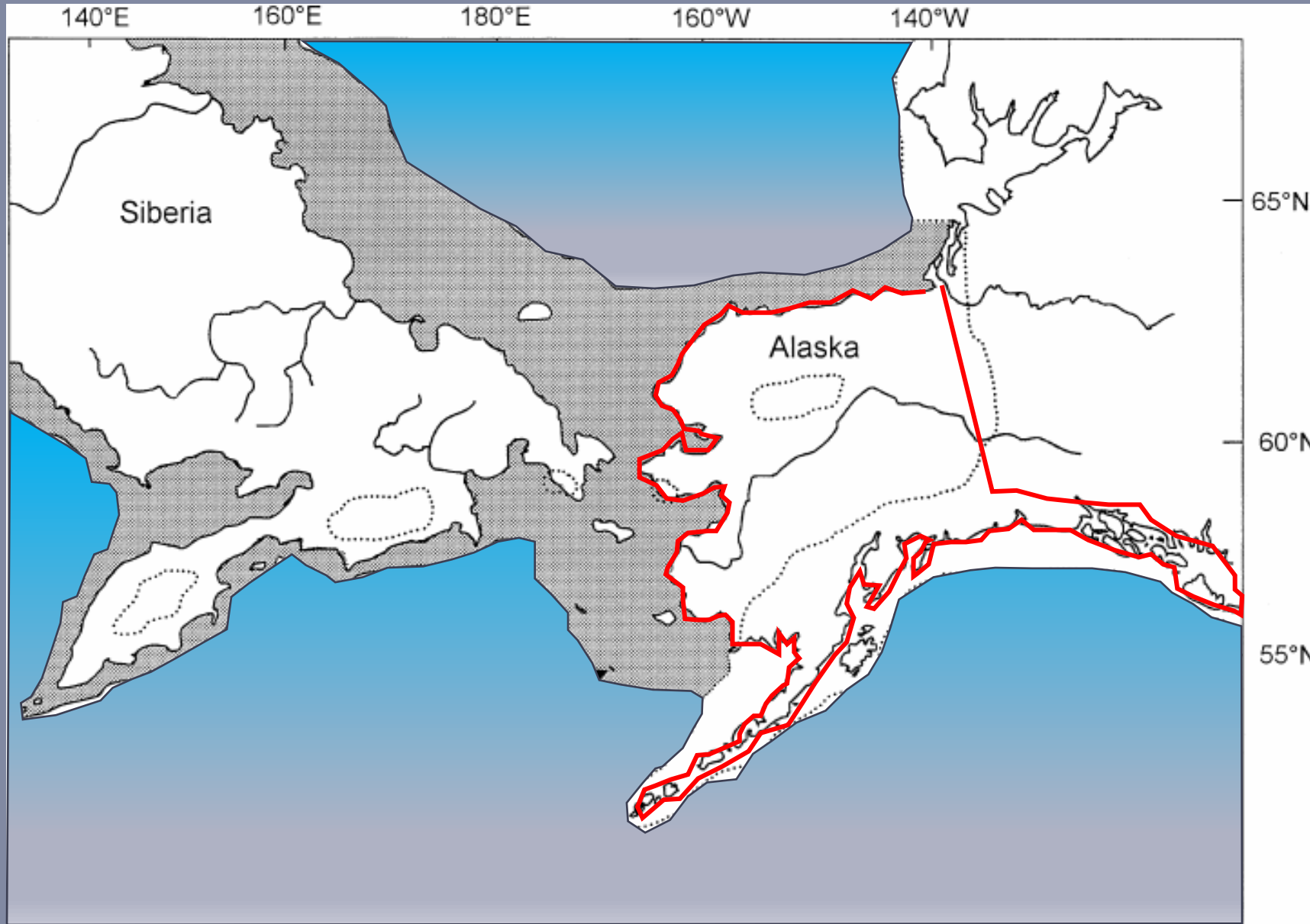
Nex'w X'aayi
(Place of
Cloudberry)

Yeilch Awataay'!
(Prayer Raven)

ALASKA HISTORY AND LAND OCCUPATION



ALASKA HISTORY AND LAND OCCUPATION

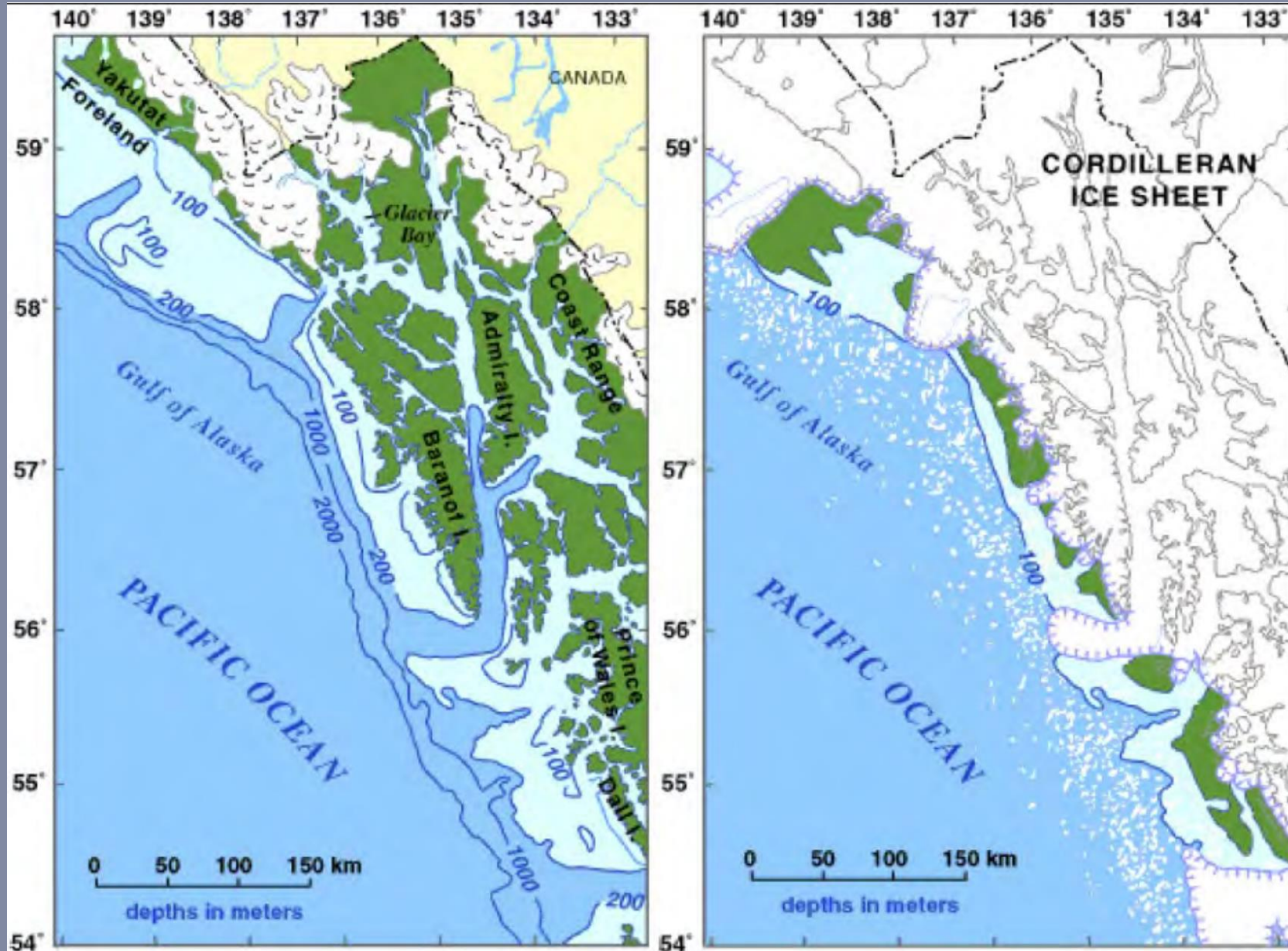


ALASKA HISTORY AND LAND OCCUPATION



Figure 52. Extent of North American Ice Sheet and possible colonization pathways between 19-15.5 ka (Lesnek et al., 2018).

JUNEAU ETHNOHISTORY AND GEOGRAPHY



ALASKA HISTORY AND LAND OCCUPATION



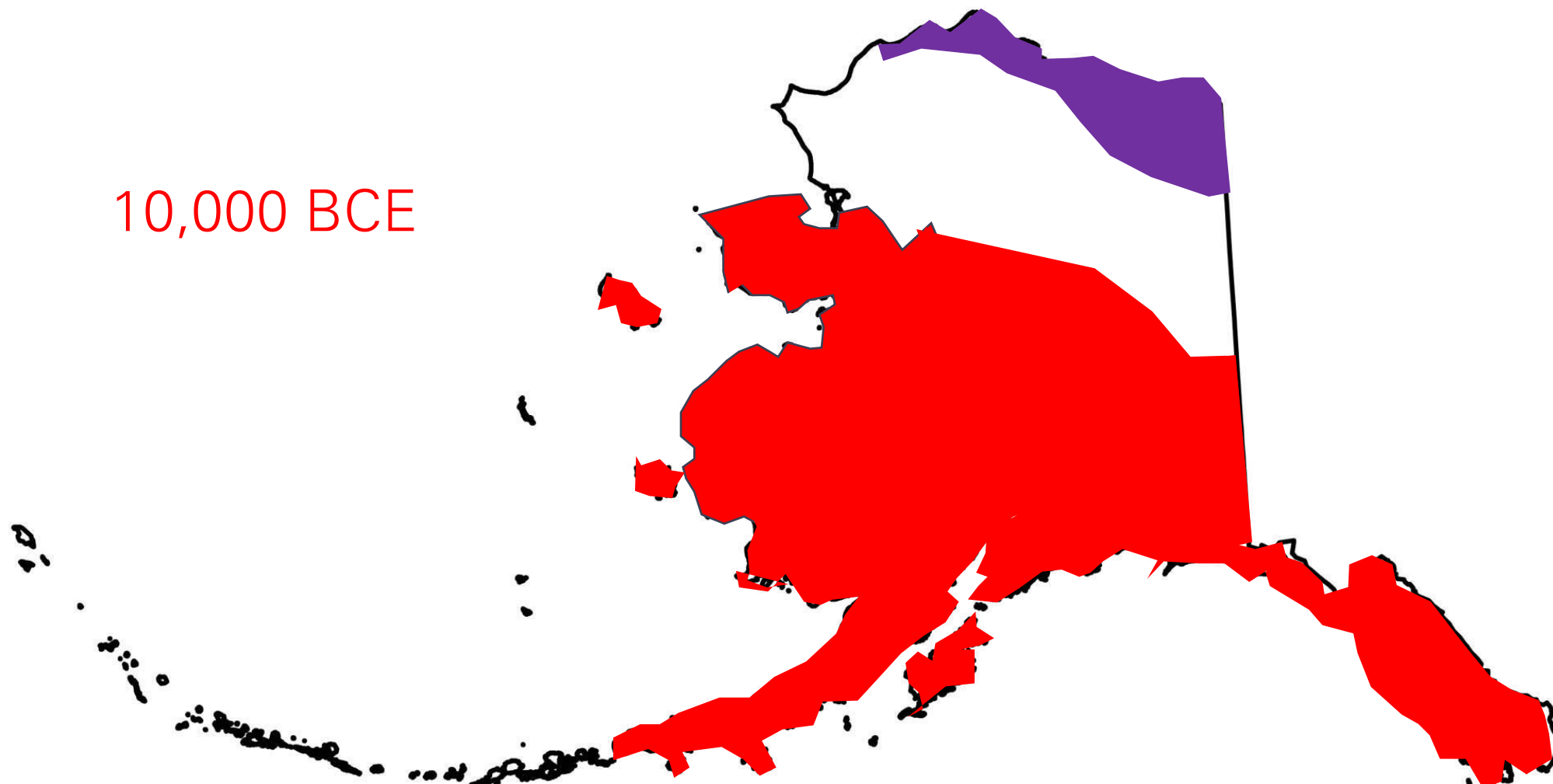
*16,000 BCE



ALASKA HISTORY AND LAND OCCUPATION



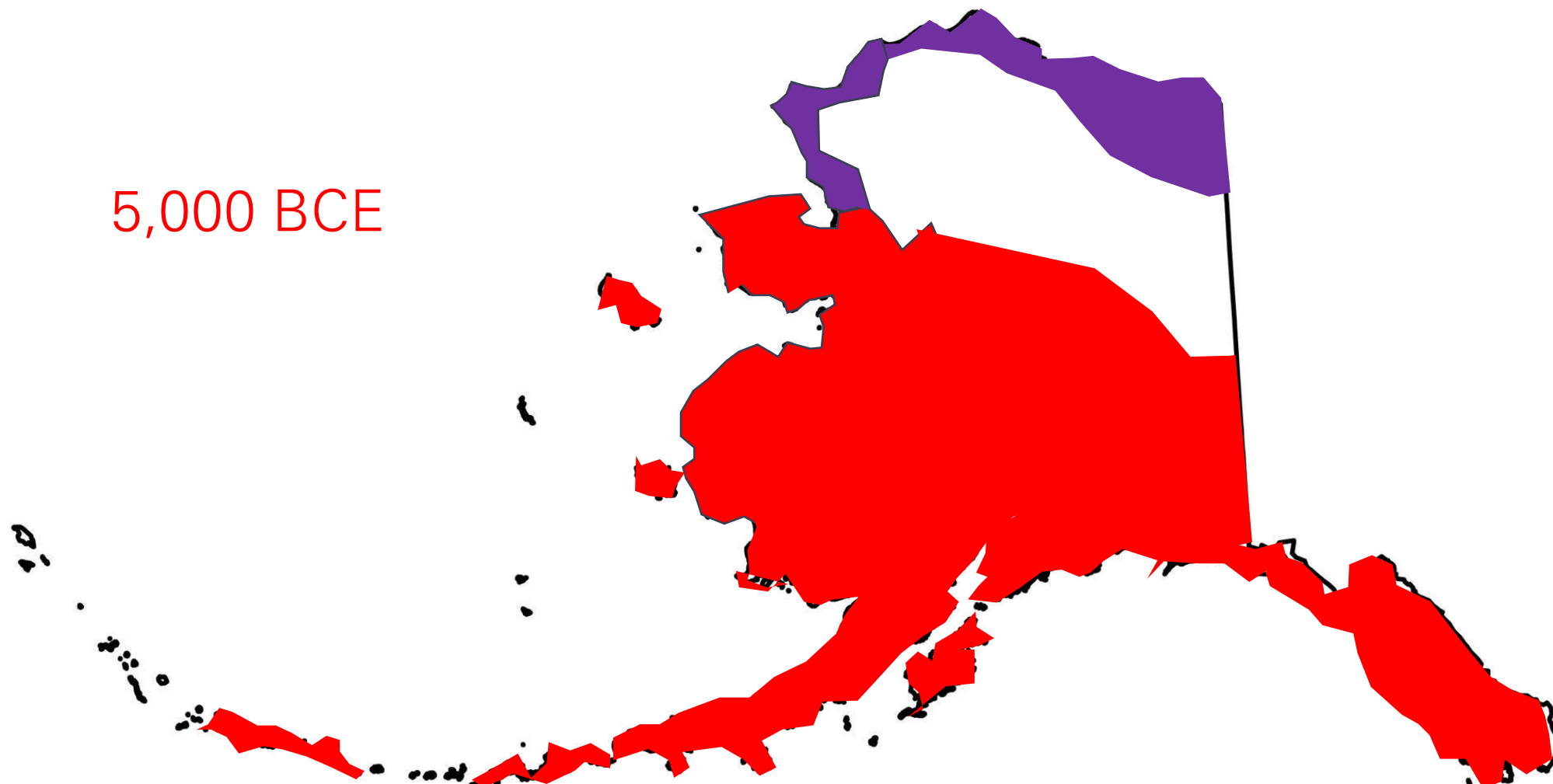
10,000 BCE



ALASKA HISTORY AND LAND OCCUPATION



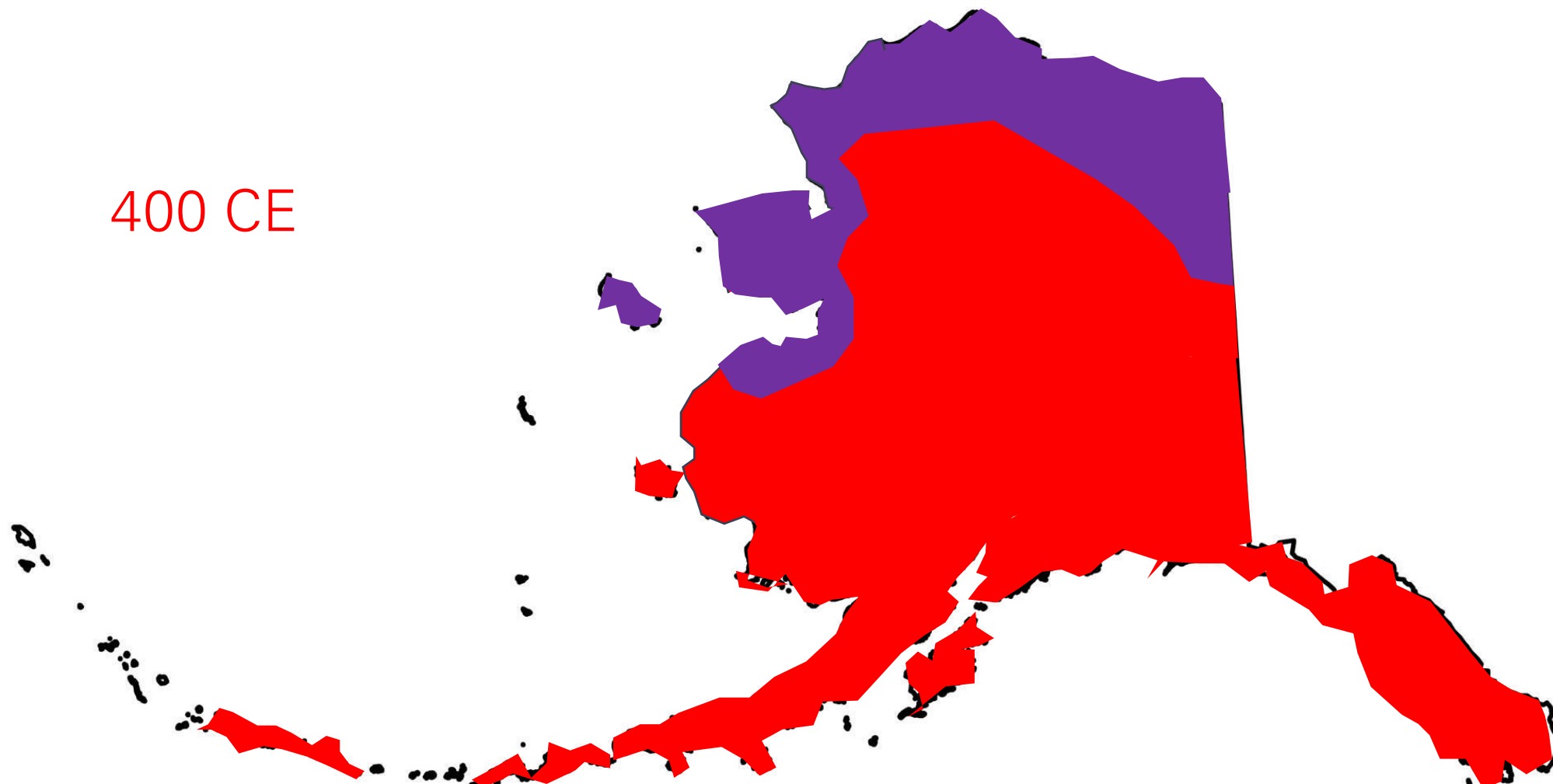
5,000 BCE



ALASKA HISTORY AND LAND OCCUPATION



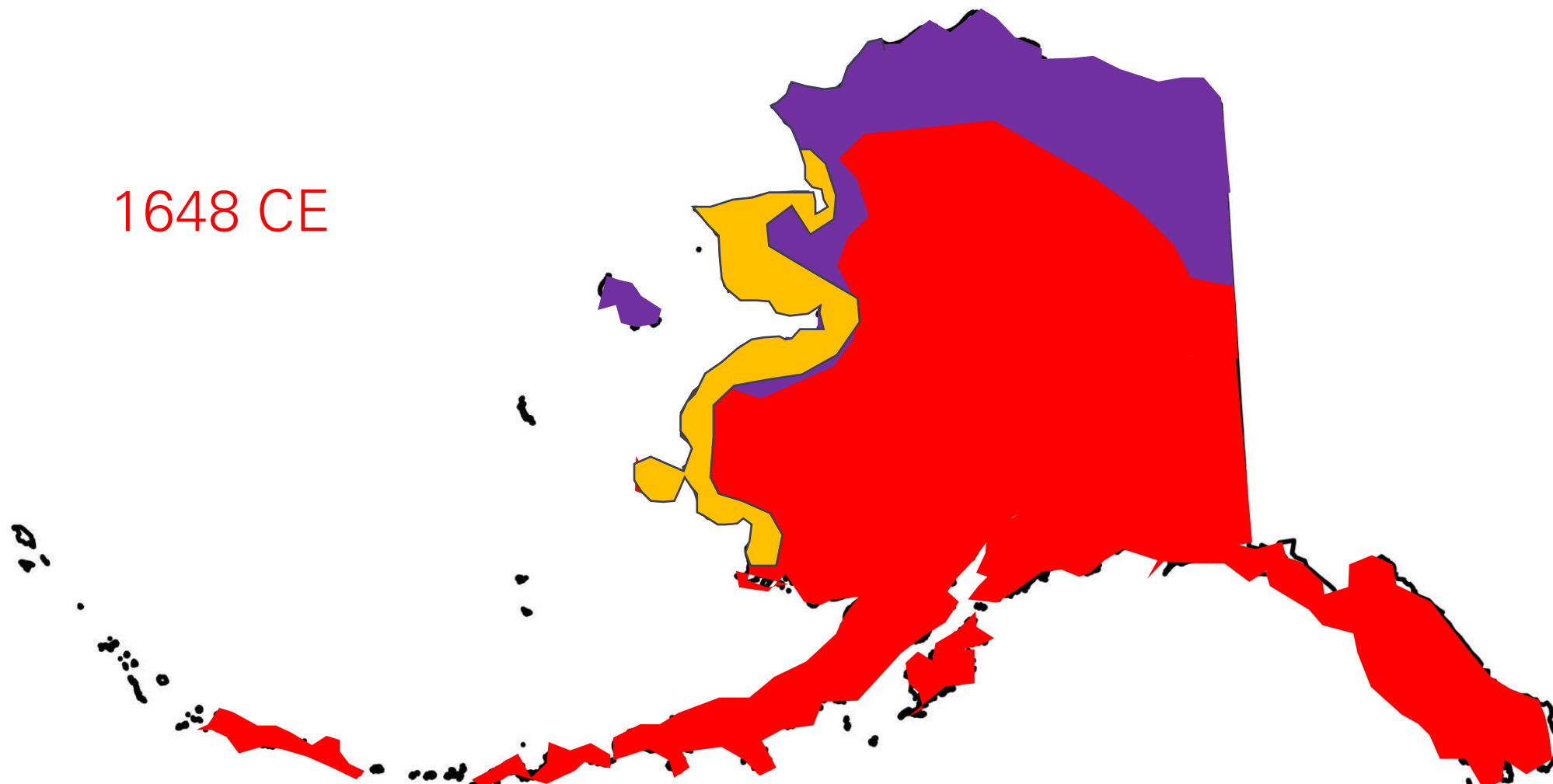
400 CE



ALASKA HISTORY AND LAND OCCUPATION



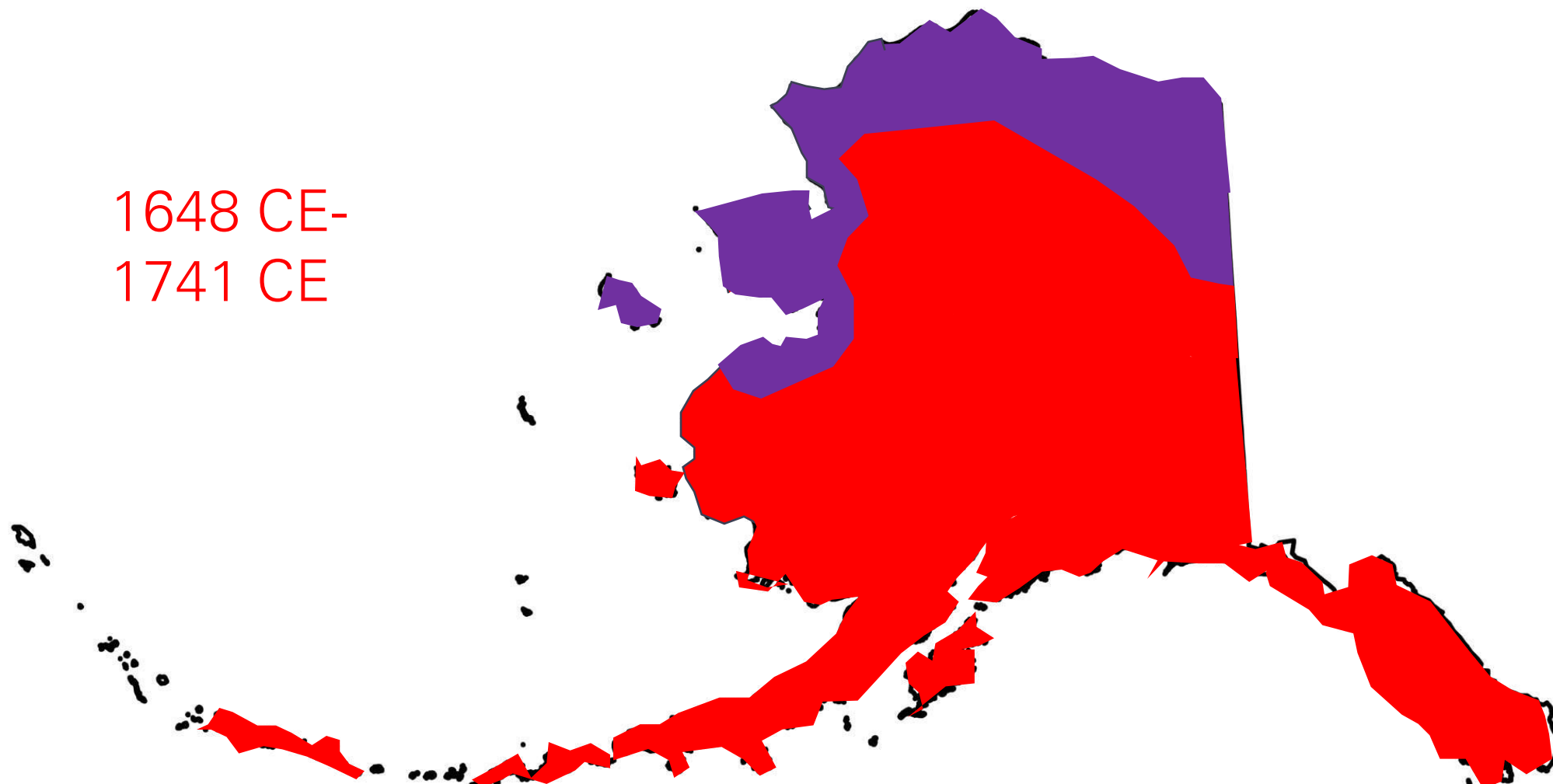
1648 CE



ALASKA HISTORY AND LAND OCCUPATION



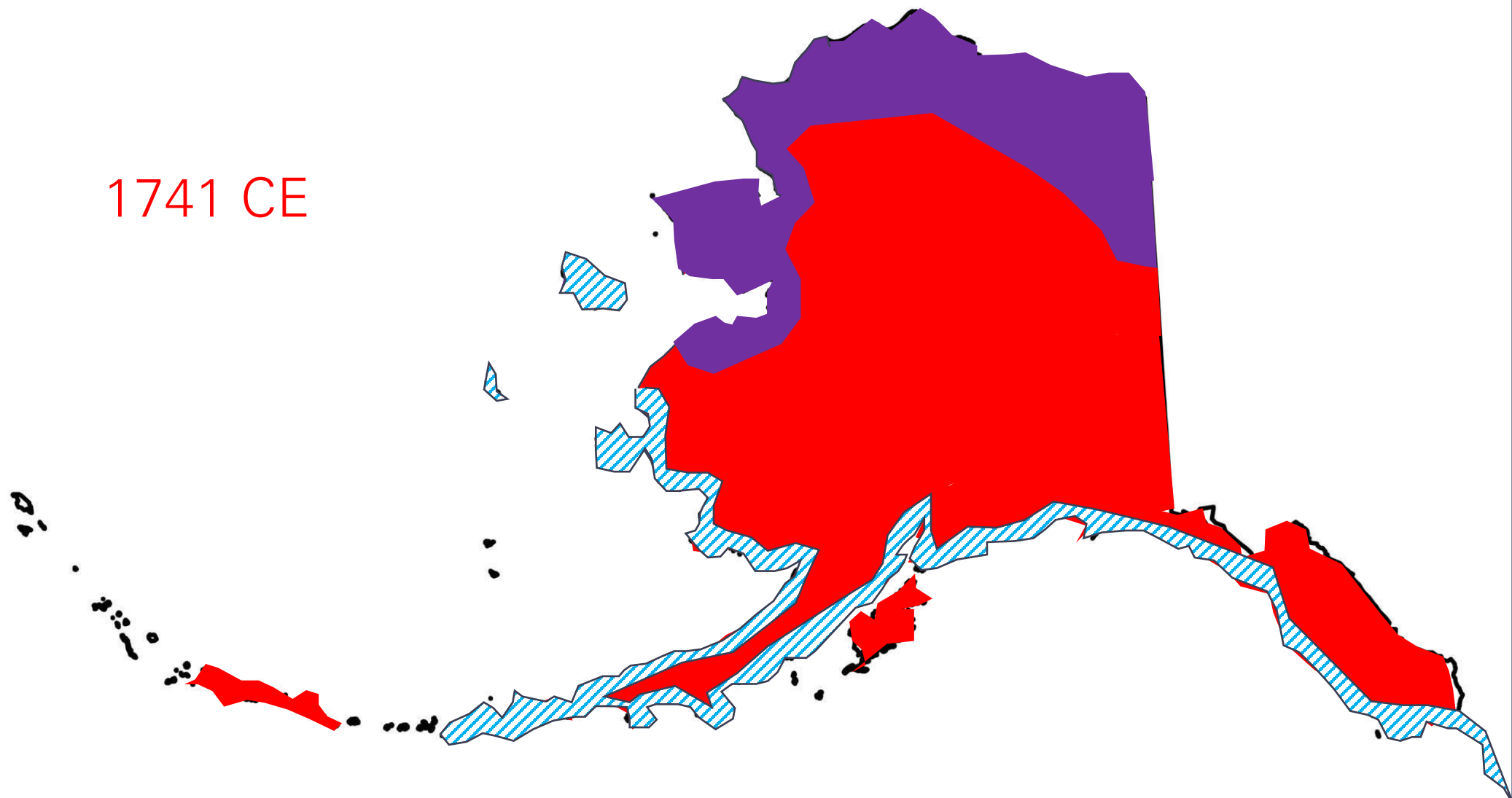
1648 CE-
1741 CE



ALASKA HISTORY AND LAND OCCUPATION



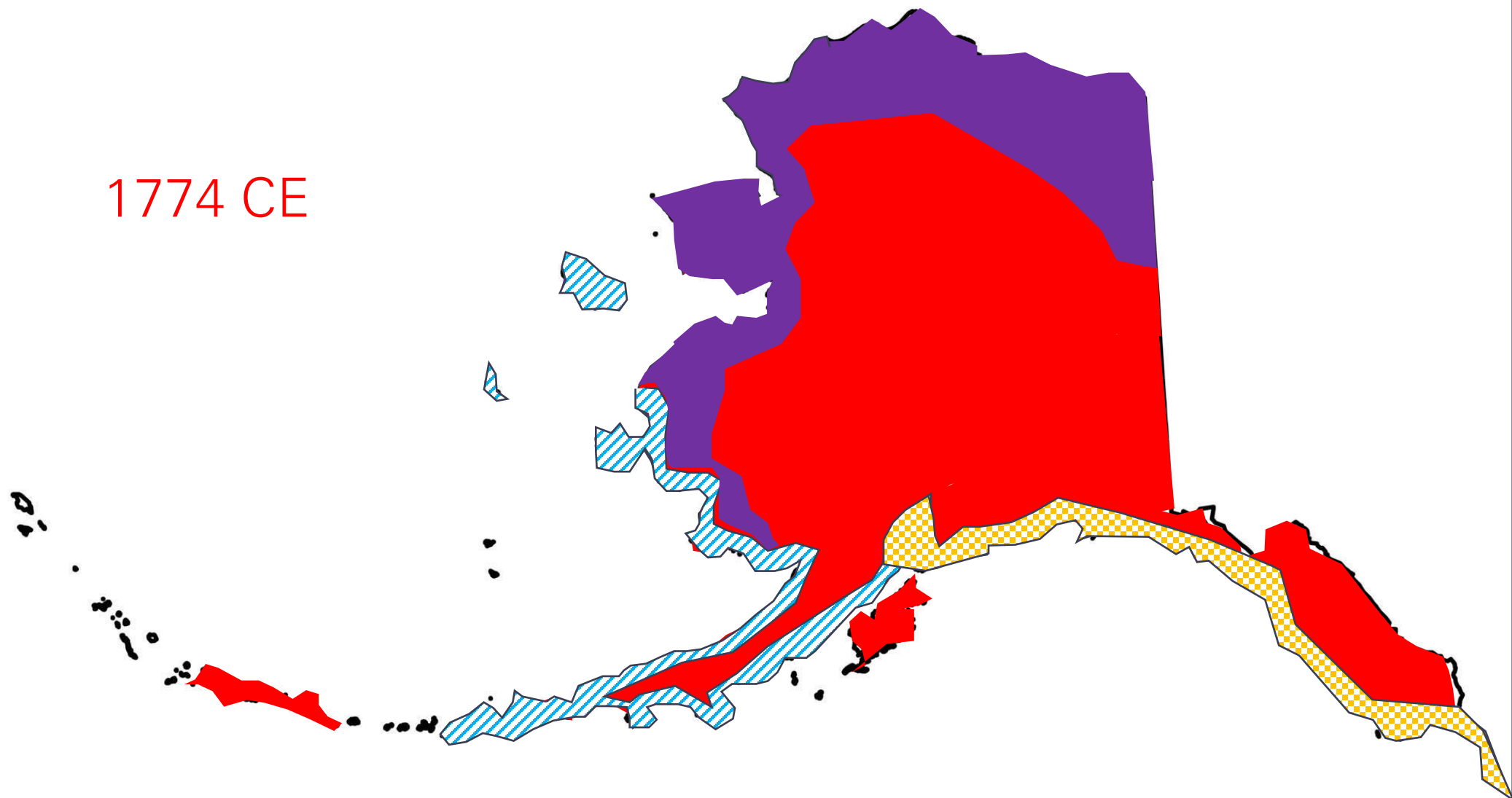
1741 CE



ALASKA HISTORY AND LAND OCCUPATION



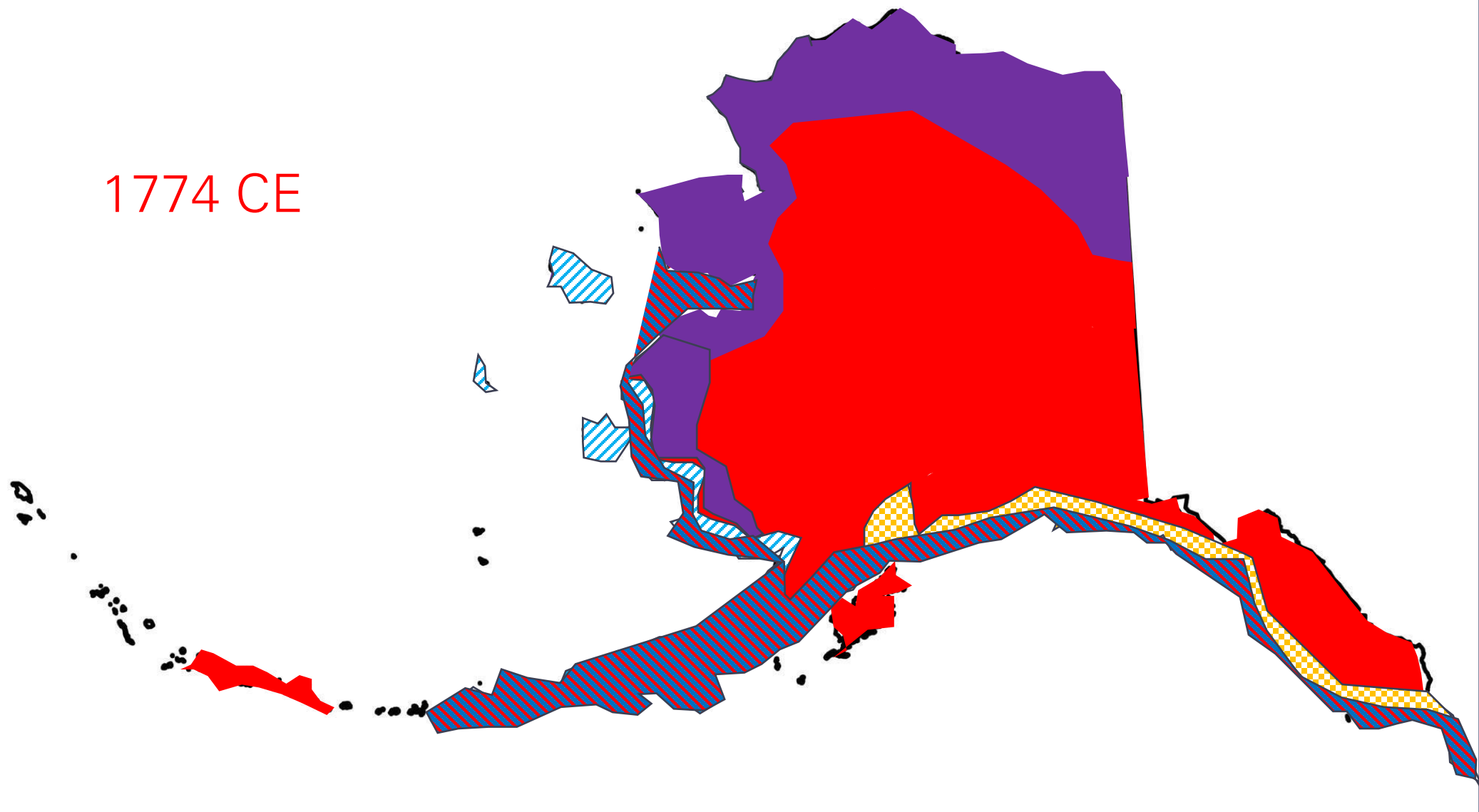
1774 CE



ALASKA HISTORY AND LAND OCCUPATION



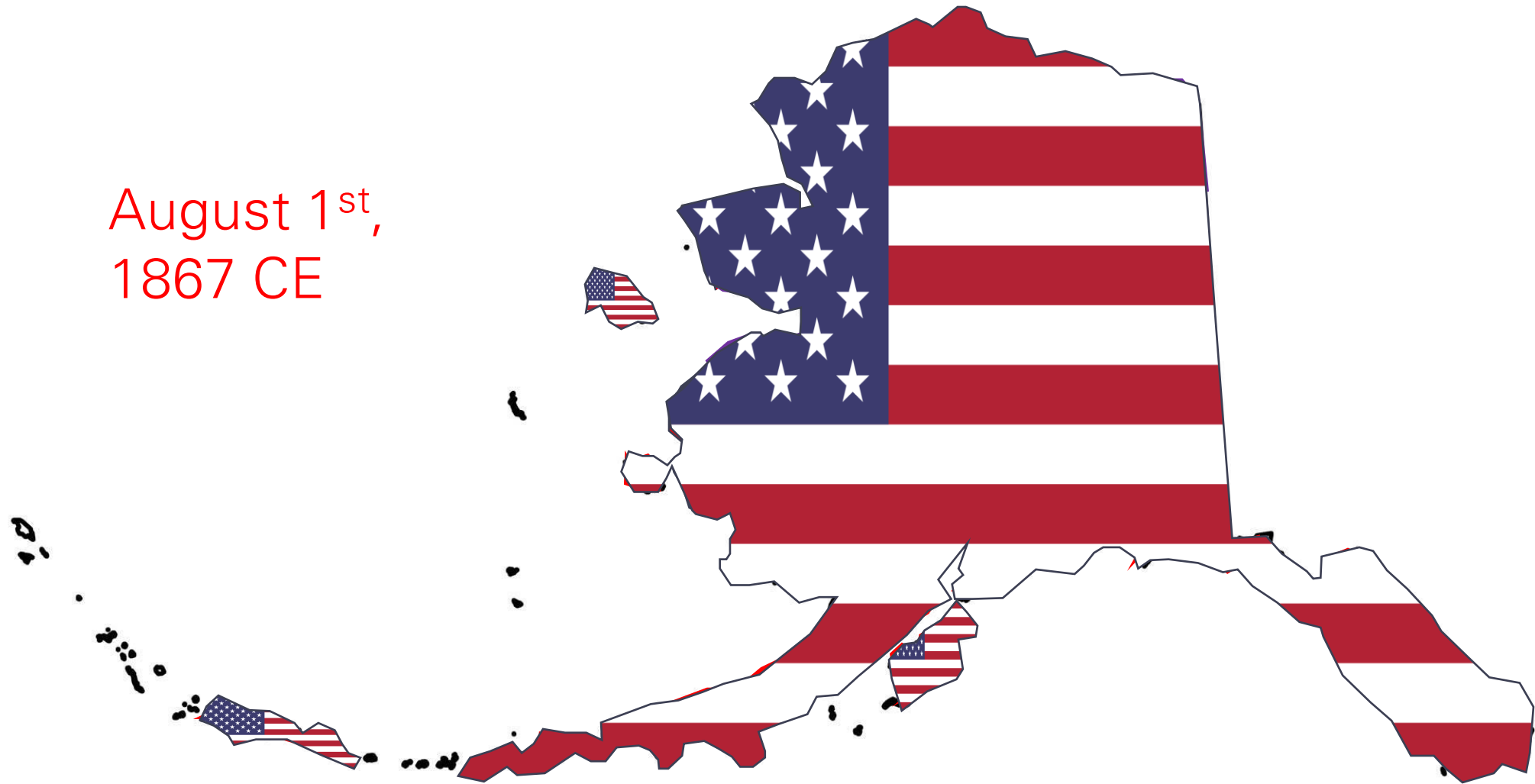
1774 CE



ALASKA HISTORY AND LAND OCCUPATION



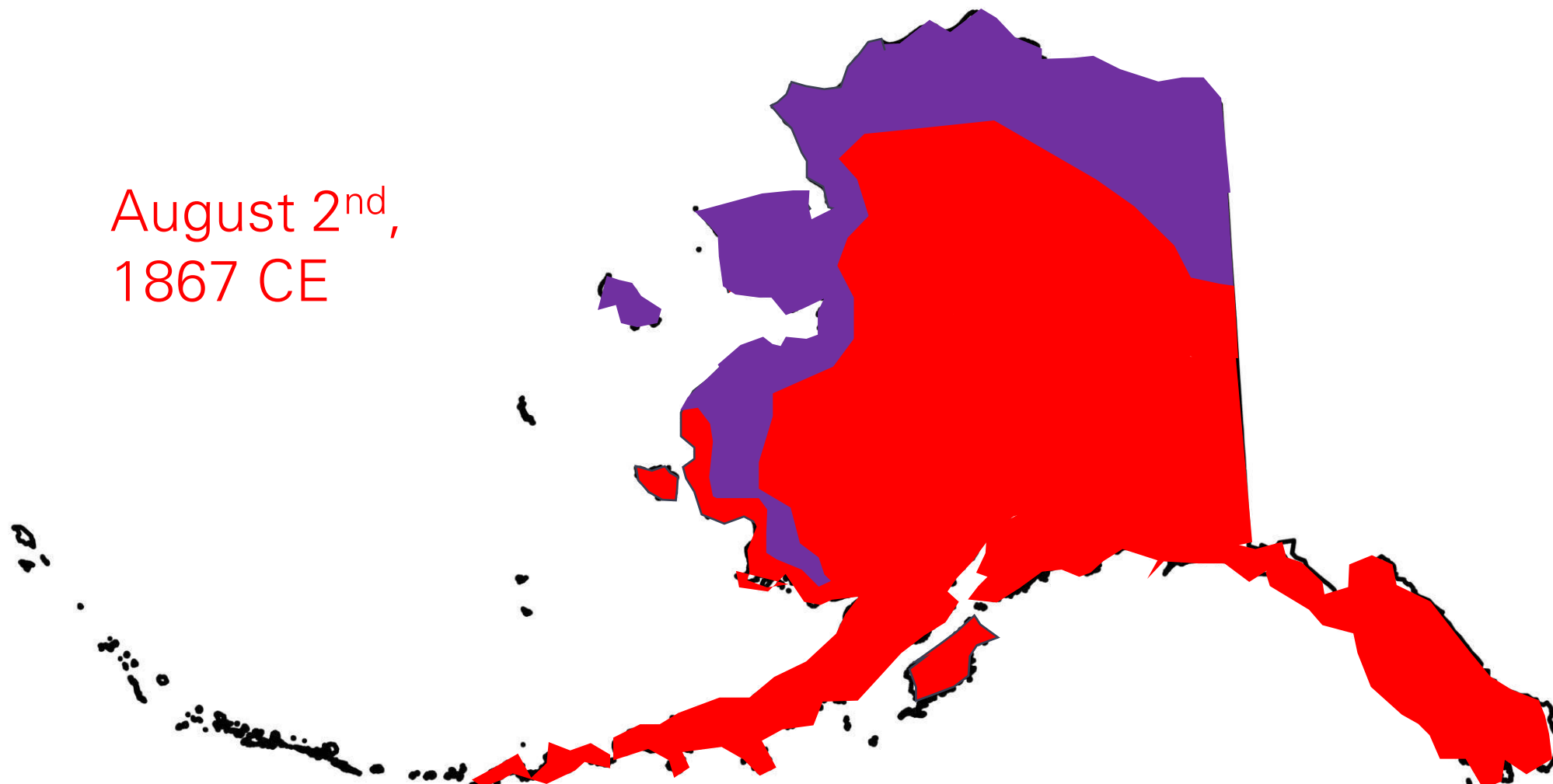
August 1st,
1867 CE



ALASKA HISTORY AND LAND OCCUPATION



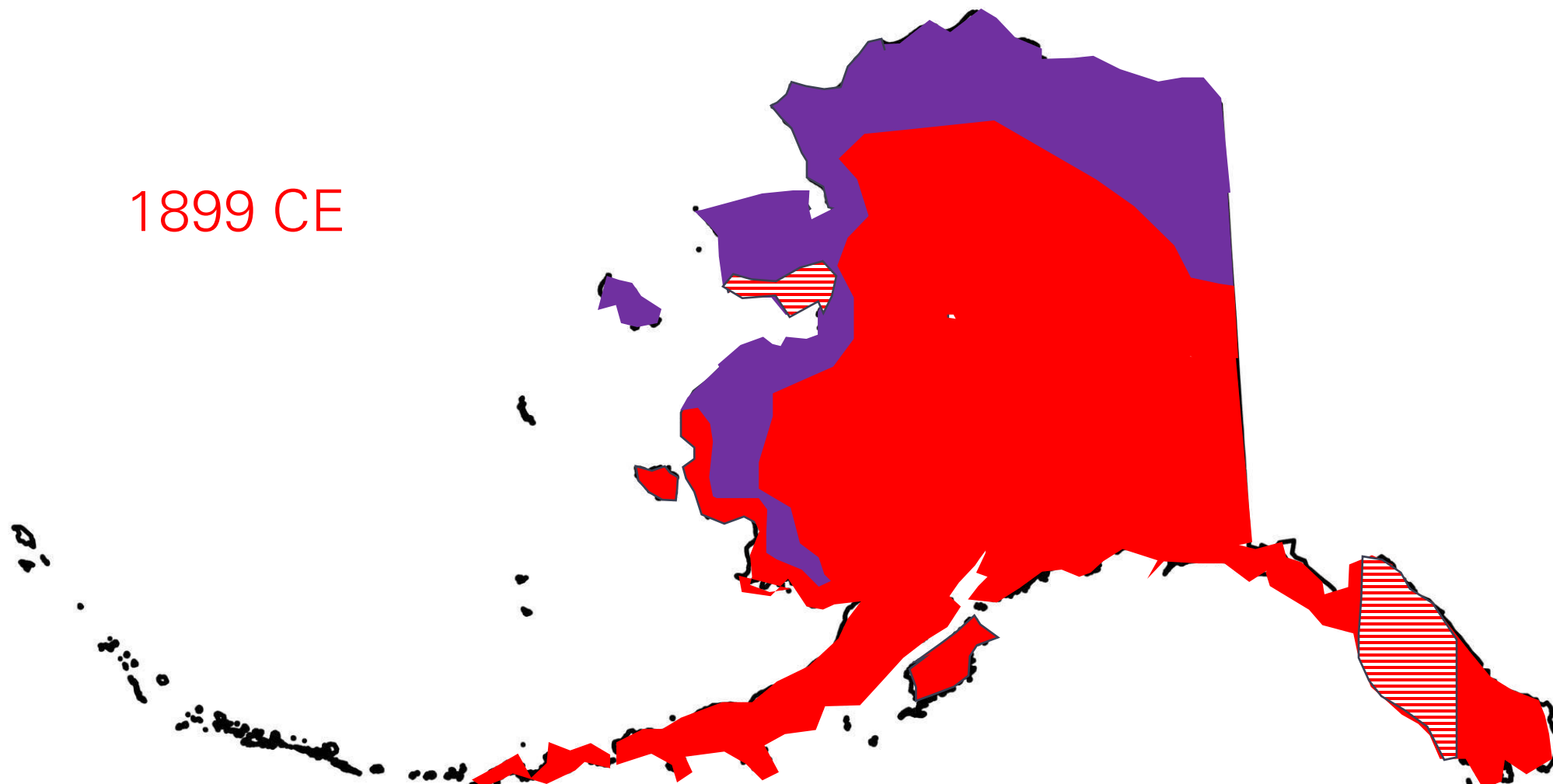
August 2nd,
1867 CE



ALASKA HISTORY AND LAND OCCUPATION



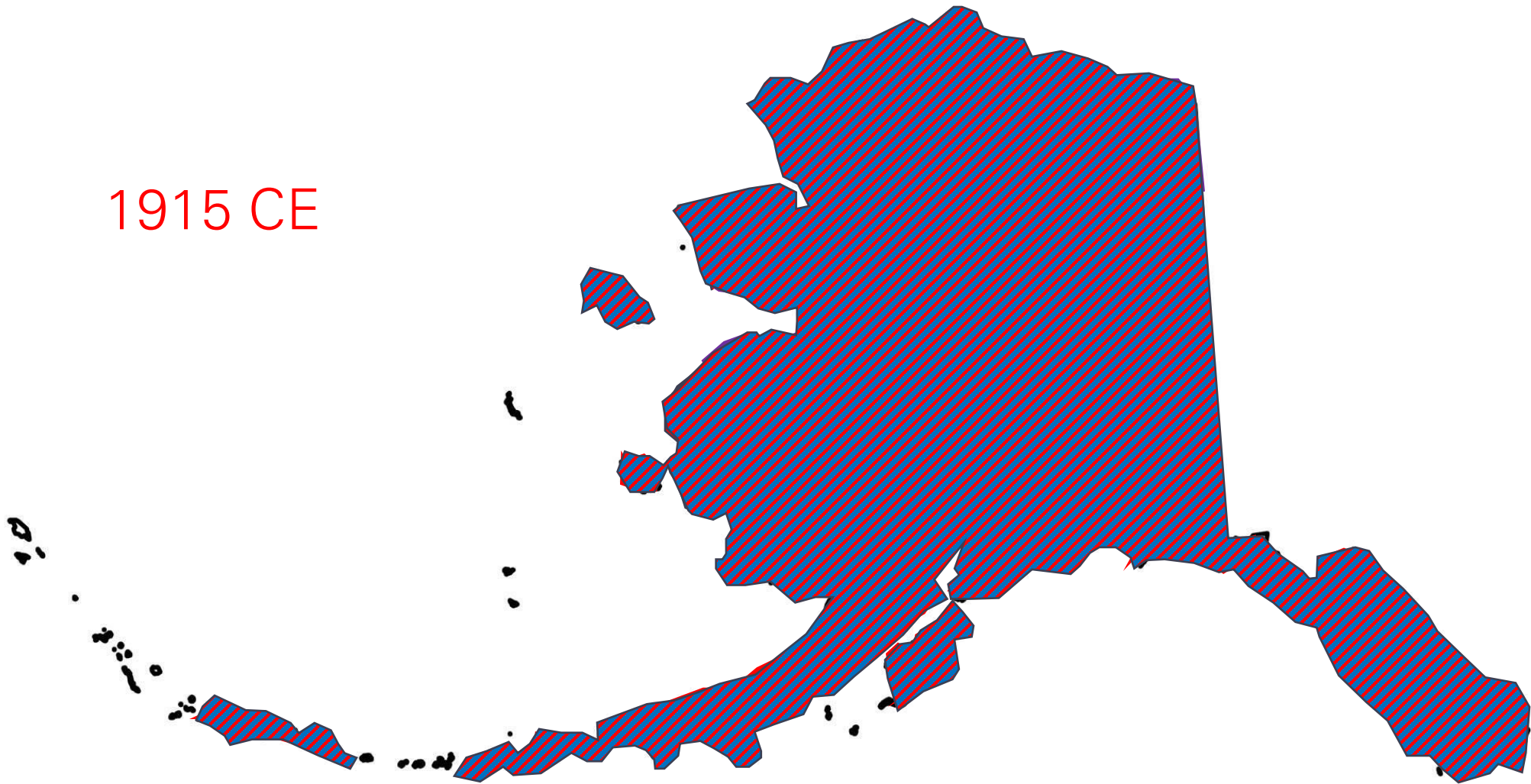
1899 CE



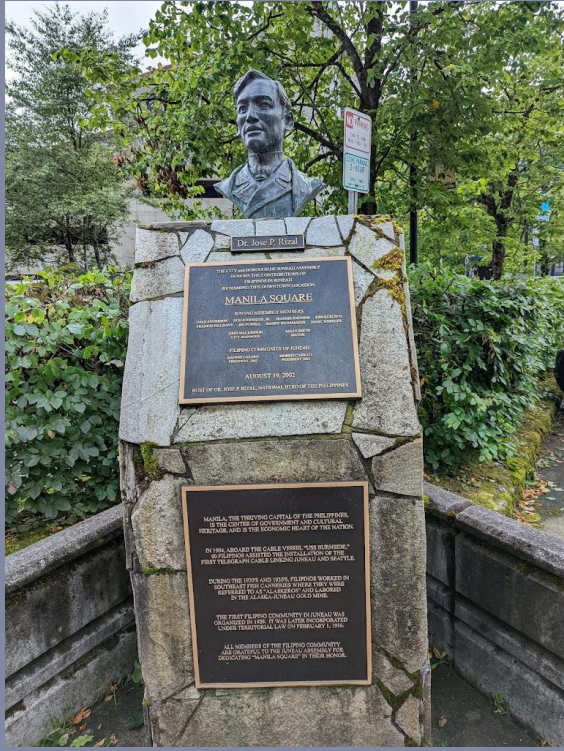
ALASKA HISTORY AND LAND OCCUPATION



1915 CE



JUNEAU ETHNOHISTORY AND GEOGRAPHY



JUNEAU ETHNOHISTORY AND GEOGRAPHY



JUNEAU ETHNOHISTORY AND GEOGRAPHY



Aleut



Yupik



SE Tribes

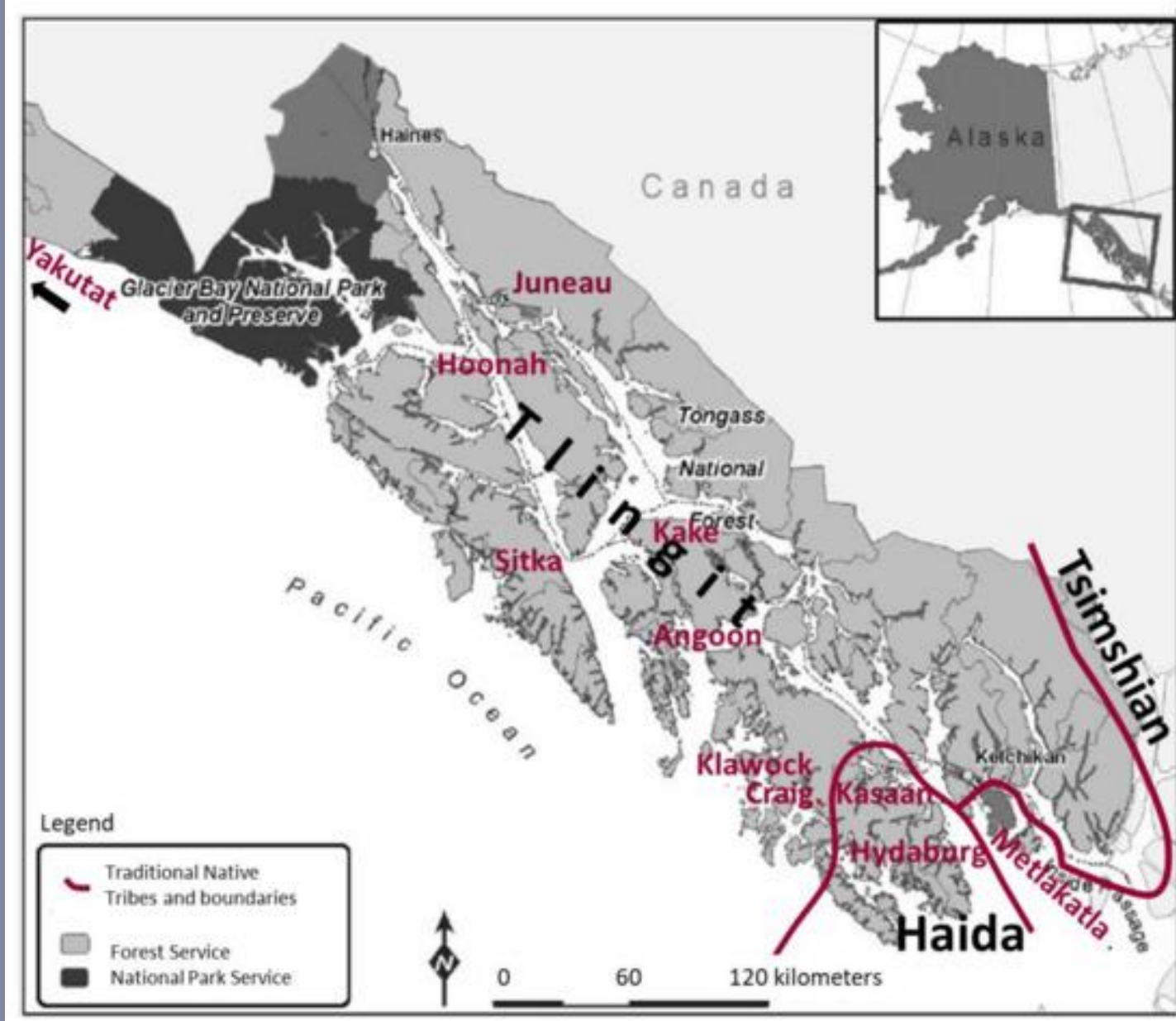


Athabascan



Inupiaq

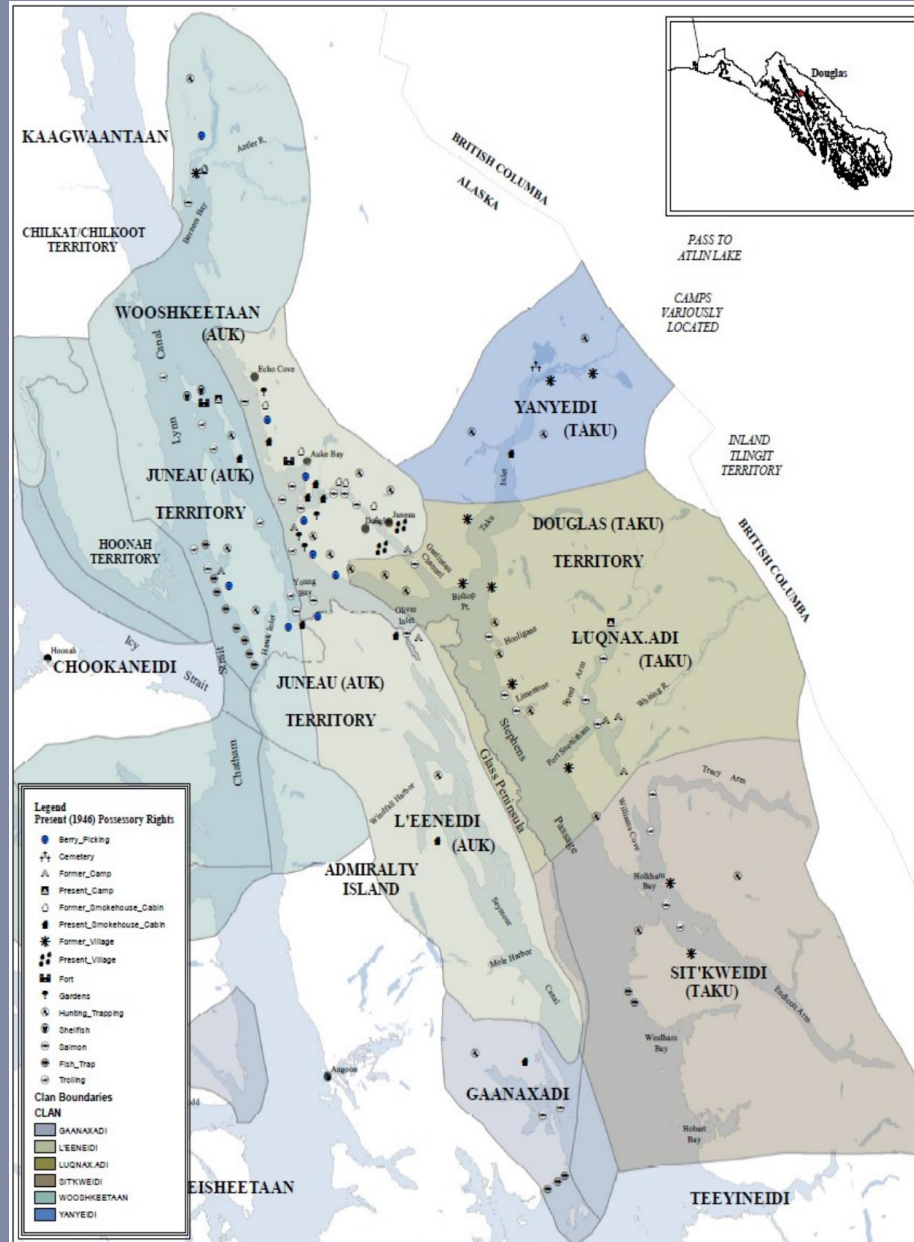
JUNEAU ETHNOHISTORY AND GEOGRAPHY



JUNEAU ETHNOHISTORY AND GEOGRAPHY



JUNEAU ETHNOHISTORY AND GEOGRAPHY



JUNEAU ETHNOHISTORY AND GEOGRAPHY

Alaska Native Authorities



- SEALASKA- Alaska Native ANSCA Corporation for Southeast Alaska Tribes
- The Central Council of the Tlingit and Haida Indian Tribes of Alaska (Tlingit & Haida) is a tribal government representing over 34,900 Tlingit and Haida
- Goldbelt Heritage Foundation: Cultural and Social Services for Alaskan Native culture
- Douglas Indian Association (DIA): Government tribal office of Taku Kwaan members
- University of Alaska Southeast: Education and research departments for Alaska Native Studies to include:
 - Language
 - Art
 - History
 - Subsistence

JUNEAU ETHNOHISTORY AND GEOGRAPHY



Cultural Considerations

- Language: Lingit is a resurrecting language and is often seen incorporated among English signage and postings throughout Juneau
- “Native Alaskan” = Any person born in Alaska
- “Alaskan Native” = Any person born within Tribal lineage
- “At.woo” = At.oow is literally translated as "an owned or purchased object" and can refer to land or sacred sites, celestial bodies such as the moon and sun, names, stories, songs, spirits and crests.
- Alaska Native gatherings are typically public and encourage non-native participation (It is courteous to contact the host of the event prior to attending)
- Recent campaign to reinstate original Tlingit placenames to landmarks.

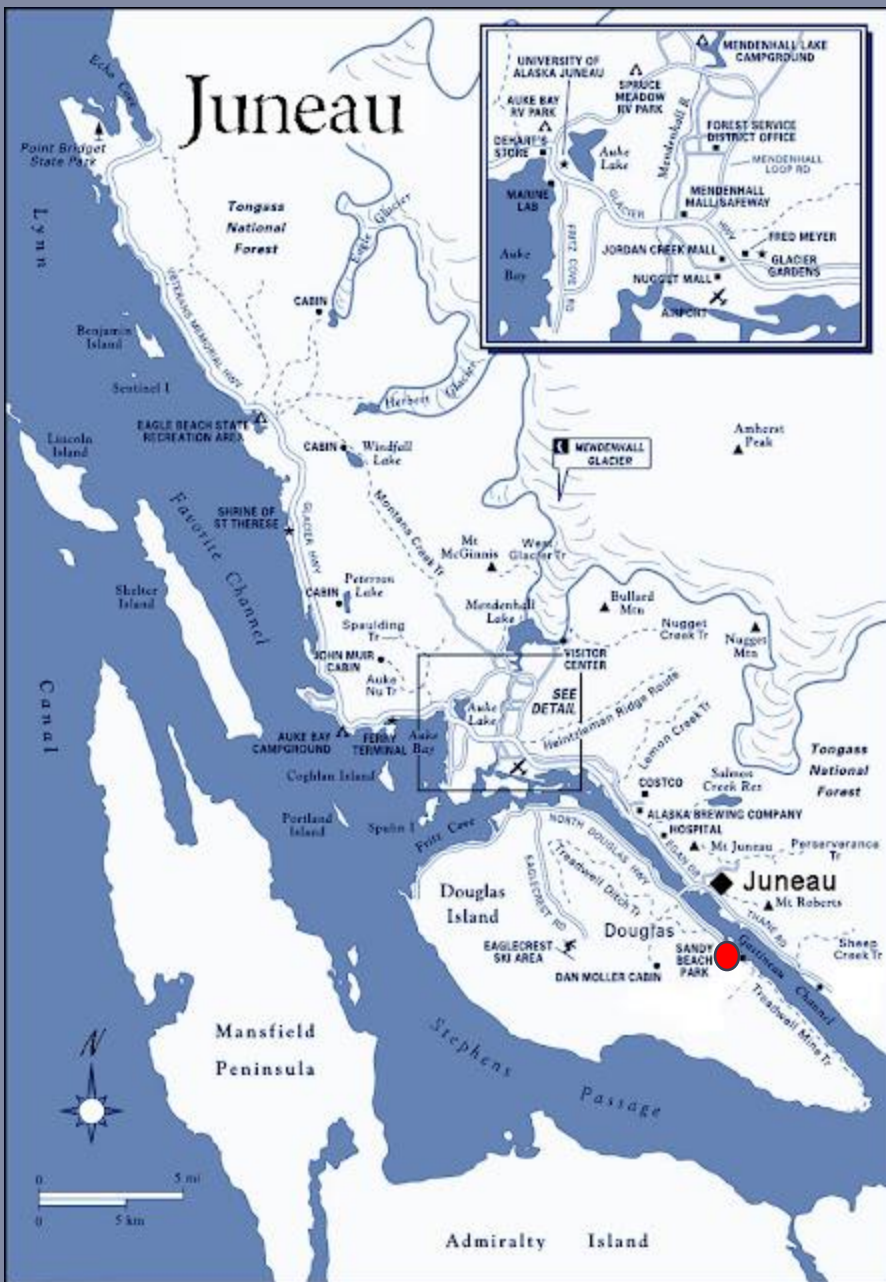
JUNEAU ETHNOHISTORY AND GEOGRAPHY



Cultural Considerations (cont)

- Alaskan Native tribal members are granted additional hunting and subsistence gathering rights
- Common Lingit Phrases:
 - “Gunalchéesh” - Thank you
 - “Hahu” - You’re Welcome
 - “Yeil” – Raven
 - “Chaak” - Eagle
 - “Tlingit Aaní” - Tlingit land

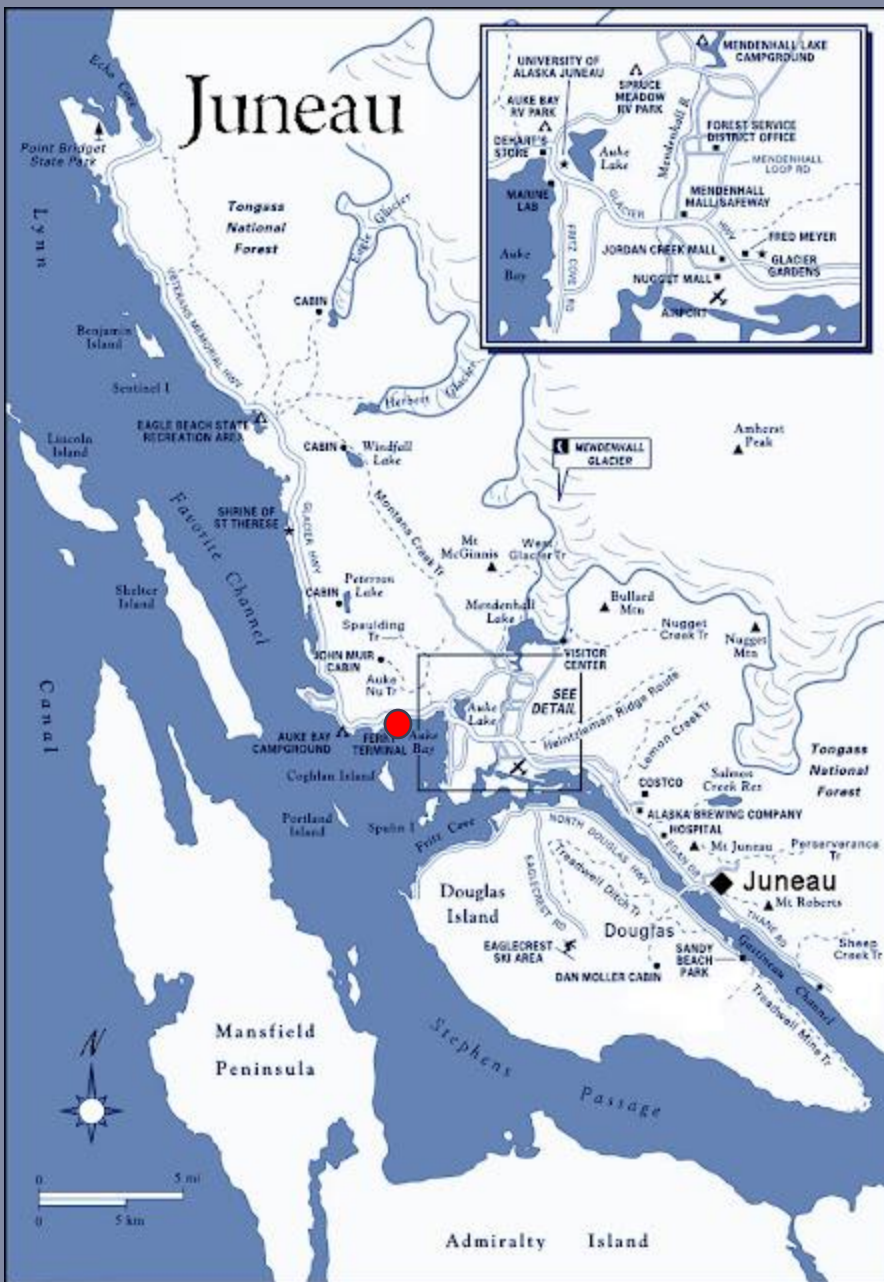
JUNEAU ETHNOHISTORY AND GEOGRAPHY



Douglas Indian Village (Savikko Park)

- Location of Taku Kwaan Village from 1860-1958
- Intentionally lit ablaze by the Douglas City Council in 1958
- Archeological remnants found along South wall of Ice Arena

JUNEAU ETHNOHISTORY AND GEOGRAPHY



Auke Village/ Rec

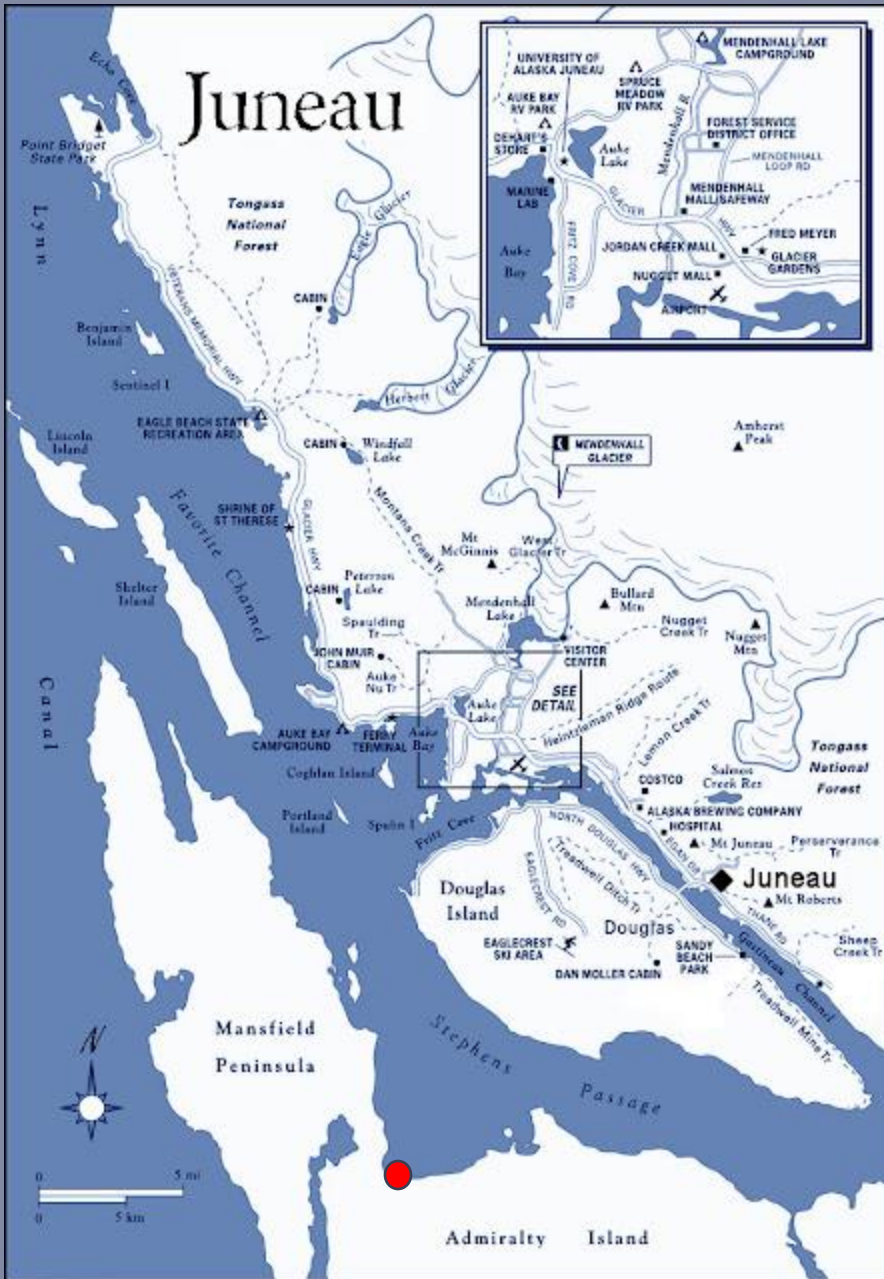
- Winter fishing site for Auke Kwaan Clan
- Abandoned in 1919, Clan house removed
- Noted in 1791 by George Vancouver
- “Aak’w” is the word for “Little Lake”
- Present day shelters are built on location of previous clan houses. Names are loosely tied to each Clan.
- Wood alterations can be found off-trail

JUNEAU ETHNOHISTORY AND GEOGRAPHY

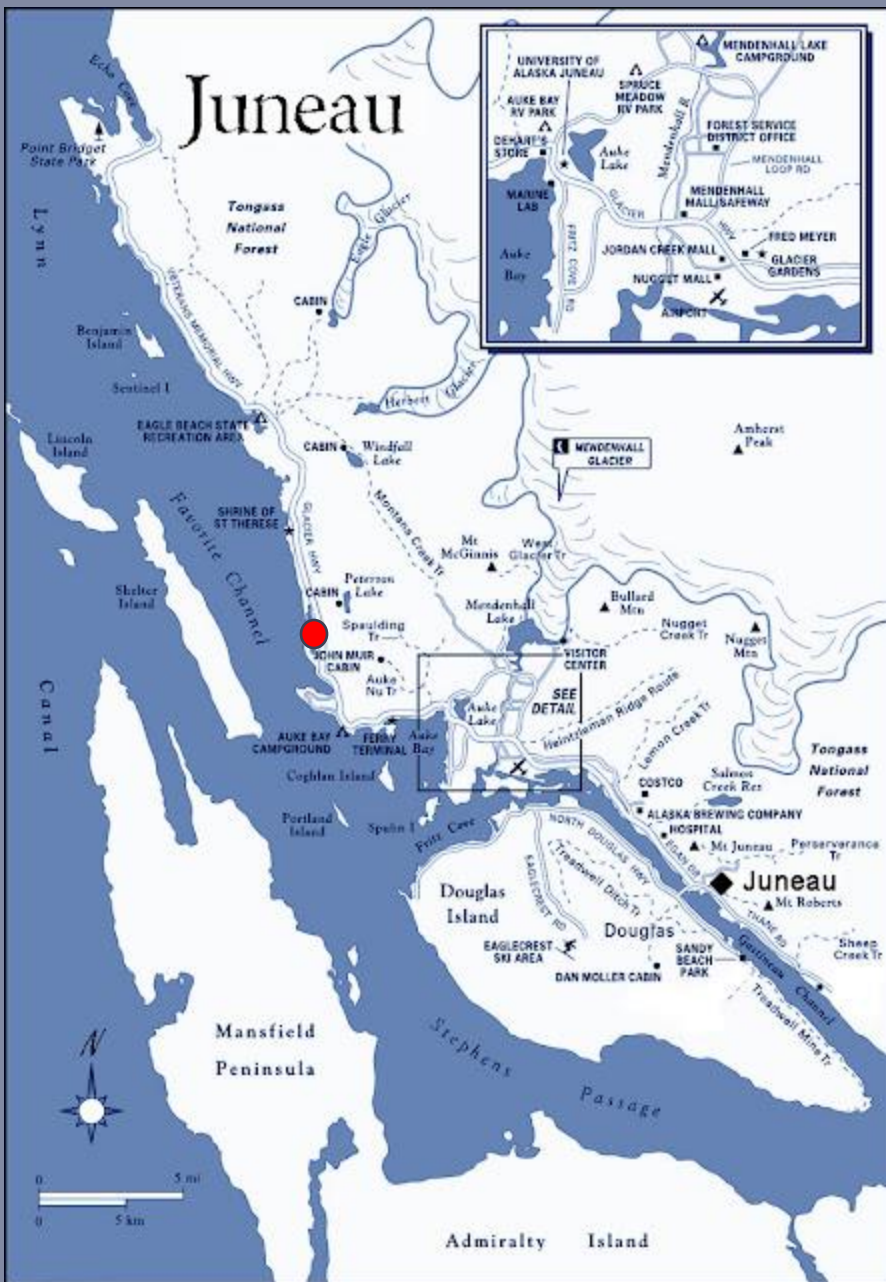


Youngs Bay

- Summer fishing site for Auke Kwaan Clan
- Noted in 1791 by George Vancouver
- Ancient raised beaches indicate occupation sites nearly 4,000 years old



JUNEAU ETHNOHISTORY AND GEOGRAPHY



Tee Harbor

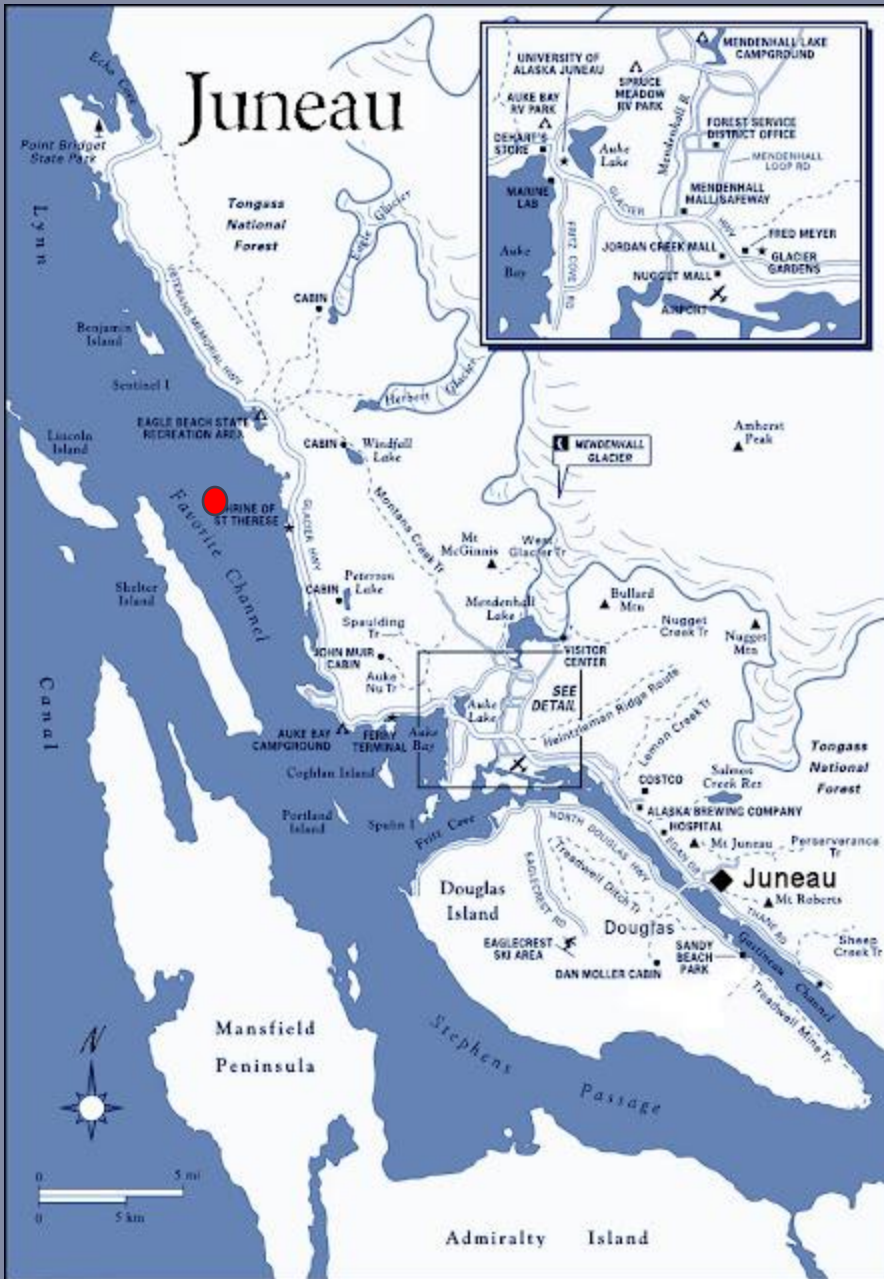
- Site of regions first saltery/ cannery
- Site of Tlingit homes prior to and following the cannery's fire in 1912
- Unknown illness destroyed the settlement by 1930

JUNEAU ETHNOHISTORY AND GEOGRAPHY



Bird/ Gull Islands

- Historic subsistence site

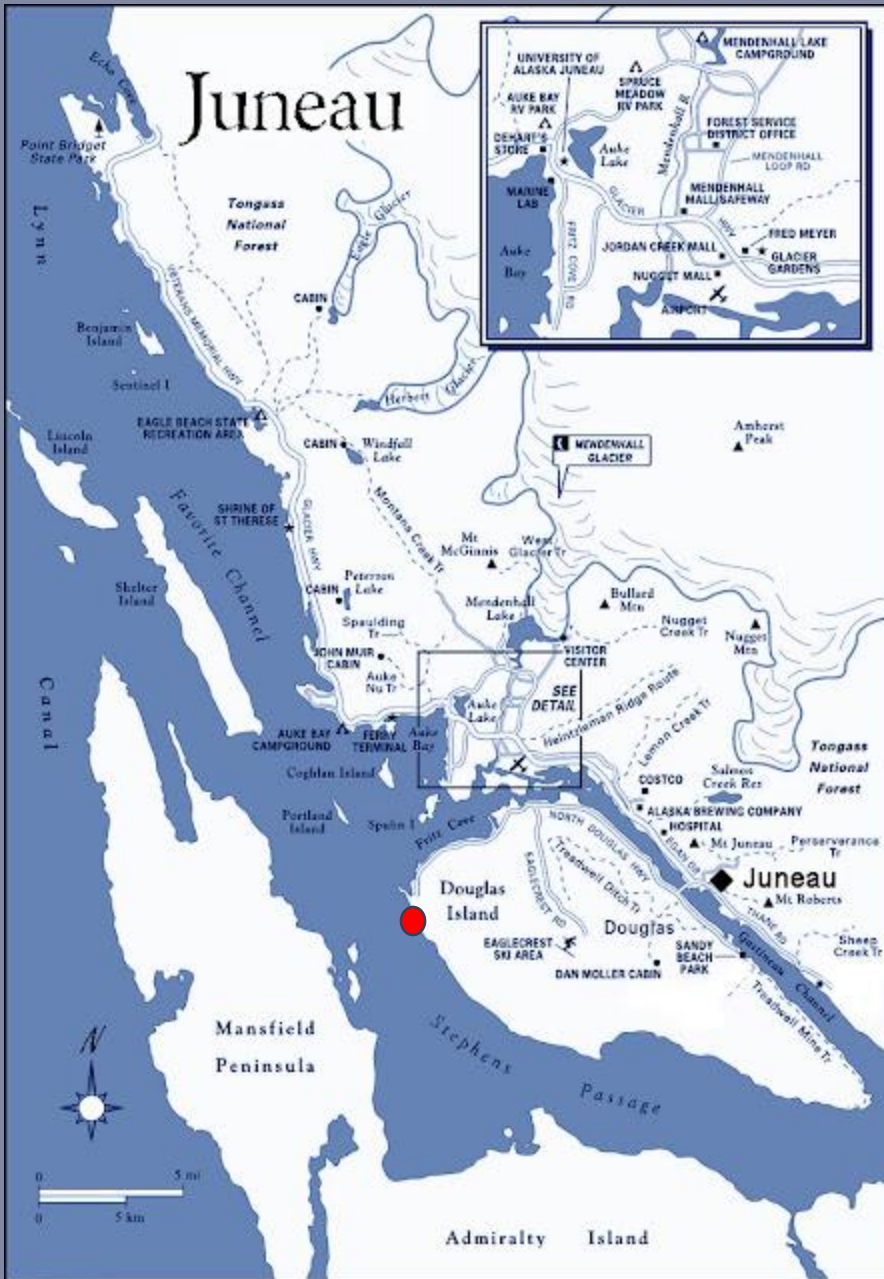


JUNEAU ETHNOHISTORY AND GEOGRAPHY

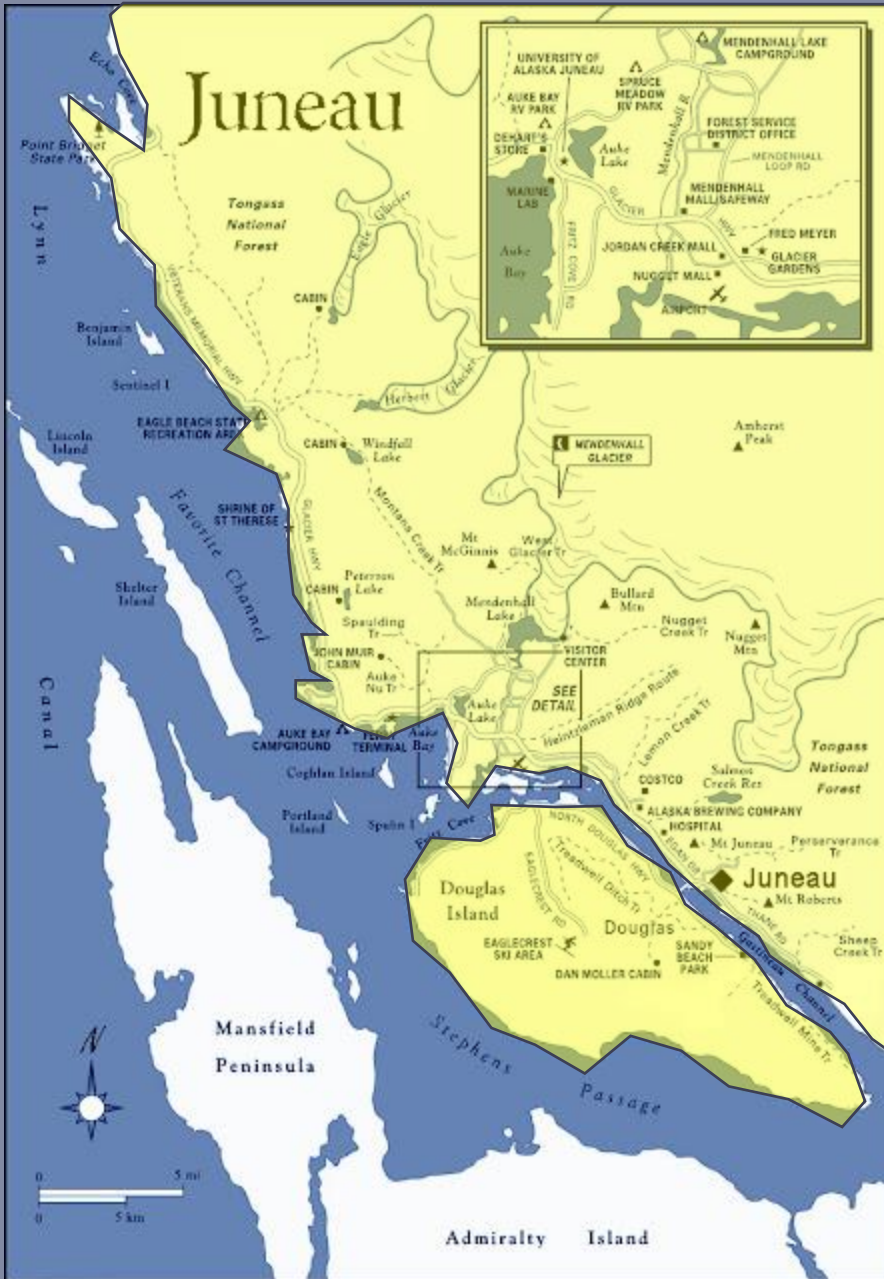


Shaman Island

- Sacred site as westernmost land on 'Sayeik'
- Petroglyphs can be found at low-tide



LAND MAMMALS OF JUNEAU



Black Bear

Population: 100,000 Alaska/ 1,300 Juneau

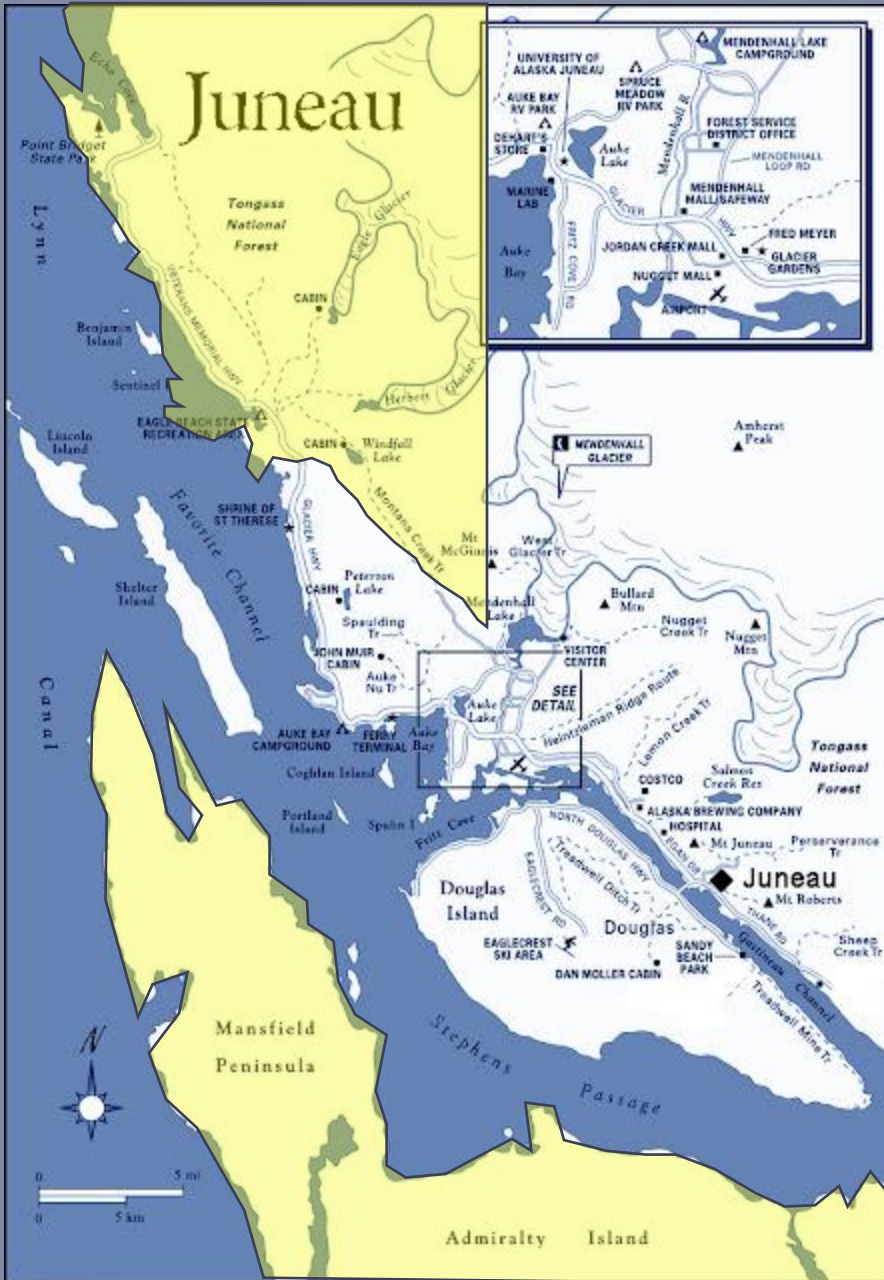
Safe Viewing Areas: Mendenhall Glacier, Vanderbilt Field, Montana Creek, Basin Road, Downtown

Notes:

-Black bears in Juneau are frequently scene in urban neighborhoods, scavenging from human activity.

-Best times for viewing are morning and evening

LAND MAMMALS OF JUNEAU



Brown Bear

Population: 30,000 Alaska/ 700 Juneau

Safe Viewing Areas: Eagle River, Pack Creek, Cowee Meadows

Notes:

- Brown Bears avoid human activity most often
- Best times for viewing are morning and evening
- Intertidal Diet

LAND MAMMALS OF JUNEAU



Sitka Black Tail Deer

Population: 180,000 Alaska/ 3,500 Juneau

Safe Viewing Areas: Fish Creek, Spalding Meadows, Eagle Canyon

Notes:

- Often seen foraging on roadways and meadows
- Short black tails with white underside
- Inhabit most Islands with a fresh water source

LAND MAMMALS OF JUNEAU



Moose

Population: 14,000 Alaska/ 110 Juneau

Safe Viewing Areas: Berners Bay, Taku Inlet

Notes:

- Not commonly seen from the road system
- Berners Bay population is stable
- Inhabit most Islands with a fresh water source

Klein, D.R. 2001. 'Postglacial distribution patterns of mammals in the southern coastal regions of Alaska'. Arctic 8(1)

LAND MAMMALS OF JUNEAU



Beaver

Population: 180,000 Alaska/ 1,000 Juneau

Safe Viewing Areas: Dredge Lake, Fish Creek

Notes:

-Can be easily spotted underneath manmade structures like bridges or pilings

-Prefer brackish to fresh water

LAND MAMMALS OF JUNEAU



River Otter

Population: 138,000 Alaska/ 2,100 Juneau

Safe Viewing Areas: Auke Bay, Tee Harbor, Eagle Beach, Mendenhall Wetlands, Gastineau Channel

Notes:

-Forages intertidal zones and estuaries

-Commonly found in areas with clustered boulders

LAND MAMMALS OF JUNEAU



Porcupine

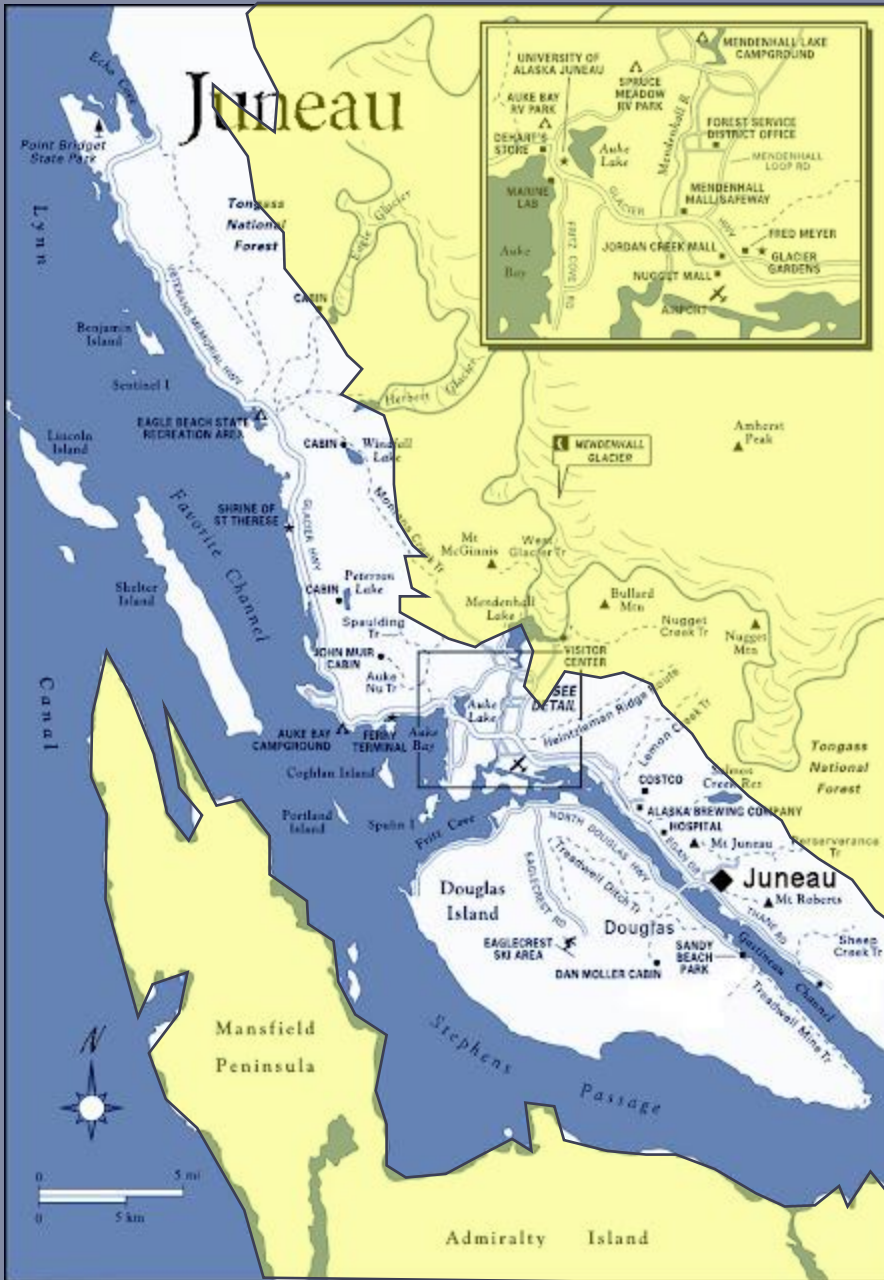
Population: 450,000 Alaska/ 4,100 Juneau

Safe Viewing Areas: Glacier Highway, Mendenhall Glacier, Fish Creek, Eagle Canyon, Thane/ Dupont

Notes:

- Often spotted in trees
- Watch roadways and adjoining ditches
- Quill piles can be found in ditches and are legal to collect

LAND MAMMALS OF JUNEAU



Mountain Goat

Population: 60,000 Alaska/ 1,450 Juneau

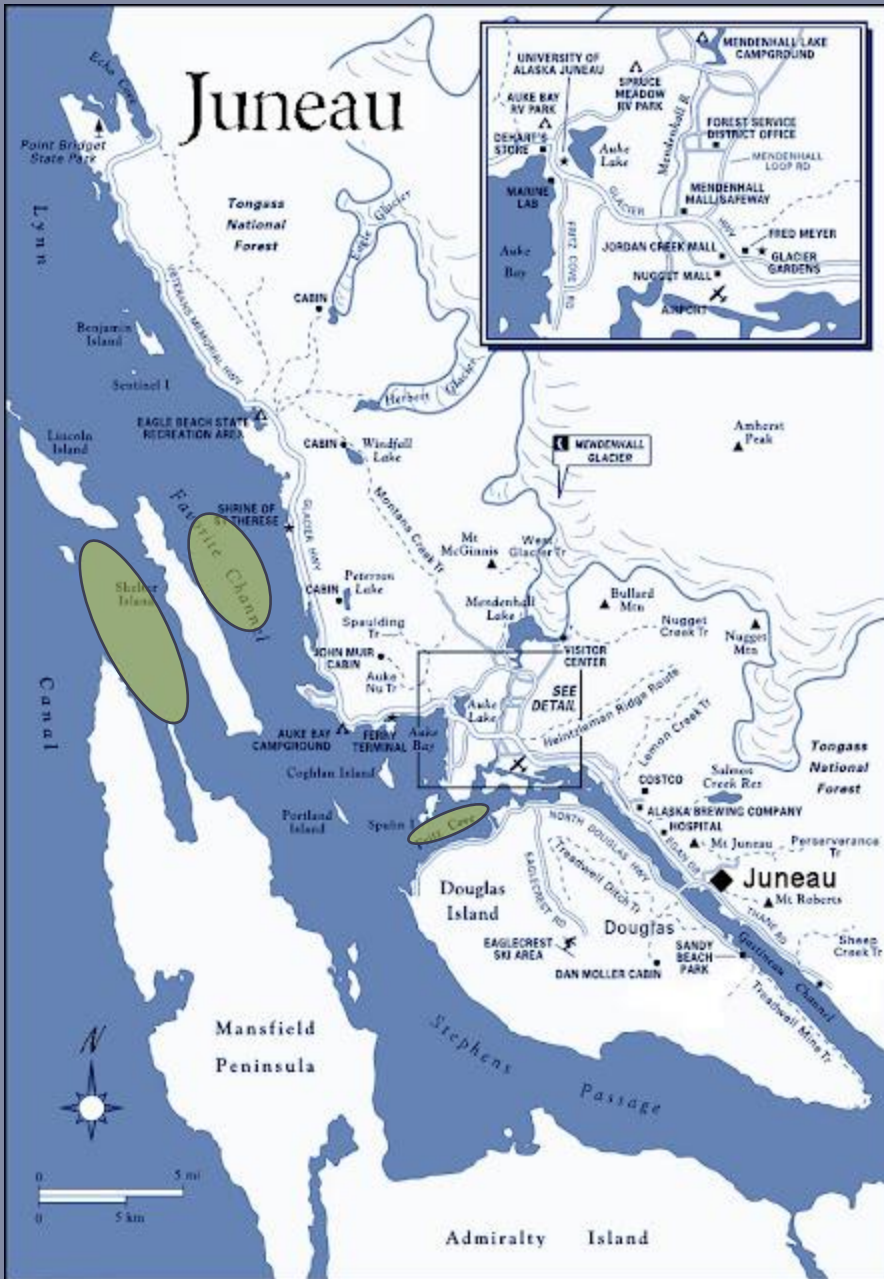
Safe Viewing Areas: Mendenhall Glacier, Basin Road

Notes:

- Found on drastically steep terrain

- Bright white coats make them easy to spot

MARINE MAMMALS OF JUNEAU



Humpback Whale

Population: 20,000+ North Pacific/ 60 Juneau

Safe Viewing Areas: North Pass, Halibut Cove, Fritz Cove, Saginaw Channel

Notes:

- Bubble Net Feeding most prominent in July and August

- Lunge Feeding most prominent in early Spring

- Protected under the MMPA (100 yards approach limit)

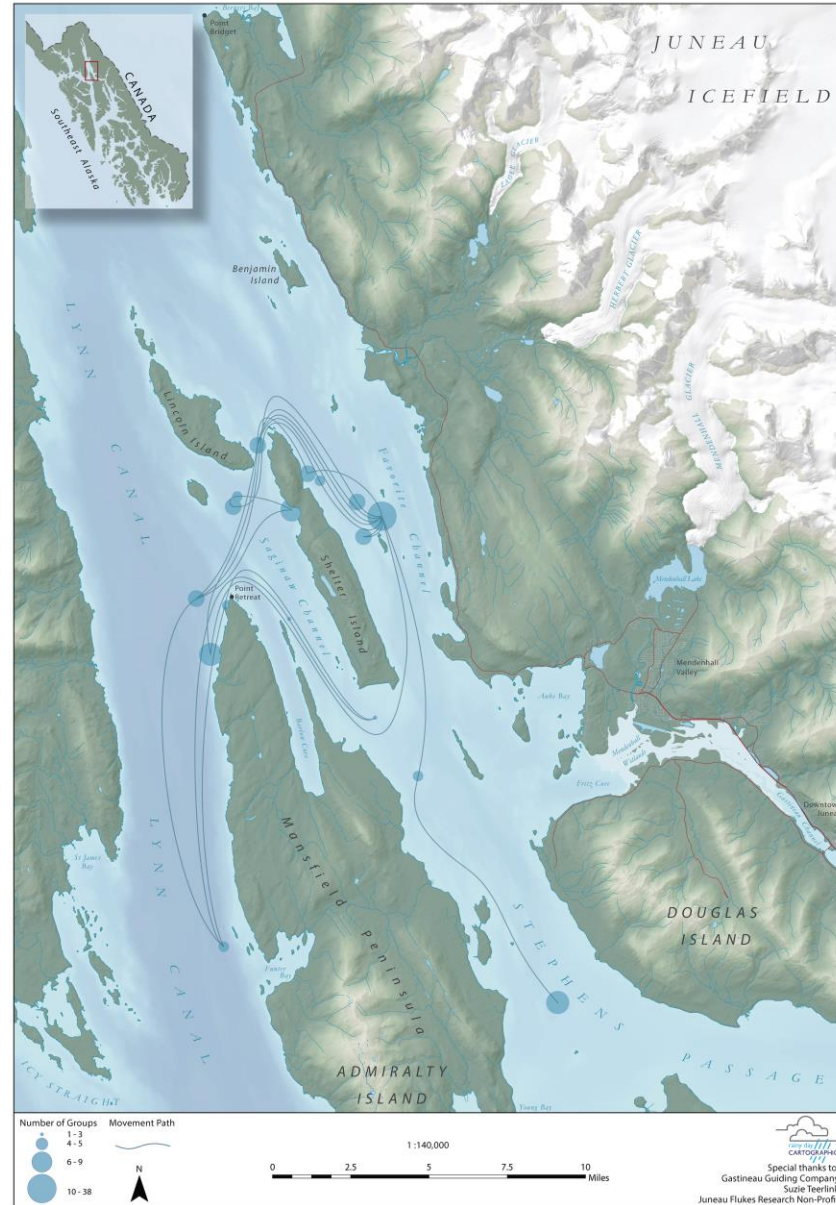
- NOAA Enforcement: 1 (800) 853-1964

MARINE MAMMALS OF JUNEAU

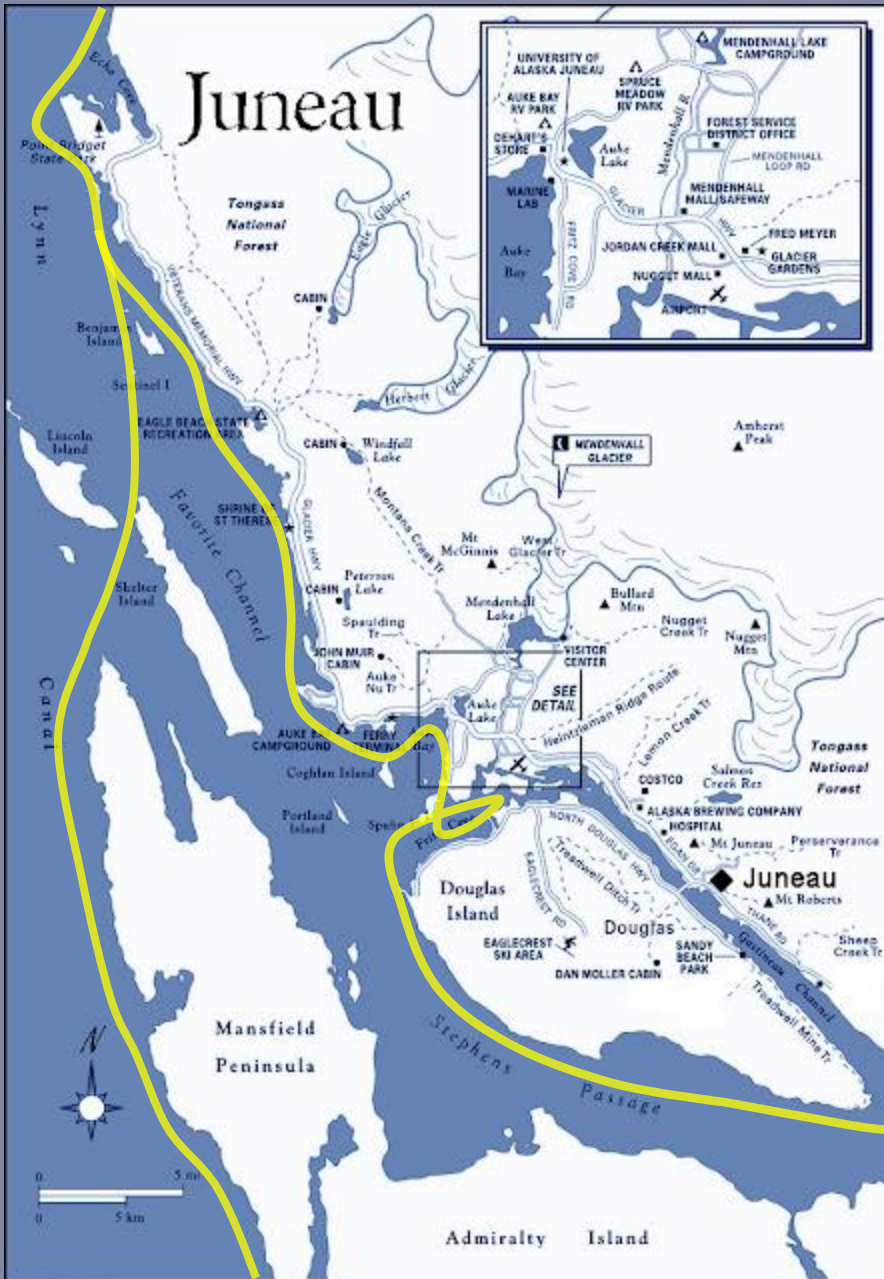


JUNEAU'S HUMPBACK WHALES

2016 Bubble Net Feeding Groups



MARINE MAMMALS OF JUNEAU



Killer Whale/ Orca

Population: 1,200 Alaska/ 80-90 Juneau

Safe Viewing Areas: Fritz Cove, Lynn Canal, Glacier Hwy

Notes:

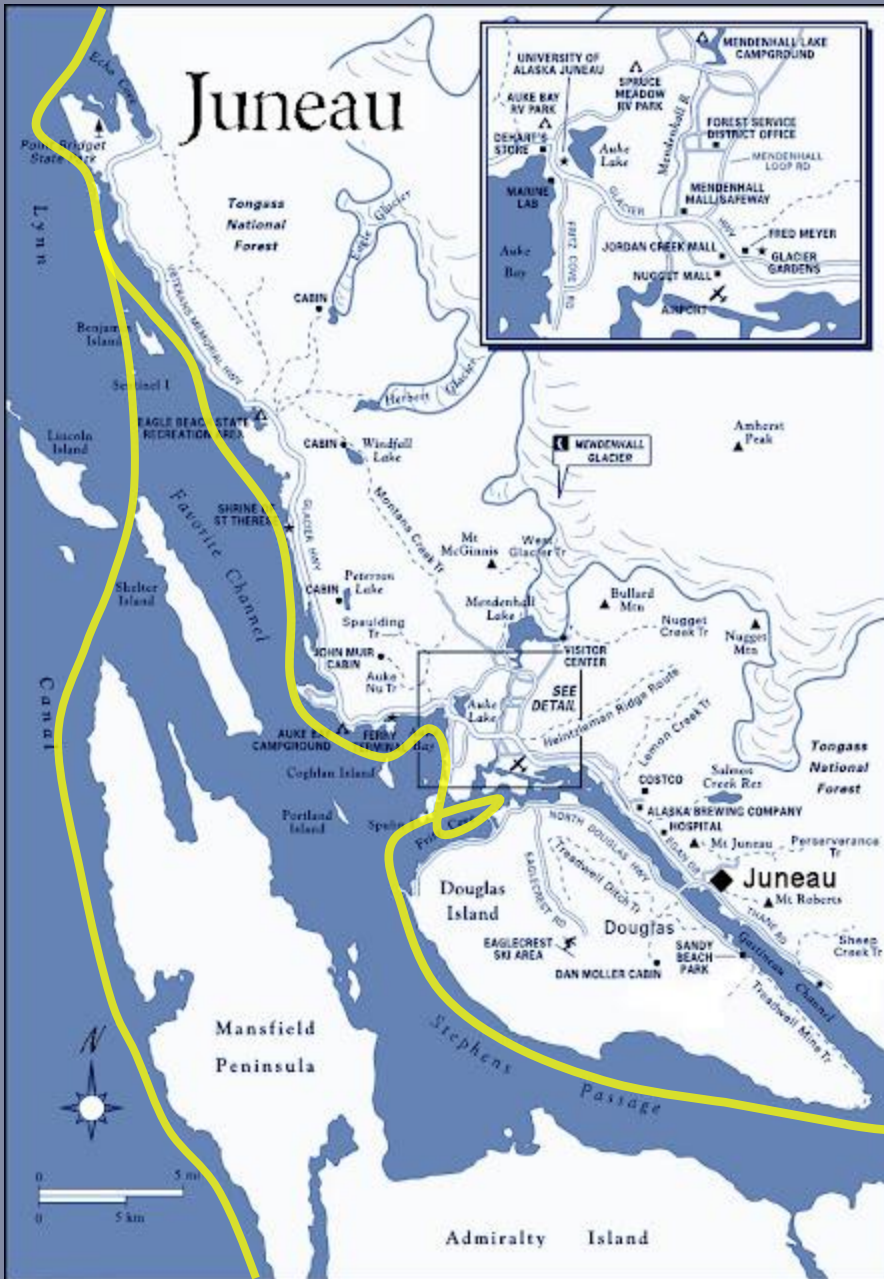
-Very nomadic and difficult to find

-Two separate subgroups. Resident vs Transient

-Protected under the MMPA (no approach limit)

-NOAA Enforcement: 1 (800) 853-1964

MARINE MAMMALS OF JUNEAU



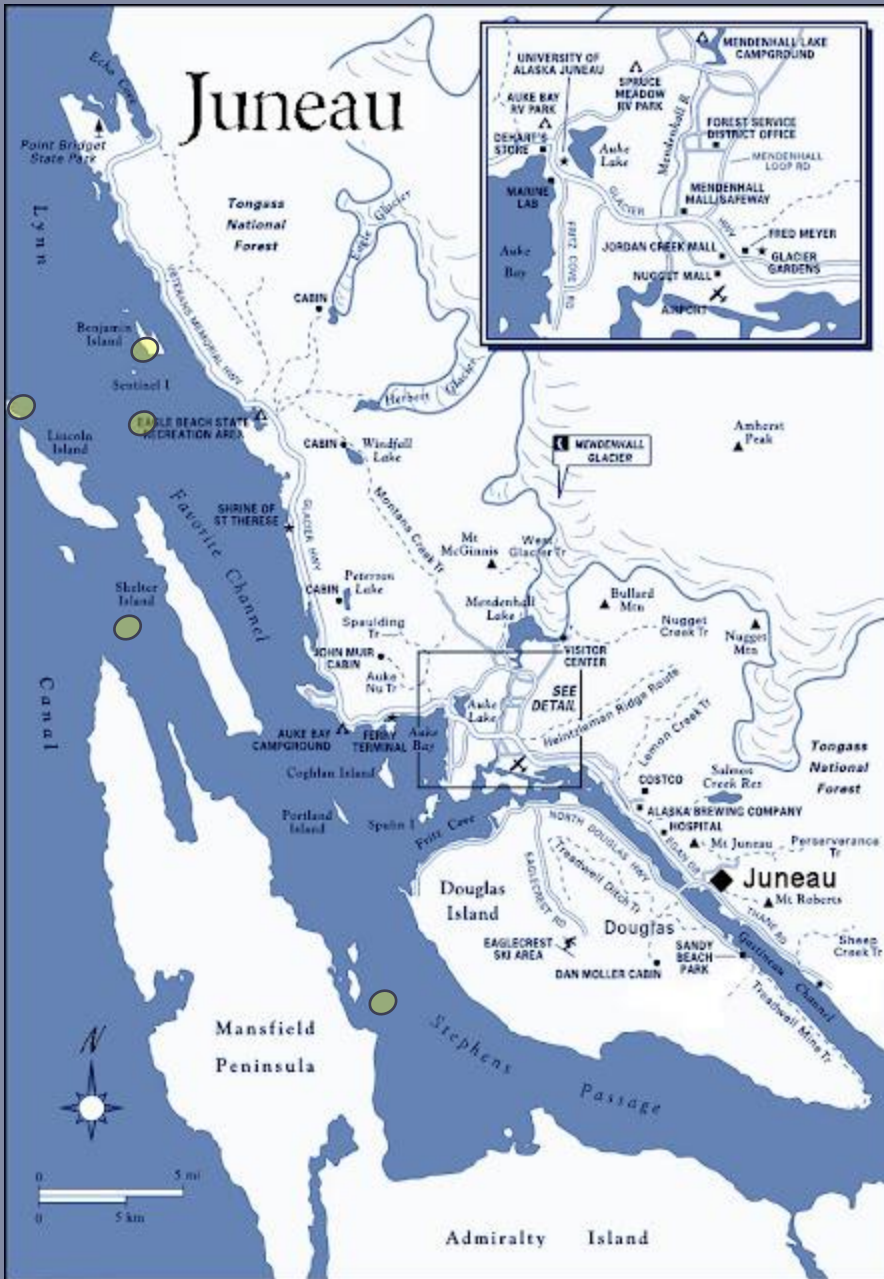
Killer Whale/ Orca



-Protected under the MMPA (no approach limit)

-NOAA Enforcement: 1 (800) 853-1964

MARINE MAMMALS OF JUNEAU



Stellar Sea Lion

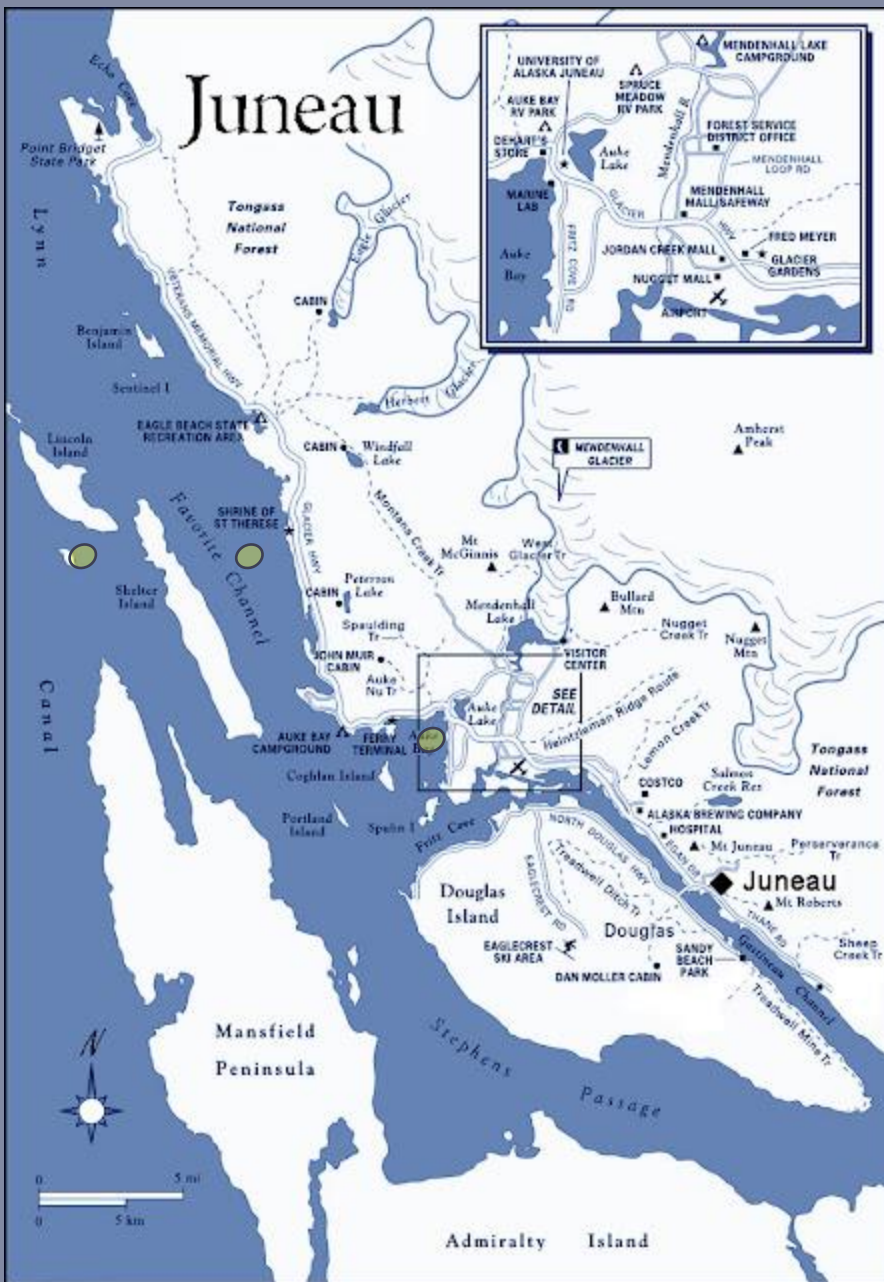
Population: 120,000 Alaska/ 600 Juneau

Safe Viewing Areas: Fritz Cove, Faust Rock, Little Island, Benjamin Island

Notes:

- Can be aggressive towards humans
- Differentiated from seals by small ear flaps
- Protected under the MMPA (no approach limit)
- NOAA Enforcement: 1 (800) 853-1964

MARINE MAMMALS OF JUNEAU



Harbor Seal

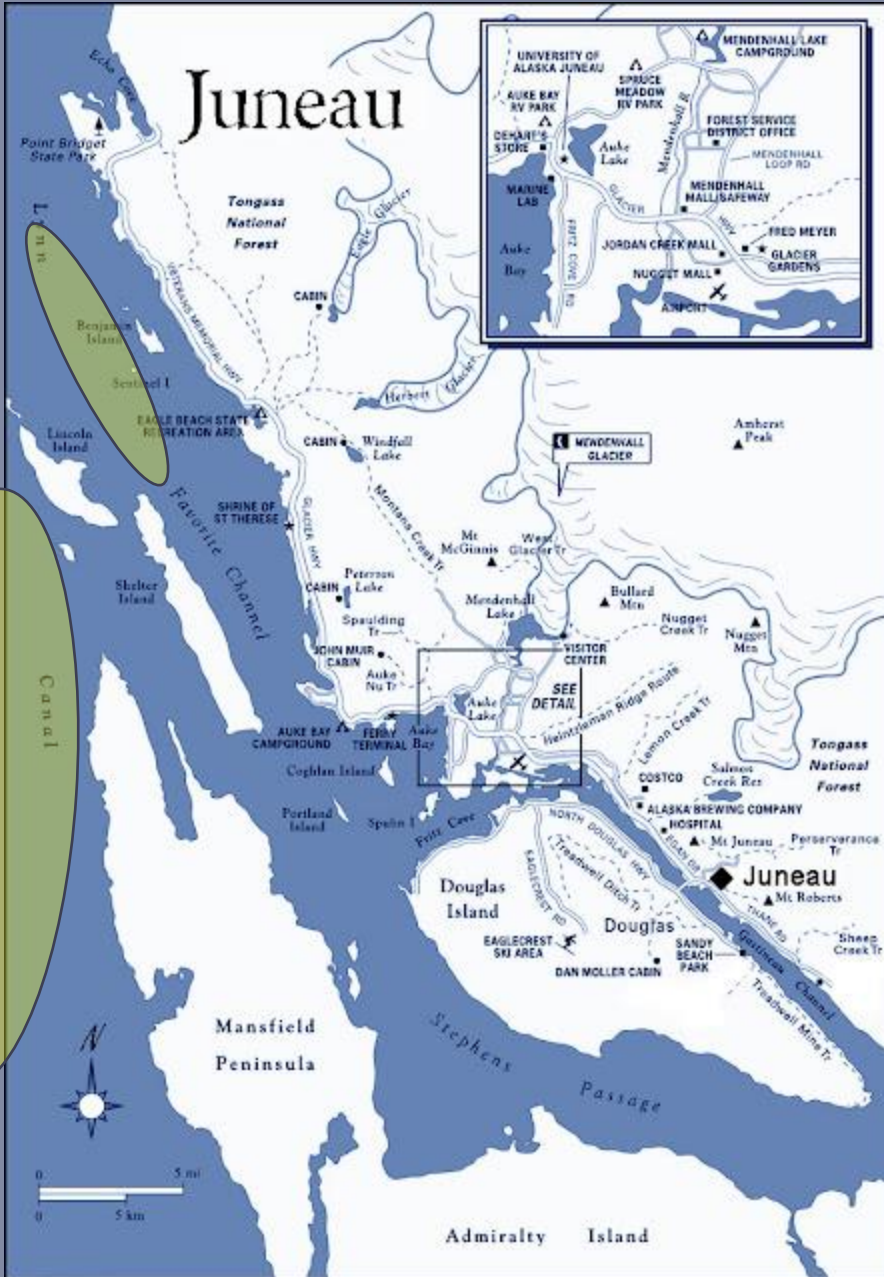
Population: 250,000 Alaska/ 1300 Juneau

Safe Viewing Areas: Fritz Cove, Hump Island, Fishermen's Bend

Notes:

- Very timid of noise and human approach
- Differentiated from sea lions by deep ear canal
- Often best viewed at low tide
- Protected under the MMPA (no approach limit)
- NOAA Enforcement: 1 (800) 853-1964

MARINE MAMMALS OF JUNEAU



Dall's Porpoise

Population: 83,000 Alaska/ 800 Juneau

Safe Viewing Areas: Lynn Canal

Notes:

-Can travel 40 MPH for short distances

-Protected under the MMPA (no approach limit)

-NOAA Enforcement: 1 (800) 853-1964

FISHING/ HUNTING IN JUNEAU



Salmon

Safe Harvest Areas: DIPAC, Sheep Creek, Fish Creek, Fritz Cove, North Pass, Cordwood Creek

Notes:

-License carry options:

Print, signed, and carried on person

ADFG app (free)

Digital picture of printed and signed license

-Always review updated ADFG statements for area closures prior to harvesting

-adfg.alaska.gov

FISHING/ HUNTING IN JUNEAU



Halibut

Safe Harvest Areas: Found in marine slide areas with prominent topographical humps or plateau

Notes:

-License carry options:

Print, signed, and carried on person

ADFG app (free)

Digital picture of printed and signed license

-Always review updated ADFG statements for area closures prior to harvesting

-adfg.alaska.gov

FISHING/ HUNTING IN JUNEAU



Land Animals

Safe Harvest Areas: (See ADFG Publication)

Notes:

-License carry options:

Print, signed, and carried on person
ADFG app (free)

-Always review updated ADFG statements for area
closures prior to harvesting

-No shooting from roadways or floating vessels

HYDROLOGY AND TIDAL EFFECTS



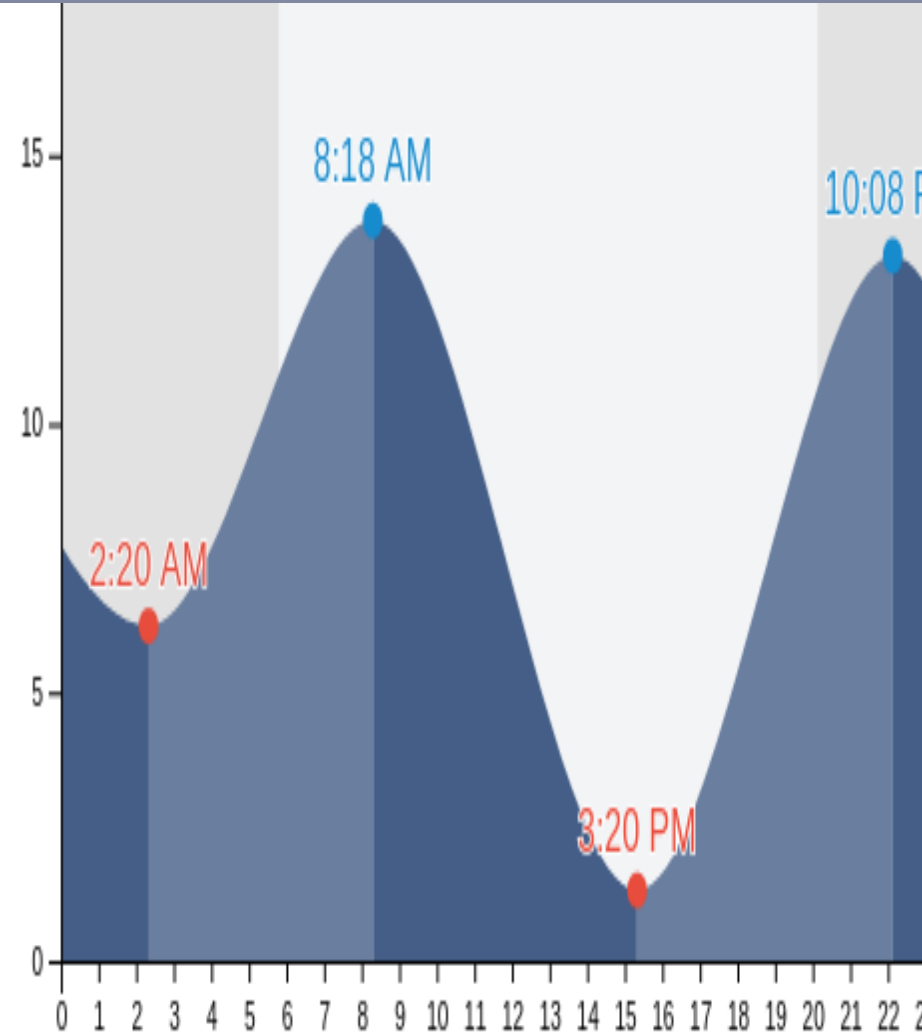
Ocean Tides in Juneau

Semi-Diurnal (2 High, 2 Low @ 6.15 hours)

Narrow passes and channels can create tidal flows exceeding 15 mph (record: 24 mph, Turnagain Arm, AK)

Creates unique ecosystems for intertidal species

Extreme low tides can accelerate land rebound by 360%



HYDROLOGY AND TIDAL EFFECTS



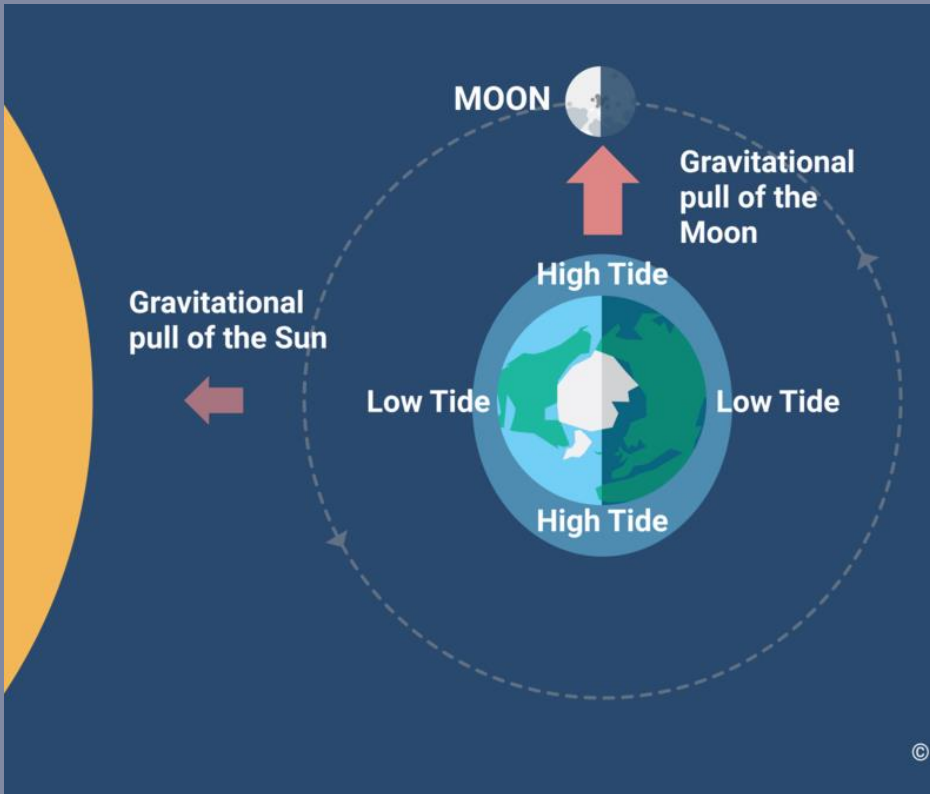
Ocean Tides in Juneau

Semi-Diurnal (2 High, 2 Low @ 6.15 hours)

Narrow passes and channels can create tidal flows exceeding 15 mph (record: 24 mph, Turnagain Arm, AK)

Creates unique ecosystems for intertidal species

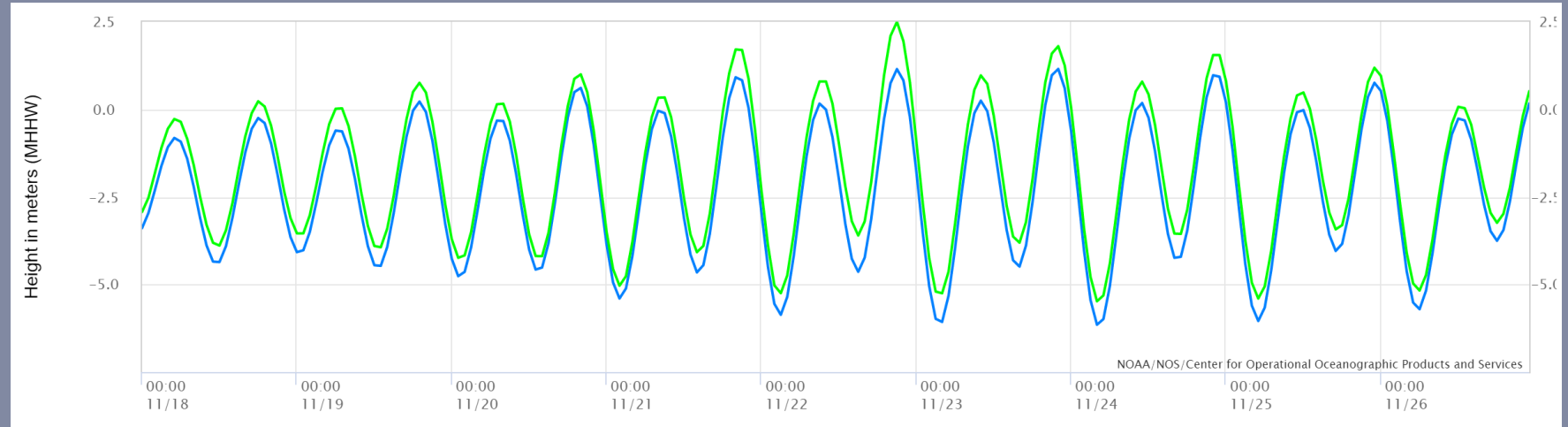
Extreme low tides can accelerate land rebound by 360%



HYDROLOGY AND TIDAL EFFECTS

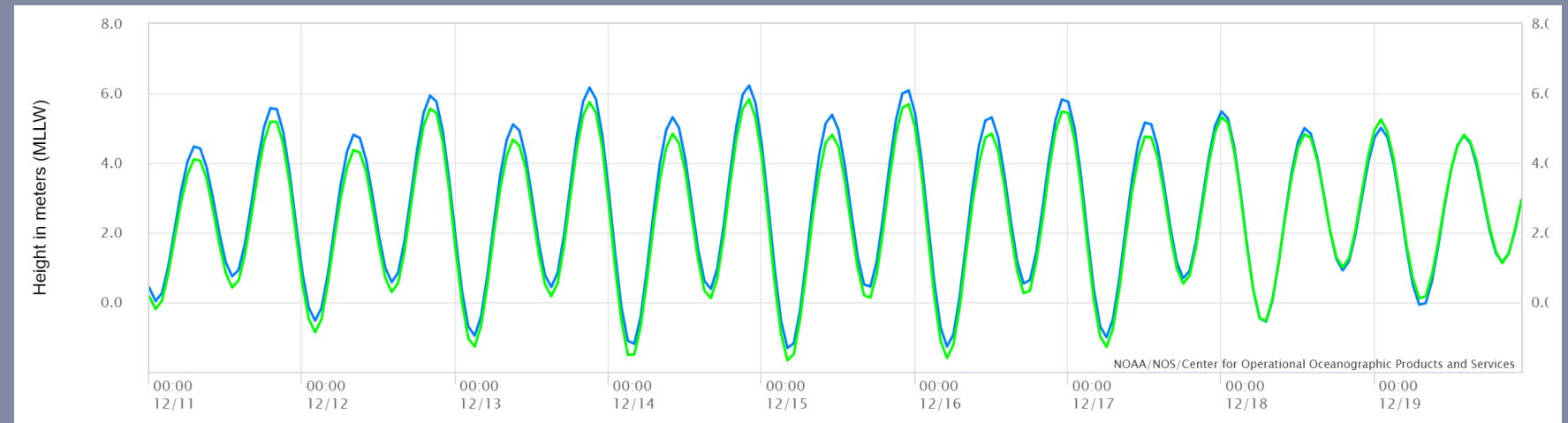


20.4' (April 2000)



Mean Range: 13.74 ft

-4.9' (March 2019)



HYDROLOGY AND TIDAL EFFECTS

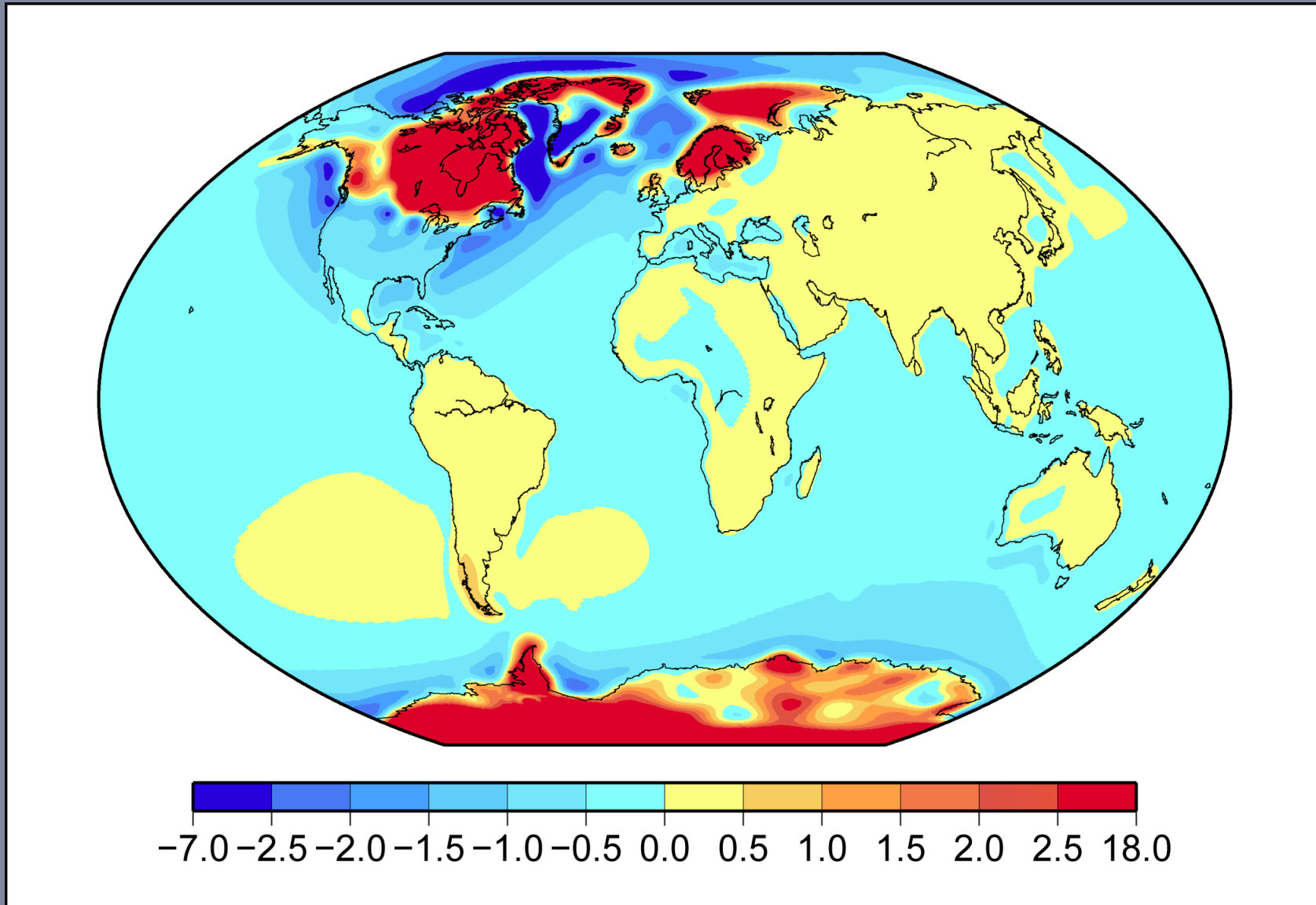


© Michael Marten

HYDROLOGY AND TIDAL EFFECTS



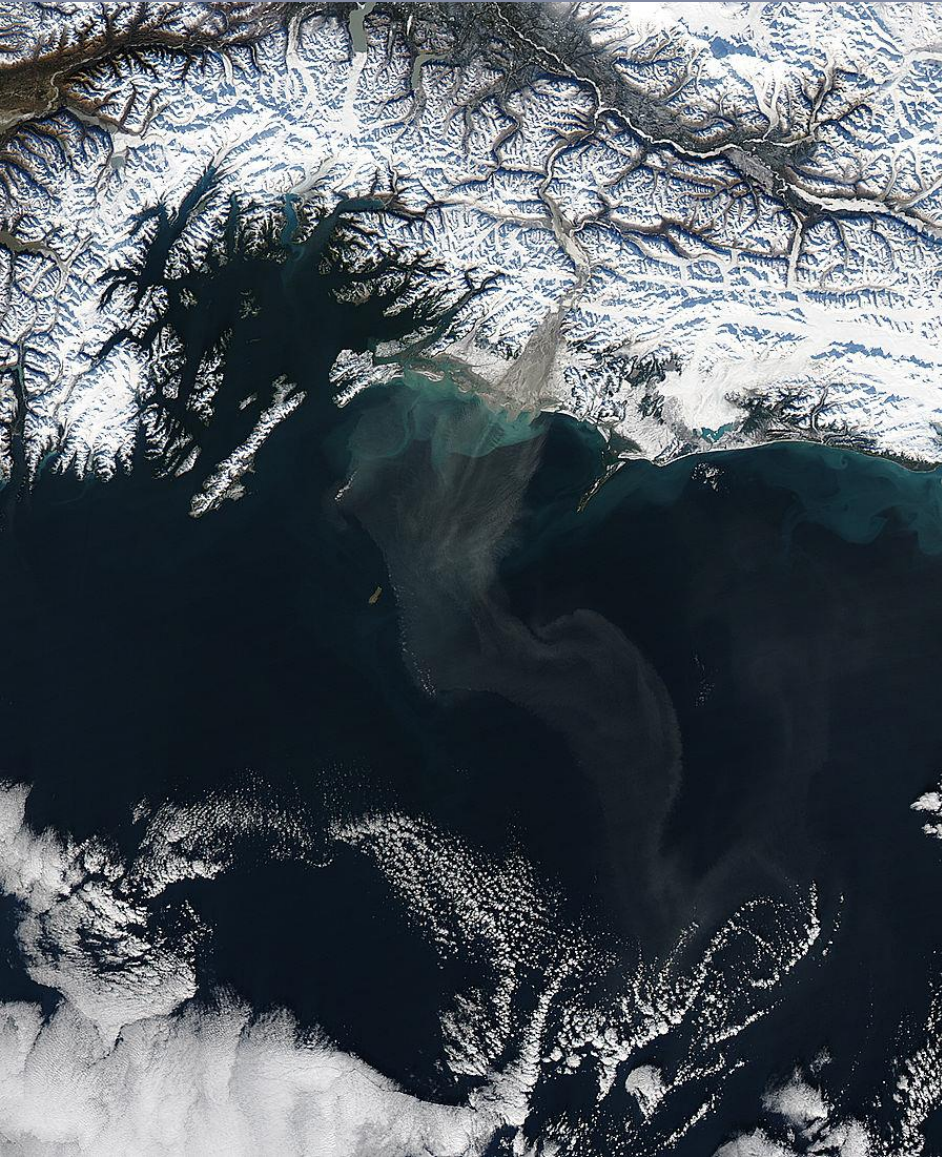
HYDROLOGY AND TIDAL EFFECTS



HYDROLOGY AND TIDAL EFFECTS



HYDROLOGY AND TIDAL EFFECTS



Glacial Contributions

Creates thermal currents in narrow channels

Glacial Flour Plumes enrich the water

Hot spot for whales, salmon, and birds

Terraforming events from Ice Sheet

- Steep terrain
- Loose soil
- Glacial-erratics (Poundstone, Faust, Scull Island)
- Isostatic Rebound
- Nunatak

HYDROLOGY AND TIDAL EFFECTS



Glacial Contributions

Creates thermal currents in narrow channels

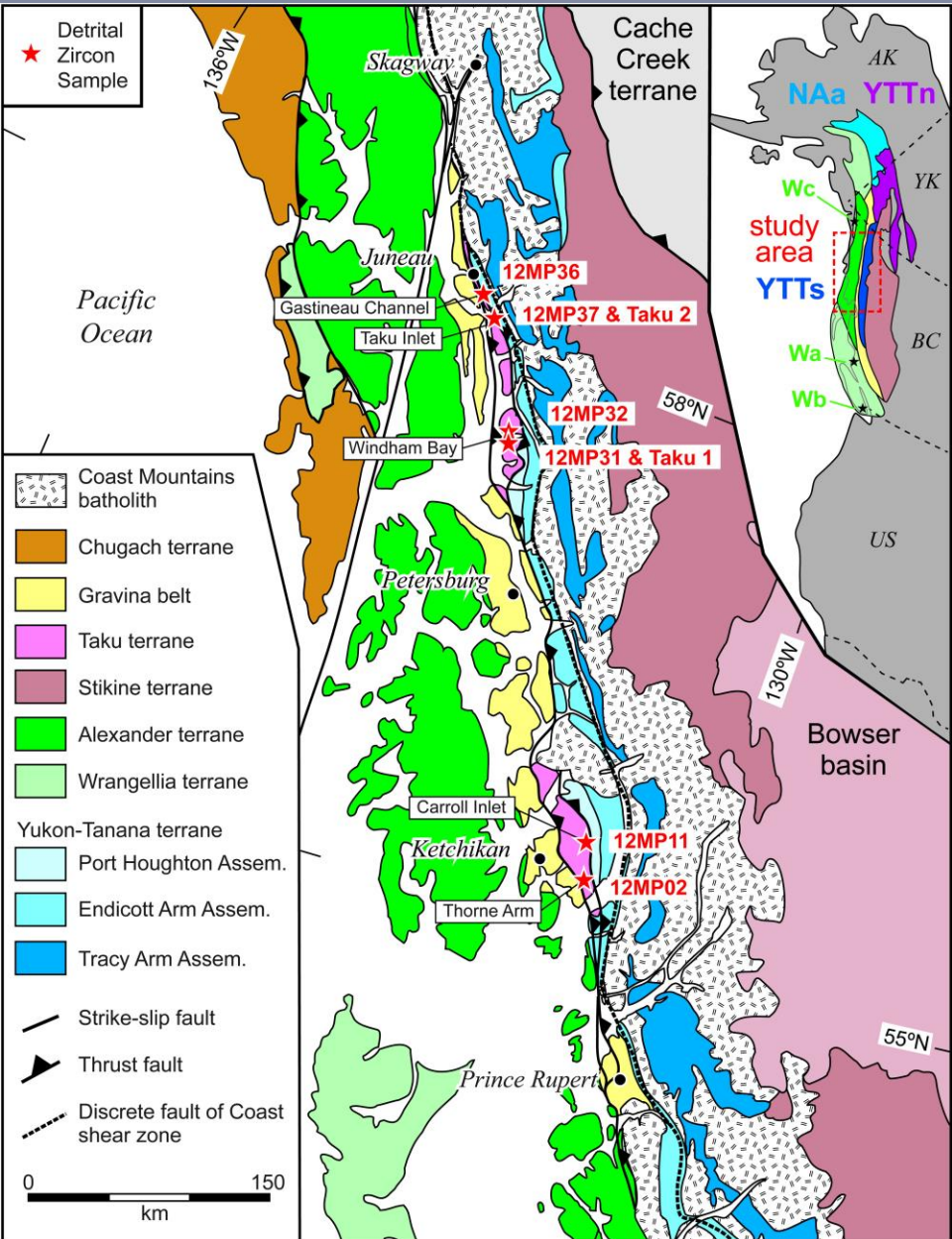
Glacial Flour Plumes enrich the water

Hot spot for whales, salmon, and birds

Terraforming events from Ice Sheet

- Steep terrain
- Loose soil
- Glacial-erratics (Poundstone, Faust, Scull Island)
- Isostatic Rebound
- Nunatak**

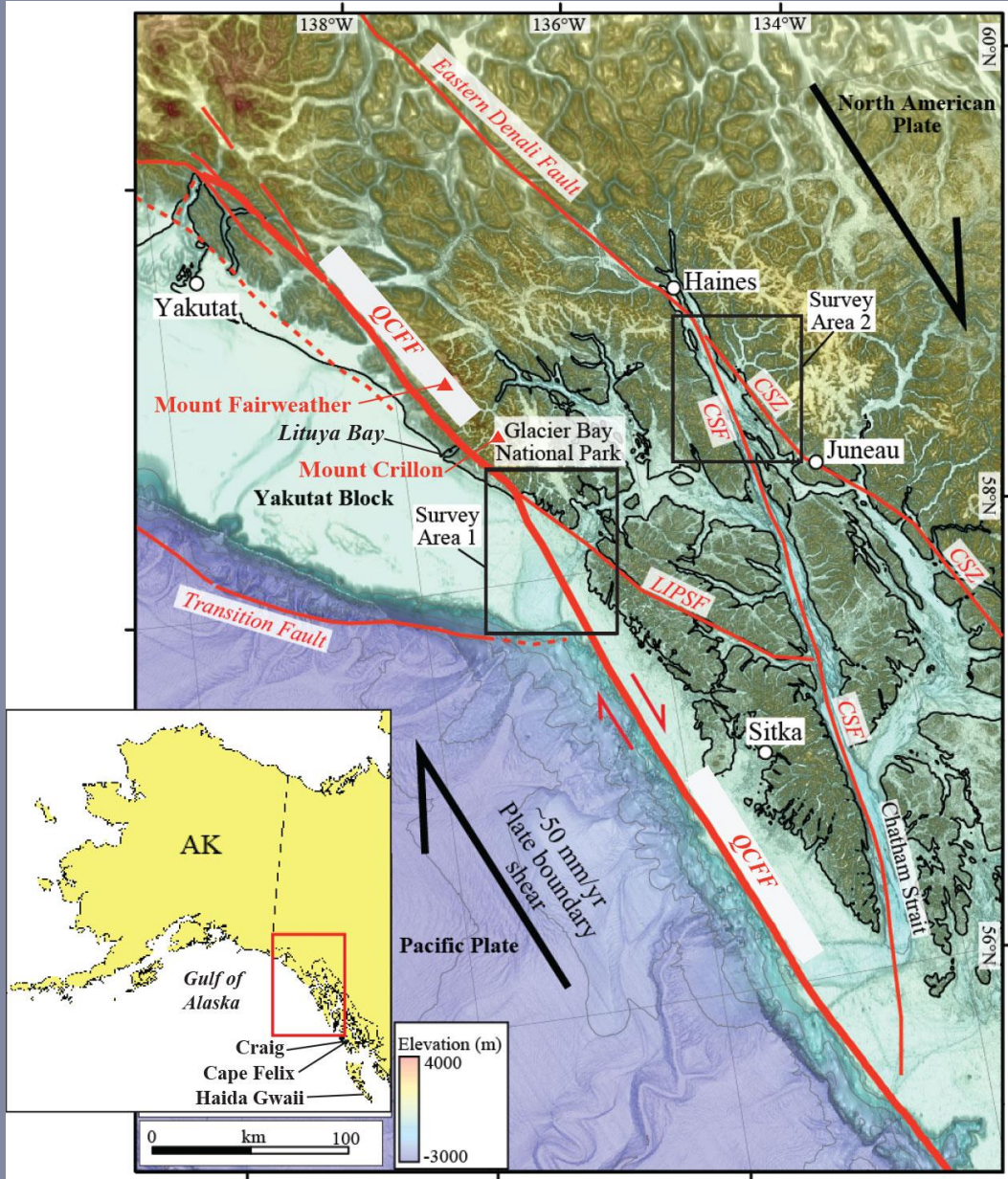
GEOLOGY AND TERRAIN



Composition

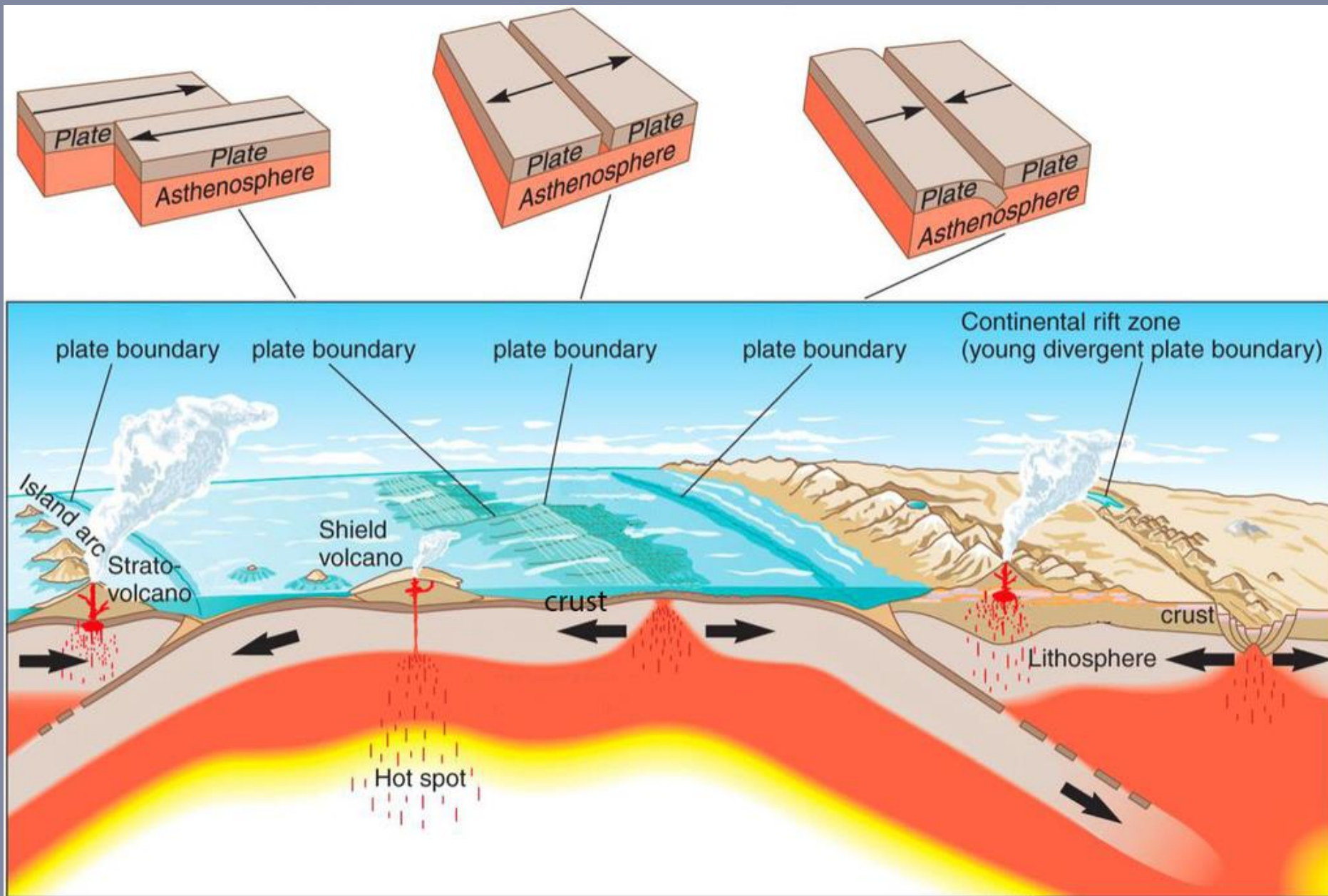
- Volcanic, Slate, and Schist rocks
- Metamorphosed by dynamic and thermal processes

GEOLOGY AND TERRAIN



" SOURDOUGH "

GEOLOGY AND TERRAIN





QUESTIONS