UC SANTA BARBARA
Bren School of Environmental Science & Management

MESM GROUP PROJECT PROPOSAL 2022

Conservation Planning for Habitat Connectivity and Federal Protection of the Chilkat Valley, Alaska

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Proposers:

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OBJECTIVES

The primary goal of this project is to aid the nonprofit Lynn Canal Conservation (LCC) in creating a conservation prioritization plan that will increase habitat connectivity throughout the Chilkat Valley area of Southeast Alaska (Figure 2). The project will identify and map the diversity of habitats formed by the valley's unique topography to assess existing structure and integrity. Given the area's high rate of timber extraction, the project will also estimate the logging industry's impact on animal diversity and forest regeneration rates across habitats. This research will inform recommendations for future management and policy decisions that support habitat conservation, equitable subsistence, and Indigenous use. Finally, the project will develop outreach materials and organize a campaign to increase public awareness of the Chilkat Valley's unique biodiversity and resources. These combined efforts will support the LCC's push for federal protection through the Biden administration's 30x30 conservation initiative. Specific objectives include:

1. Map the microclimates and associated habitat types of Haines State Forest and surrounding areas to identify conservation strategies to maximize habitat connectivity.
2. Determine the impacts of timber extraction by calculating forest regeneration rates and faunal abundance following clearcuts in various habitats. The results will inform the potential need for microclimate-specific management.
3. Engage with local residents through community science projects and educational outreach to build a coalition of support for LCC's federal conservation campaign.

SIGNIFICANCE

The Chilkat Valley is a biodiverse region of continental and cultural importance. Coastal temperate rainforests are rare, and the valley's old-growth trees offer a unique structure and functionality critical for wildlife migration. However, these important habitats are being fragmented by industrial timber harvesting which increases soil erosion, reduces natural regeneration, and shifts vegetative species composition (Alaska Department of Fish and Game, 2021). Due to its unique topography and accessible location at the end of the Inside Passage, the Chilkat Valley has long served as one of the only migratory corridors linking the Alaska coast to the state's interior. As one of the highest value watersheds for salmon habitat in Southeast Alaska, the Chilkat Valley also attracts the world's largest gathering of bald eagles each fall (Figure 1; Smith, 2016). In deciduous and riparian forests, willow and other shrubs act as important sources of food for moose – a cultural keystone species (Karst and Vystrcil, 2019). With the highest mammal diversity in Southeast Alaska, the conservation of this region is imperative for the survival of brown and black bears, wolves, lynx, and wolverines (Carstensen et al., 2007).

Despite its biological importance, the valley is not currently federally protected. Only 0.9% of its large-tree forests are preserved in watershed-scale reserves, which are crucial for "conservation of wide-ranging species such as salmon, bears, and wolves" (Figure 3; Albert and Schoen, 2007). Audubon Alaska and The Nature Conservancy have identified the area as being of the highest cumulative ecological risk given its percentage of habitat remaining intact compared to the percentage protected (Smith, 2016). The need for a focus on conservation in the Chilkat Valley is well-documented, making this project exceedingly salient.

Two major landowners of the valley are Haines State Forest and the University of Alaska, but despite this public ownership, only 2% of the valley is legislatively protected (Smith, 2016). The outdated Haines State Forest management plan (2002) relies on industrial logging, which has historically incited conflict with local and Indigenous Southeast Alaska communities (Smith, 2021; Griswold et al., 2021). Home to the village of Klukwan, the Chilkat Valley is a critical resource for

Alaska Natives who use the ecosystem for subsistence (American Rivers, 2019). An estimated 90% of residents extract resources from the region, including salmon, moose, and wood (Koster, 2012). The existence of a functional and intact ecosystem is necessary to sustain the livelihood and health of local people and to support the valley's irreplaceable biodiversity.

BACKGROUND

LCC is a nonprofit organization that has advocated for protection of public lands and waters throughout the Chilkat Valley region for 50 years. Their successful campaigns have included preventing mine development and creating the Chilkat Bald Eagle Preserve. Inspired by the current window of opportunity under the Biden Administration's 30x30 plan, the Bren School's partnership with LCC aims to serve as the foundation for the federal protection of the Chilkat Valley and its unique microclimates and critical habitats.

Haines State Forest covers 286,000 acres of the Chilkat Valley with three major river watersheds within its boundaries (AK Division of Forestry, 2022). Most importantly, it lies within the transition zone between the wet coast and dry interior, with elevations spanning from sea level to 7,000 feet, enabling the forest to act as a biodiversity refuge. Yet 42,000 of those forest acres are devoted to timber extraction, with 5.88 million board feet harvested annually (AK Division of Forestry, 2022). The intensely extractive management of Haines State Forest has negatively impacted its exceptionally diverse forest types and associated habitats by causing fragmentation of crucial migratory corridors. To properly campaign for federal protection, it is necessary to identify these habitat types, their regeneration rates, and the migratory species that use them to inform better management practices.

EQUITY

The Chilkat Valley is home to one of the longest continuously inhabited indigenous villages in North America – Klukwan (translated to "Eternal Village") – and the Tlingit tribe relies heavily on the natural resources of the watershed. The land is "key to their identity," but their previously sprawling ancestral grounds have been reduced to a mere three square mile village site (Block, 2017). The Chilkat River's salmon feed the Tlingit, who have dotted the shores in Klukwan with fish-cleaning tables and smokehouses. Tribal President Kimberley Strong states, "I always feel like we're nestled in the hand of God here" (Block, 2017). The physical and spiritual connection of the Tlingit people to the valley is evident and needs to be supported through further protection and accessibility for Indigenous use beyond the village borders.

LCC has a close relationship with the Tlingit tribe as they have worked together on anti-mining campaigns to protect the river and salmon essential to their community. Given this relationship, we intend to help LCC craft management and policy recommendations that are guided by Indigenous knowledge and values, while respecting the Tlingit's land claims and cultural needs to meaningfully protect the natural resources of the Chilkat Valley. As previously noted, a vast majority of valley residents, Indigenous or otherwise, rely on its biodiversity for subsistence living, and maintaining and enhancing this access will be a priority in our management recommendations.

AVAILABLE DATA

There are numerous data sources for both historic and current Chilkat Valley conditions that can be used for this project. This includes the following datasets:

- Ecological Atlas of Southeast Alaska (2016) by Audubon Alaska. 228 pages of maps, charts, and information on physical, ecological and human use patterns. The 'Chilkat River Complex' is detailed on each topic. Link.
- Conservation Prioritization of the Chilkat-Skagway Rivers Region (2018) by the Southeast Alaska Land Trust. Highly relevant maps and a GIS tool to assess conservation value of area land parcels. Includes list of datasets utilized in their analysis. Link.
- A Conservation Assessment and Resource Synthesis for The Coastal Forests and Mountains Ecoregion in the Tongass National Forest and Southeast Alaska (2007) by The Nature Conservancy. GIS database and detailed ecological information. Link.
- U.S. Forest Service & State of Alaska Geospatial Data Portals. State-wide maps of vegetation cover, type, tree mortality, boundary/parcel borders, etc.. Examples: Link, Link.
- Alaska Department of Natural Resources Division of Forestry: Timber Inventory of State Forest Lands in the Haines Area 2020. Data on the types of timber within the region and information on the logging industry. Link.
- Alternatives to Clearcutting in the Old-Growth Forests of Southeast Alaska (2000). Information on regeneration rates in stands of various ages. Link.
- Additional data and resources provided by LCC: See attached client letter of support.

POSSIBLE APPROACHES

The project will complete the following tasks:

- Conduct a literature review synthesizing current information on ecosystem variety, timber extraction, and local and Indigenous resource use in the Chilkat Valley.
- Utilize existing spatial data to map the area's distinct habitats and determine current levels of connectivity and ecosystem functionality.
- Calculate recovery rates across microclimates and compare them to the Division of Forestry's current rate for all of the Haines State Forest while measuring the faunal diversity supported by stands of different ages.
- Communicate with and engage local residents to draw attention to the irreplaceable value of the valley and its potential for federal protection

DELIVERABLES

Deliverables for the project include:

- **Interactive website map** using QGIS with layers showing microclimates of Haines State Forest, logging areas, impacted habitats, and current levels of ecosystem connectivity.
- **Forest management recommendations** guided by literature on the distinct microclimates of the state forest and data on regeneration rates and the effects of logging on biodiversity across forest types, to shift current logging operations while ensuring sustainable use of the Chilkat Valley's natural resources that is both just and equitable.
- **Framework for a public engagement campaign** to increase citizen engagement and support for a federal protection campaign with at least one completed educational resource (e.g. brochure) targeted to the general public.

INTERNSHIP

Lynn Canal Conservation can offer two internships with a $3000 - $5000 stipend each with housing provided to enable students to further the objectives of the project over the summer of 2022. Internships will be based at LCC's headquarters in Haines, Alaska.

BUDGET

We anticipate that the $1300 stipend from Bren will cover all associated costs with the project. Additionally, LCC expects to offer stipends, housing, and transportation in the Haines area for the duration of the internships.

REFERENCES

Alaska Department of Fish and Game. (2022). *Chilkat River Critical Habitat Area*. https://www.adfg.alaska.gov/index.cfm?adfg=chilkatriver.main

Alaska Department of Fish and Game. (2021). Featured Species-Associated Forest Habitats: Boreal Forest and Coastal Temperate Forest. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/species/wildlife_action_plan/appendix5_forest_habitats.pdf

Alaska Department of Natural Resources Division of Forestry. (2022). *Alaska's State Forests*. Alaska Department of Natural Resources Division of Forestry. http://forestry.alaska.gov/stateforests.htm

Alaska Department of Natural Resources. (2002). *Haines State Forest Management Plan*. http://forestry.alaska.gov/Assets/pdfs/timber/haines/hsfpfinal.pdf

Albert, D., & Schoen, J. (2007). A Conservation Assessment for the Coastal Forests and Mountains Ecoregion of Southeastern Alaska and the Tongass National Forest. Southeast Alaska Conservation Assessment, 2. https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/alaska/seak/era/cfm/Documents/2_Chapter_2.pdf

American Rivers. (2019). *Chilkat River named one of America's most endangered rivers of 2019*. American Rivers. https://www.americanrivers.org/conservation-resource/chilkat-river-named-one-of-americas-most-endangered-rivers-of-2019/

Block, M. (2017). *A Native Village in Alaska Where the Past is Key to the Future*. NPR. https://www.npr.org/2017/06/20/531612789/a-native-village-in-alaska-where-the-past-is-key-to-the-future

Carstensen, R., Schoen, J., & Albert, D. (2007). *Biogeographic Provinces of Southeastern Alaska. The Coastal Forests and Mountains Ecoregion of Southeastern Alaska and the Tongass National Forest.* . The Nature Conservancy: Conservation Gateway. https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/alaska/seak/era/cfm/Pages/default.aspx

Griswold, L., Tienabeso, S., Davis, L., & Yamada, H. (2021). *Battle rages over conservation and local economy in Alaska*. ABC News. https://abcnews.go.com/US/battle-rages-conservation-local-economy-alaska/story?id=81062700

Hanson, D. (2020). *Timber Inventory of State Forest Lands in the Haines Area 2020*. Alaska Department of Natural Resources Division of Forestry. http://forestry.alaska.gov/Assets/pdfs/forestinventories/HainesForestInventory2020.pdf

Karst, A., & Vystrcil, E. (2019). *Speaking for the Moose*. Nature United. https://www.natureunited.ca/what-we-do/our-priorities/conserving-at-scale/moose-workshop/

Koster. (2012). *Community Subsistence Information System: Haines 2012*. Alaska Department of Fish & Game. http://www.adfg.alaska.gov/sb/CSIS/index.cfm?ADFG=commInfo.summary

Smith, C. (2021). *Conservationists challenge old-growth timber sale in Haines State Forest for a second time*. KTOO Public Media. https://www.ktoo.org/2021/08/05/conservationists-challenge-old-growth-timber-sale-in-haines-state-forest-for-a-second-time/

Smith, M. A. (2016). *Ecological Atlas of Southeast Alaska.* Audubon Alaska. https://ak.audubon.org/conservation/ecological-atlas-southeast-alaska.

Southeast Alaska Land Trust. (2018). *Conservation Prioritization of Chilkat-Skagway Rivers Region: Identifying Opportunities for Conservation*. https://www.southeastalaskalandtrust.org/wp-content/uploads45yI789N/2021/07/2018-Chilkat-Skagway-Prioritization-Report-FINAL-compressed.pdf

APPENDIX

Figure 1. Bald eagles in the Chilkat Bald Eagle Preserve fishing for salmon.
[Photo copyright National Audubon Society:
https://www.audubon.org/magazine/winter-2019/an-alaskan-mine-threatens-site-worlds-largest]

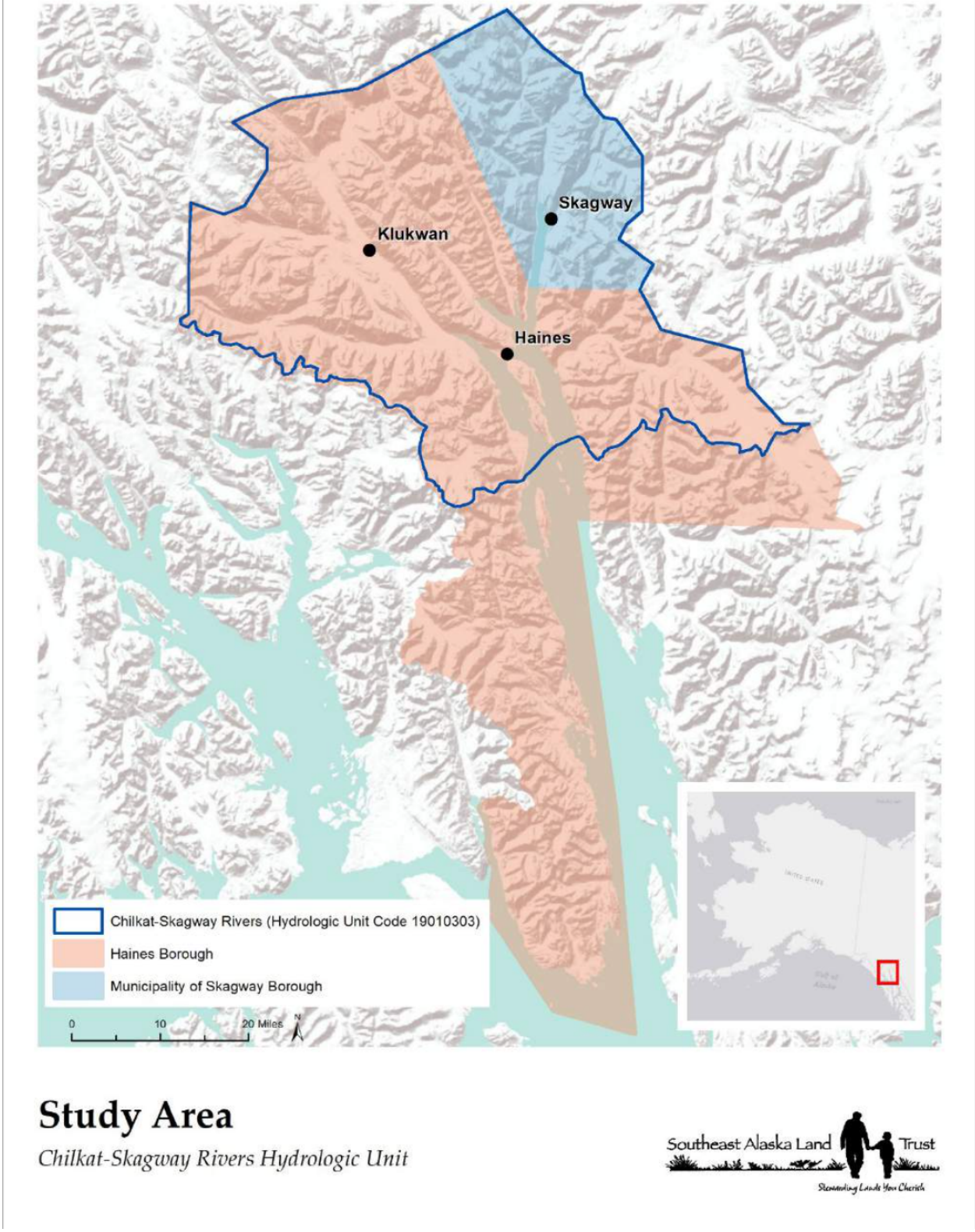

Figure 2. Map of Chilkat Valley area, on which this project will be focused.
[Map copyright Southeast Alaska Land Trust:
https://www.southeastalaskalandtrust.org/wp-content/uploads45yI789N/2021/07/2018-Chilkat-Skagway-Prioritization-Report-FINAL-compressed.pdf]

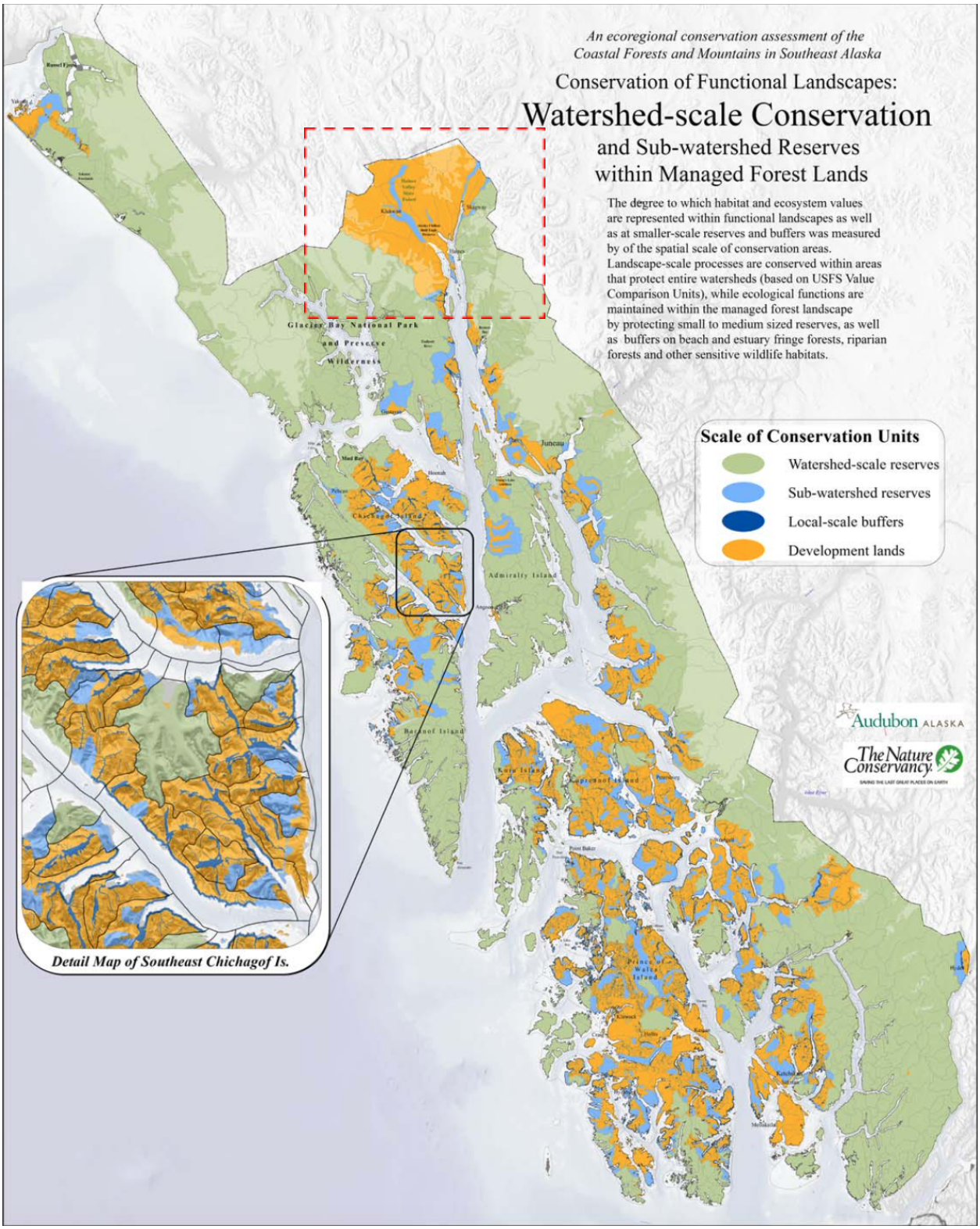

Figure 3. Map showing watershed-scale conservation in Southeast Alaska. The area in the red box (added by the proposal authors) shows that the Chilkat Valley area is primarily in the 'Development Lands' category, notice. [Map copyright Audubon Alaska and The Nature Conservancy: https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/alaska/seak/era/cfm/Documents/2_Chapter_2.pdf]

Lynn Canal Conservation

biodiversity+protection=resilience

January 20, 2022

MESM Group Project Selection Committee
Bren School of Environmental Science and Management
2400 Bren Hall, University of California,
Santa Barbara, California 93106
January 19, 2022

Dear Bren Group Project Committee,

Lynn Canal Conservation (LCC) is pleased to offer our full support to the master's project proposed by Bren students Katie Pietrucha and Katheryn Moya. Ms. Pietrucha and Ms. Moya reached out to LCC with an initial proposal grounded in their own astute inquiry into the potential conservation needs of our area here in northern Southeast Alaska. They then worked cooperatively with LCC to hone their project to meet both their academic interests and our highest conservation priorities, including preparing justification for inclusion of the Chilkat Valley in the Biden Administration's 30x30 biodiversity and climate resilience initiative.

The Bren students are offering LCC work that is timely, needed, and relevant. The "Conservation Planning for Habitat Connectivity and Federal Protection of the Chilkat Valley, Alaska" project is responsive to the urgent need for greater ecological understanding and forward-thinking, large landscape planning in the Chilkat watershed. The Chilkat watershed is gaining recognition for its exceptional species richness and its role as a glacial refugium and crucial migratory corridor during past climatic shifts. This crucial ecological service can only be maintained by preserving critical habitats and connectivity between ecotones in this complex landscape.

We are prepared to support Bren's students in their endeavors with expert educational resources, housing, and financial support, pending grant approval.

- LCC has an extensive library that we will make available to the Bren students while they are on location. Many of our documents are historical records of studies conducted in the Alaska Chilkat Bald Eagle Preserve that are not readily available in a digital form. We also have field guides to the flora and fauna of the region.

- Richard Carstensen of Discovery Southeast is an author, naturalist, and expert cartographer working for LCC on an ecological atlas of the Greater Chilkat Watershed. Mr. Carstensen will be available to the Bren students on GIS questions,

mapping, and the natural history of the Chilkat Valley.

- Herb Hammond is the founder of the Silva Forest Foundation and author of 3 books and numerous papers on forest ecology, ecological forestry, and a process of community planning that places human needs within the matrix of ecological systems. Mr. Hammond is working with LCC on a related project and will be available to the Bren students for questions regarding his areas of expertise.

- LCC has confirmed housing accommodations for the Bren students at our office in Haines, which has 2 private offices/bedrooms with a shared bathroom and kitchen. Our partners at Takshanuk Watershed Council have donated the space for the duration of the internship.

- We are still in the process of acquiring stipend funding for the Bren students, but I am seeking between 3 and 5 thousand per student to fund their internships. As LCC executive director, I will devote a portion of my time consulting with the students on their project. Members of our Board of Directors will be available to accompany the students into the field, help train the students in bear safety, identification of scat, plants, fungi, etc., and other essential field skills, while generally helping them feel at home while they're here.

The Chilkat Valley is a unique landscape with irreplaceable ecological values, including its dual role as a glacial refugium and migratory corridor between the coast and the interior during historic climatic shifts. LCC is a small grassroots conservation organization working to bring additional research and meaningful protections to the Chilkat watershed, while striving to uphold Indigenous rights and social justice ideals in our outreach and our actions. The proposed Bren project will benefit this landscape and its people, and provide for a more just and ecologically resilient future.

Thank you for your consideration of this essential and timely project.

Sincerely,

Jessica Plachta
Executive Director
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