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Submitted electronically at: US Forest Service NEPA Projects Home

Attn: Draft Assessment

Dear Ms. Mathews:

I submit the following scoping comments on behalf of the Alaska Longline Fishermen's Association (ALFA) regarding the Tongass National Forest Land Management Plan Revision resource assessments. ALFA represents numerous Southeast Alaska residents who participate in, or otherwise
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support and bene?t from the commercial ?shing economy. Many of ALFA's members are Southeast Alaska residents who participate in regional salmon ?sheries and rely on forest resources for recreation, food, health, scenery and other resource values. ALFA advocates for salmon conservation, supports science-based ?sheries management and works to safeguard the health of the marine and freshwater environments that support salmon and other marine life. ALFA markets wild, sustainably caught Alaska seafood under the Alaskans Own label throughout Alaska and the U.S. to fund its Seafood Donation Program and Fishery Conservation Network. Alaskans Own is a leader in the sustainable seafood movement and has helped address food insecurity issues in Alaska and the Northwest.

Introduction

There are several assessments that discuss Southeast Alaska's salmon but no single assessment that covers the species ecology, economy, habitats and factors that limit population productivity. Given the important of this resource, ALFA submits that it would be useful to discuss salmon in one assessment. Southeast Alaska's most important economic drivers include productive commercial, sport and subsistence salmon ?sheries. Salmon also feed multiple mammal and avian species and are
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ecosystem engineers, bringing energy and nutrients to freshwater and riparian ecosystems. The large

1
ALFA also has members throughout Alaska and the United States.
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Gri?ths, J.R., Schindler, D.E., Armstrong, J.B., Scheurell, M.D., Whited, D.C., Clark, R.A., Hilborn, R., Hold,

C.A., Lindley, S.T.,
Stanford, J.A. & E.C. Volk. 2014. Performance of salmon ?shery portfolios across western North America. Journal of Applied
Ecology, 51(6):1554-1563.
1

transboundary mainland rivers, the Alexander Archipelago Island ecosystems, and the northern outer coast from Cape Spencer to Cape Suckling are the three distinct areas that produce salmon. The range of habitats and di?erences in run timing normally bu?ers against variability in marine and freshwater
3
conditions. These comments provide additional information for inclusion in the assessment in support of future decisionmaking about the need to revise the Forest Plan.

Because salmon are so critical to Southeast Alaska communities, preserving the salmon portfolio is of utmost importance as the Forest Service moves forward with the Forest Plan revision. Section I. of this comment letter describes Southeast Alaska's salmon economy. The socio-economic assessment could more fully capture the diverse regional ?sheries and how critical they are to each Southeast Alaska community. Section II. discusses the impacts of logging on salmon and emphasizes our longstanding concerns about the need for bigger bu?ers for riparian areas and identi?es barrier culverts as one of the most signi?cant threats to the region's salmon portfolio. Section III. discusses regional salmon productivity trends and both realized and projected climate change impacts for the region's salmon. While many runs are resilient, recent low ?uctuations for several species of forest ?sh are a concern and heighten the need to maintain intact habitat for client resilience.

The ensuing sections respond to other resources discussed in the assessments. Section IV. explains that many Southeast Alaska ?shermen are also hunters, and the assessment process would bene?t from additional discussion of Sitka black-tailed deer habitat needs and population trends. Section V. shows that conserving high biodiversity forests - both abundant large old-growth trees and trees that can soon reach large diameters - for their value as carbon reservoirs is by far one of the most cost-e?ective options for climate mitigation in part because of the high value of intact forests for the other ecosystem services they provide - biodiversity; scenic beauty; recreation; human health; ?sheries; indigenous cultural and traditional values; and enhanced resilience in a changing climate. Section VI. responds to the Designated Areas Assessment's discussion of estuaries and explains that those high value ecosystems are also carbon sinks and provide habitat features that are essential for salmon and virtually every marine ?sh species found in the region. The carbon storage capacity of Alaska's naturally functioning coastal forest and estuarine ecosystems is globally signi?cant because of their capacity to
4
o?set anthropogenic greenhouse gas emissions. Concluding sections discuss the cumulative impacts of industrial logging and the need for intact forests to provide for climate resilience.

Most of the information provided herein is also available in the Alaska Sustainable Fisheries Trust's annual SeaBank reports, which are available here: About SeaBank - Alaska Sustainable Fisheries Trust. We also are attaching our Petition for a Salmon Conservation Rulemaking that we submitted to the U.S. Secretary of Agriculture in 2020 which requested signi?cant Forest Plan changes related to management of Tongass salmon habitat. That document has additional discussion and reference materials relevant to the assessment process.

3
Bryant, M.D. 2009. Global climate change and potential effects on Paci ic salmonids in freshwater ecosystems of Alaska.
Climate Change, 95, p.169-193.
4
Vynne, C., Dovichin, E., Fresco, N., Dawson, N., Joshi, A., Law, B.E., Lertzman, K., Rupp, S., Schmiegelow, F. & Trammell, E.J.

2021. The importance of Alaska for climate stabilization, resilience, and biodiversity conservation. Frontiers in Forests and
Global Change, 4, p.121; DellaSala, D.A., Gorelik, S.R. & Walker, W.S. 2022. The Tongass National Forest, Southeast Alaska, USA:
A Natural Climate Solution of Global Signi?cance. Land, 11(5), p.717.
2

I. A more thorough discussion of Southeast Alaska's salmon economy would improve the
Socio-economic assessment

Both the socio-economic and non-commercial harvest assessments discuss the signi?cant contribution that ?sheries make to Southeast Alaska's socio-economic well-being. The assessments note the signi?cant contribution that "forest ?sh" - salmon - make to regional ?sheries since three-fourths [5] of the harvested salmon spawn and rear in forested watersheds. The Socioeconomic Assessment provides seafood processing employment data and income ?gures from one regional economic report [6] but omits the large number of commercial ?shing vessel businesses from the discussion. The non-commercial harvest assessment provides some research and data about commercial salmon ?shery [7] values from 2007-2016. Agency decisionmakers would bene?t from a more current and comprehensive assessment of Southeast Alaska's coastal community ?shery economy.

The non-commercial harvest assessment describes the economic, ecological and cultural value of [8] salmon to the economy, ecology and culture to Southeast Alaska as "immeasurable." It recognizes that the Tongass National Forest provides critical spawning and rearing habitat, and that changes in the [9] abundance and stability of salmon populations a?ect community well-being. Because of this signi?cance, assessment notes that maintenance of salmon streams and populations are identi?ed as a [10] major concern and focus by public, tribal representatives, and agencies.

The following discussion describes the current economic pro?le of Southeast Alaska's salmon economy. This information is also available in a recent National Marine Fisheries Service Environmental Impact Statement and the Alaska Sustainable Fisheries Trust's SeaBank reports. Recent runs and earnings from salmon ?sheries have varied considerably. The Gulf of Alaska marine heat waves occurring in 2014-2016 and 2018-2019 had a signi?cant impact on regional salmon ?sheries. 2020 was a year of poor salmon returns all over Southeast Alaska. However, Southeast Alaska has a diverse salmon portfolio, and the recent recovery of multiple runs has helped to boost harvests and ?shery values since then. Key points are as follows:

(1) Southeast Alaska is one the most important ?shing regions in the United States and the viability of its ?sheries depend on salmon;
(2) Alaska Natives have ?shed for salmon for ~10,000 years and continue to do so today;
(3) The Southeast Alaska salmon economy remains vital to local communities and the broader Paci?c Northwest and its portfolio of salmon resources remains resilient in a changing environment; and,
(4) Multiple studies indicate that in general, each dollar in a commercial ?shermen's earnings can generate $4 in additional economic impacts in local communities, or in some cases, throughout a broader multi-regional economy.

Doyon, T. 2024. Socioeconomic Assessment. Tongass National Forest Plan Revision. Forest Service, Alaska Region. December
2024; Noesser, E., R. Cross & G. Risdahl. 2024.
6
Id.; see Tables 10 & 11 (estimating current seafood processing jobs number and income).
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Noesser, E., R. Cross & G. Risdahl. 2024.
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Id.
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Id.
10
Id.

Southeast Alaska: a small boat commercial ?shing region of national signi?cance

Southeast Alaska is one of the most important ?shing regions in Alaska, with more full-time
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?shery workers than any region other than the Bering Sea. Juneau, Ketchikan, Petersburg and Sitka
12
are consistently among the top 40 ?shing ports in the U.S. based on landing volume and value. In any
13
given year, Craig, Haines, Wrangell and Yakutat may also be among the top 100 ?shing ports by value.
rd th th
Resident earnings are high-level: Petersburg (3 , $49 million), Sitka (4 , $41 million), Juneau (8 , $20
th
14
million) and Ketchikan (10 , $16 million) are four of the top 10 ?shing communities in Alaska.
The top competitive strength is the high quality of Southeast Alaska seafood products, which include
most of the Alaska harvest of high-value Chinook and coho salmon, Dungeness crab, spot shrimp,
15
geoducks and sea cucumbers. Small-boat ?shermen harvest these species with sustainable ?shing
gear types in small amounts or even one at a time and promptly process and chill them for rapid
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delivery to a local processor or freeze them at sea. Southeast Alaska's cold, pristine waters and diverse
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food web also contribute to the superior quality of its seafood. Over the past decade (2013-2022), the
18
region's average in?ation-adjusted, ex-vessel value (the amount paid to ?shermen) was $308 million.
A changing ocean environment, lower salmon harvests and the COVID-19 pandemic reduced ?shery
19
values in 2018 through 2020. The 2021 and 2022 seasons were considerably better, with stronger
salmon catches, combined with higher halibut prices and high Dungeness crab harvests. This increased
20
?shermen's earnings to $301.8 million - the most valuable catch since 2017. The $892 million
21
wholesale value generated by regional processors in 2022 was the highest on record.
Resident participation in Southeast Alaska ?sheries is high. Residents own 2,655 ?shing vessels - one-
22

third of Alaska's ?shing ?eet and more than any other region in the state. Most ?shing vessel owners participate in multiple ?sheries. The number of resident commercial ?shermen (vessel owners and

11
McKinley Research Group. 2022. The economic value of Alaska's seafood industry. January 2022. Available at: https://mckinleyresearch.com/project/economic-value-of-alaskas-seafood-industry-2022/.
12
United Fishermen of Alaska. 2021. 2020 commercial ?shing and seafood processing facts. Available at: http://www.ucida.org/wp-content/uploads/2021/01/2020-UFA-Fish-Facts.pdf; United Fishermen of Alaska. 2023. 2022
commercial ?shing and seafood processing facts. Available at: https://www.ufa?sh.org/?shing-facts/.
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Id.
14
McKinley Research Group. 2022.
15
Rain Coast Data. Southeast Alaska by the numbers 2023. Prepared for: Southeast Conference. Available at: https://www.seconference.org/wp-content/uploads/2023/09/SE-by-the-numbers-2023-Final.pdf.
16
Alaskans Own. Available at: https://alaskansown.com/pages/seafood-species; Seafood Producers Cooperative. Available at:
https://alaskagoldbrand.com/.
17
Id.
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Rain Coast Data. Southeast Alaska by the numbers 2021. Prepared for: Southeast Conference. Available at: https://www.seconference.org/wp-content/uploads/2021/09/SE-by-the-numbers-2021-
?nal.pdf?399dc1&399dc1.
19
Id.
20
Rain Coast Data. Southeast Alaska by the numbers 2023.
21
Id.
22
McKinley Research Group. 2022.

23
crew) peaked at 5,000 in 2014 and has since declined to roughly 4,400. Another 1,000 ?shermen from
24
out of state also work in Southeast Alaska ?sheries.

Fishermen's harvests support 41 shore-based processing facilities and 2,900 full-time- equivalent
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processing jobs. From 2014 to 2019, annual wholesale values ranged between $400 million and $600
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million. Fisheries also support 1,100 government and hatchery management jobs and signi?cant
27
employment in the transportation, marine and academic sectors. Economists estimate that direct and indirect economic output from Southeast Alaska seafood, including multiplier impacts, exceeds $800
28

million annually and accounts for 15 percent of regional employment.
For local and state governments, commercial ?sheries directly contribute substantial revenue
29
through landing taxes and ?sheries business taxes. Processors' business tax revenues go into Alaska's general fund, and the legislature then appropriates up to 50 percent of the revenue back into
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communities where processing occurred. Also, one-half of the landing tax is returned to municipalities
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based on landing location.
Fisheries are critical to nearly all of Southeast Alaska's 33 communities. Many of the more remote communities, such as Edna Bay, Meyers Chuck, Point Baker, Port Protection, Port Alexander and Pelican, are historical ?shing villages that rely almost exclusively on commercial ?shing, with some of
32
these communities recently developing economic activity from sport ?shing lodges. Prince of Wales Island has 202 active ?shing permit holders and 438 crew - roughly eight percent of the borough
33
population - who earn $20.4 million in ex-vessel revenue.
The Alaska Native villages of Hoonah, Klawock, Metlakatla and Yakutat also heavily rely on
34
commercial ?shing. Eight percent of the Hoonah/Angoon Borough population is active in commercial
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?shing. Residents own 156 boats and 234 permits, earning $5.3 million and generating jobs for a
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mostly local seafood processing work force. Yakutat is among the top 70 ports in the U.S. based on the
37
value of commercial seafood landings. Twenty percent of its population is active in commercial
38
?shing.

23
McDowell Group. 2020. The economic value of Alaska's seafood industry. Prepared for: Alaska Seafood Marketing Institute.
Available at: https://www.alaskaseafood.org/wp-content/uploads/McDowell-Group_ASMI-Economic-Impacts-Report-JAN-
2020.pdf.
24
Id.
25
McKinley Research Group. 2022.
26
Id.
27
McDowell Group. 2020.
28
Id.
29
Id.
30
United Fishermen of Alaska. 2021. Alaska Seafood Industry Taxes and Fees. Juneau, AK. Available at:
https://www.ufa?sh.org/wp-content/uploads/2015/02/4a-Alaska-Seafood-Industry-Taxes-Fees-021115-v1s.pdf.
31

Id.
32
2016 TLMP FEIS.
33
United Fishermen of Alaska. 2023.
34
2016 TLMP FEIS.
35
United Fishermen of Alaska. 2023.
36
Id.
37
Id.
38
Id.

In the region's three largest communities - Juneau, Ketchikan and Sitka - commercial ?shing is a primary private sector small business generator and employer. These communities have over 2,000
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permit holders and crew - and 1,475 ?shing boats. They have 17 processors which collectively employ
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nearly 2,700 workers earning over $50 million in wages. Sitka is Southeast Alaska's top seafood port
th
and ranks 16 in the U.S. by seafood volume and value, producing 73.4 million pounds of seafood worth
41 42
$53.5 million in 2021. Roughly 10 percent of Sitka residents are active commercial ?shermen.
The "mid-sized" Southeast Alaska communities of Haines, Petersburg and Wrangell are heavily
st
dependent on SeaBank ?shery resources. In 2021, Petersburg was the 21 ranked port by seafood
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volume and 33 by value in the U.S. It landed 44.3 million pounds of seafood worth $38.3 million.
Petersburg's active resident permit holders earned $66.5 million from local, Gulf of Alaska and Bristol Bay ?sheries in 2021, the third-highest ?shing earnings among Alaska communities and highest in
44
Southeast Alaska. Nearly one-quarter of Petersburg residents are active ?shermen. Wrangell and
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Haines both rank among the nation's top 100 ?shing ports in some years. The gillnet ?shery - mostly
46
in Lynn Canal - is the most important ?shery for the Haines ?eet. In these three communities, over 1,000 individual resident ?shermen, including crew, rely on a ?eet of roughly 700 vessels. The ?eet
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generated roughly $98 million in ?shing income in 2021. Seafood landed in these communities
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supported nearly 900 processing jobs, and created over $14 million in wages.
In 2021, economists from the University of Alaska's Institute of Social and Economic Research
49
produced an Alaska-speci?c economic analysis of ?shery economic outputs. The analysis revealed that Alaska resident seafood harvests, as well as harvests by non-resident ?shers who function as locals during the extended season, signi?cantly bene?t local economies through local expenditures on fuel,

groceries, vessel repair, and maintenance sectors and gear suppliers. This boosts the local economies,[50] with indirect employment and wage income that circulates. These ?shery economic multiplier e?ects on local economies are indispensable to a diverse range of businesses. Each dollar in resident ?shery earnings generates $1.54 in total community revenue and over seven jobs per $1 million dollars in[51] ?shery earnings. In other words, local earnings of over $231 million in 2022 generated $356 million in income within Southeast communities and 2,100 jobs.

39 Id.

40 Id.

41 Id.

42 Id.

43 Id.

44 Id.

45 United Fishermen of Alaska. 2021.

46 United Fishermen of Alaska. 2023.

47 Id.

48 Id.

49 Watson, B., M.N. Reimer, M. Guettabi & A. Haynie. 2021. Commercial Fishing and Local Economies. Institute of Social and Economic Research, University of Alaska Anchorage.

50 Id.

51 Id.

TABLE II.1: 2022 ALL FISHERY LANDINGS BY SOUTHEAST ALASKA RESIDENTS

Borough	Active Permits	Pounds	Ex-vessel value
Haines	80	6,295,000	$9,470,000
Hoonah	87	2,401,000	$5,138,000
Juneau	308	13,157,000	$25,047,000
Ketchikan	278	23,625,000	$24,664,000
Petersburg	604	44,561,000	$67,797,000
Prince of Wales	288	16,457,000	$19,453,000

Sitka 639 39,737,000 $60,874,000
Skagway 6 193,000 $317,000
Wrangell 204 10,006,000 $12,597,000
Yakutat 123 1,786,000 $6,090,000
All Alaska 2,617 158,218,000 $231,447,000

Southeast Alaska Salmon Economy and Culture

As explained in the following discussion, for all of the above communities, the salmon ?sheries
are the most important in terms of value and volume. ALFA's members come from Alaska's diverse
?shing cultures. Southeast Alaska is the historical territory of Haida and Tlingit people, who lived in
villages throughout the islands and mainland areas in Southeast Alaska and northern British
52
Columbia. Salmon (xaat in Tlingit) have been a major driver of the Southeast Alaska culture, economy
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and governance for thousands of years. Tlingit and Haida societies historically consisted of multiple
geographic units (known in Tlingit as kwáans) governed by independent clans which owned and
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managed lands and resources, particularly salmon streams. Each clan monitored salmon streams,
measuring escapements and developing abundance thresholds that informed the timing, location, and
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volume of harvest. Clans introduced salmon to previously unoccupied streams and developed late-fall
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chum runs. They also maintained productive stream habitats by removing blockages, such as
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landslides, fallen trees and beaver dams, managed predators, and enhanced salmon spawning beds.

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Schurr, T.G., Dulik, M.C., Owings, A.C., Zhadanov, S.I., Gaieski, J.B., Vilar, M.G., Ramos, J., Moss, M.B., Natkong, F. and
Genographic Consortium, 2012. Clan, language, and migration history has shaped genetic diversity in Haida and Tlingit
populations from Southeast Alaska. American journal of physical anthropology, 148(3), pp.422-435; Langdon, S.J., 2015.
Foregone harvests and neoliberal policies: Creating opportunities for rural, small-scale, community-based fisheries in southern
Alaskan coastal villages. Marine Policy, 61, pp.347-355.
53
Langdon, S., 2006. Traditional knowledge and harvesting of salmon by Huna and Hinyaa Tlingit. Anchorage: US Fish and
Wildlife Service, O?ce of Subsistence Management.
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Langdon, S.J., 2015; Carothers, C., Black, J., Langdon, S.J., Donkersloot, R., Ringer, D., Coleman, J., Gavenus, E.R., Justin, W.,
Williams, M., Christiansen, F. and Samuelson, J., 2021. Indigenous peoples and salmon stewardship: a critical relationship.
Ecology and Society, 26(1).
55
Id.
56

Carothers, C., et al. 2021; Langdon, S.J. 2015.
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Id.
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This management system sustained Southeast Alaska's large salmon runs for thousands of years. After the arrival of Euroamericans, Tlingit and Haida ?shermen combined participation in emerging Southeast Alaska commercial ?sheries with traditional subsistence ?sheries to meet their nutritional,
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economic, and cultural needs.
Many Southeast Alaskans continue to use historical ?shing locations for personal- and
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community-use food ?sheries. In many communities, including Angoon, Hydaburg, Hoonah, Kake and
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Yakutat, roughly one in every 10 residents participated in personal-use food ?sheries. Recent annual
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average harvests were 57,000 salmon. Sockeye has long been the most sought after species,
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comprising over 80 percent of the catch. Personal-use harvesters use 140 of Southeast Alaska's more
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than 200 sockeye salmon-producing systems. In 2016, over 2,000 Southeast Alaska ?shermen harvested salmon for personal and community food using subsistence permits issued by the Alaska
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Department of Fish and Game. Roughly 1,000 Haines and Sitka residents had the highest harvests,
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with 1,000 ?shermen catching over 20,000 sockeye.
Southeast Alaska salmon runs, sustained by centuries of tribal management, today support one in 10 jobs in Southeast Alaska, where commercial, sport and subsistence salmon ?sheries can produce $1
67
billion in economic outputs during a strong season. It is the region's most abundant and valuable harvested seafood species and comprises between 60 and 70 percent of the total seafood productivity in
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any year. There are ?ve commercial salmon ?sheries in the region: purse seine, drift gillnet, set
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gillnet, hand troll and power troll. They harvest all ?ve Paci?c salmon species. Since 1975, pink salmon have generated one-third of the harvest value; chum salmon and coho salmon have each
70
generated over 20 percent; and Chinook and sockeye salmon each 13 percent.
From 2011 to 2020, Southeast Alaska salmon ?shermen produced an average annual harvest of
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47.5 million salmon worth $127.6 million in ex-vessel value. In 2013, a record year for salmon catches by all gear types, decadal-peak harvests reached 95 million pinks, 12.3 million chum and 4 million

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Id.
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Id.
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Fall, J. A., Turek, M. & Naves, L. 2009, supra n. 113.
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Fall, J. A., Godduhn, A,, Halas, G., Hutchinson-Scarbrough, L., Jones, B., McDavid, B., Mikow, E., Sill, L.A., Wita, A. & Lemons,
T. 2019. Alaska Subsistence and Personal Use Salmon Fisheries 2016 Annual Report. Alaska Department of Fish and Game
Division of Subsistence Technical Paper No. 446, Anchorage, AK.
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Id.
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Fall, J. A., Turek, M. & Naves, L. 2009. Overview of amounts reasonably necessary for subsistence uses of salmon in Southeast Alaska. Division of Subsistence Special Publication No. BOF 2009-03, Anchorage, AK.
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Id.
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Fall, J. A., et al. 2019.
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Id.
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U.S. Forest Service. 2017. Tongass Salmon Fact Sheet. Alaska Region, R10-PR-40.
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McKinley Group. 2022; McDowell Group. 2020.
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Stern, C., Robbins, B. & Strong, D. 2021. CFEC Permit holdings and estimates of gross earnings in the Yakutat and Southeast
Alaska commercial salmon ?sheries, 1975-2020. CFEC Report Number 21-4N, December 2021 (Revised January 2022). Juneau,
AK.
70
Id.
71
Conrad, S. & Thynes, T. 2022. Overview of the 2021 Southeast Alaska and Yakutat commercial, personal use, and subsistence
salmon ?sheries. Alaska Department of Fish and Game, Fishery Management Report No. 22-05, Anchorage, AK.

72 73
coho. The catch of 112 million ?sh was a regional record and worth $228 million in ex-vessel value.
Since 2019, runs and earnings from salmon ?sheries have varied considerably, driven in large part by
74
pink salmon run sizes and chum salmon prices.
Over half of Southeast Alaska communities have active ?sh processors that rely heavily on
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salmon, which comprise roughly 70 percent of regional seafood production value. The ?rst wholesale
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value of salmon in 2022 was $602.8 million. Many smaller communities depend on salmon processing
77
with little opportunity to shift to another industry.
The year 2020 yielded poor salmon returns all over Southeast Alaska but salmon harvests
rebounded in 2021. The 2021 pink salmon harvest of 48.5 million ?sh was six times as high as the 2020
78
catch and aligned with the average odd-year harvest of 49 million ?sh during the 2010s. While the
2022 catch volume was lower due to a smaller number of pinks, high chum prices boosted the harvest

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value to the highest since 2017. The 2023 catch of 65.7 million salmon was the highest since 2013 and
st 80
the sixth-largest harvest of the 21 century.

72
Id.
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Id.
74
Id.
75
NMFS. 2024. Draft Environmental Impact Statement (DEIS) for the Issuance of an Incidental Take Statement under the
Endangered Species Act (ESA) for Salmon Fisheries in Southeast Alaska Subject to the Paci?c Salmon Treaty and Funding to the
State of Alaska to Implement the 2019 Paci?c Salmon Treaty Agreement. Juneau, AK 99802. January 2024.
76
Id. at 213.
77
Id. at 214-215.
78
Brenner, R.E., Donnellan, S.J. & Munro, A. eds. 2022. Run forecasts and harvest projections for 2022 Alaska ?sheries and
review of the 2021 season. Alaska Department of Fish and Game, Special Publication No. 22-11, Anchorage, AK.
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Alaska Department of Fish and Game. 2022 Salmon Harvest Summary press release. November 11, 2022. Available at:
https://www.adfg.alaska.gov/index.cfm?adfg=pressreleases.pr&release=2022_11_10#:~:text=The%202022%20commercial%2
0salmon%20?shery,harvest%20of%20233.8%20million%20?sh.
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Conrad, S. & Thynes, T. 2022.
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TABLE II.2: SOUTHEAST ALASKA SALMON HARVESTS AND VALUE (MILLIONS OF DOLLARS) 2020-2023

	Chinook	Sockeye	Coho	Pink	Chum	Total
Avg. Catch 2011-2020	271,468	1,074,723	2,393,262	33,811,239	10,008,115	47,532,032
Avg. Value 2017-2019	$13.2	$7.9	$17.6	$25.3	$64.7	$132.0
Avg. Price/lb 2017-2019	$6.76	$1.94	$1.67	40.33	$0.74	---
2020 Catch	200,277	373,458	1,102,285	7,969,459	4,656,485	14,301,964
Value	$13.5	$2.6	$12.2	$6.2	$15.7	$50.1
Price/lb.	$5.65	$1.29	$1.74	$0.22	$0.45	---
2021 Catch	216,338	1,117,597	1,505,569	48,212,277	6,988,703	58,040,484
Value	$15.2	$11.4	$17.9	$48.1	$39.6	$132.3
Price/lb.	$6.17	$1.80	$2.11	$0.36	$0.84	---
2022 Catch	257,103	1,161,359	1,240,499	17,557,187	9,382,534	29,598,682
Value	$16.2	$13.2	$13.0	$22.5	$79.2	$144.0
Price/lb.	$5.54	$1.98	$1.84	$0.34	$1.18	---
2023 Catch	184,083	882,188	1,519,610	47,645,891	15,508,87	65,737,799
Value	$12.7	$5.5	$11.8	$33.9	$53.2	$117.1
Price/lb.	$6.31	$1.09	$1.40	$0.23	$0.53	--

Local vessel owners predominate in Southeast Alaska's salmon ?sheries. In 2022, over 80
percent of nearly 1,000 active vessels in the troll and gillnet ?sheries were operated by Alaska
82
residents. They also harvested over 80 percent of the 40-million-pound catch from the two ?sheries,
83
earning $55 million - 85 percent of the value from the two ?sheries. Alaskans owned over one-half of
84
the 195 active seine permits and generated one-half the ?shery volume and value in 2022.
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Southeast Alaska salmon ?sheries bene?t the larger North American economy. In particular,
86
Washington State supplies many Alaska businesses and distributes salmon caught in Southeast Alaska.
Residents of Washington State are the most signi?cant ?shery participants from outside Alaska,

81
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Available at:
2021 Preliminary Alaska Commercial Harvest and Exvessel Values;
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83
Id.
84

Id.
85
NMFS. 2024. Draft Environmental Impact Statement (DEIS) for the Issuance of an Incidental Take Statement under the
Endangered Species Act (ESA) for Salmon Fisheries in Southeast Alaska Subject to the Paci?c Salmon Treaty and Funding to the
State of Alaska to Implement the 2019 Paci?c Salmon Treaty Agreement. Juneau, AK 99802. January 2024.
86
Id. at 217.

87
particularly the seine ?shery. Roughly a third of commercial salmon ?shing jobs and processing
88
workers are from outside of Alaska, mainly from Washington State.

Troll, Seine and Gillnet Salmon Fisheries

The troll ?eet is diverse, including hand trollers (who use hand-powered downriggers or ?shing rods), power trollers who sell iced ?sh to shore-based processing plants and tenders, and catcher-
89
processors (freezer boats which harvest ?sh and freeze them at sea). The troll ?eet operates in every Southeast Alaska community and comprise the region's largest and most widely distributed ?shing
90
?eet. They are an economic pillar in rural ?shing communities where residents rely on trolling as the primary or only income source and in larger communities with more diverse economies such as Sitka, where there is a large troll ?eet of 184 active ?shermen who harvested 5.6 million pounds of salmon
91
worth $12.6 million in 2022.
Trollers harvest mostly Chinook and coho salmon - roughly two-thirds of the regional harvest of
92
both species. Since 1975, coho and Chinook salmon have comprised 51.4 percent and 43 percent of troll
93
harvest value, respectively. In recent years, trollers have devoted signi?cant e?ort to harvesting
94
chum, averaging 450,000 per year during the 2010s. The outer coast areas o?shore of Sitka and Craig
95
typically comprise roughly two-thirds of the troll ?shery value each year. Sitka has the largest troll ?eet, with 184 active permit holders harvesting 5.6 million pounds of salmon worth $12.6 million in
96
2022.
Troll Chinook harvests since the early 2010s have been much lower than in the past. The main reasons are declines in Alaska stocks and new restrictions under the Paci?c Salmon Treaty limiting
97
harvests of stocks from the Paci?c Northwest which transit Southeast Alaska waters. Alaska Department of Fish and Game regulations intended to protect Southeast Alaska transboundary river stocks have limited both the areas and the seasons for spring and winter troll ?sheries, reducing
98
harvests and e?ort.

87

Alaska Commercial Fisheries Entry Commission. 2023. Southeast Alaska Salmon Permit & Fishing Activity by Year, State,
Census Area, or City, 2022. Available at: https://www.cfec.state.ak.us/?shery_statistics/earnings.htm
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NMFS. 2024.
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Hagerman, G., Vaughn, M. & Priest, J. 2021. Annual management report for the 2020 Southeast Alaska/Yakutat salmon troll
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Year, State, Census Area, or City, 2022. Available at: https://www.cfec.state.ak.us/?shery_statistics/earnings.htm
92
Id.
93
Stern, C., Robbins, B. & Strong, D. 2021.
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96
Id.
97
Hagerman, G., Vaughn, M. & Priest, J. 2021.
98
Id.

99
Most troll-caught coho originate in Southeast Alaska watersheds. The long term (1989-2019)
100
troll coho harvest average is 1.7 million ?sh. The 1990s had high harvests, averaging 3.2 million coho,
101
and included a record of 5.5 million ?sh in 1994. The highest recent harvest was 2.1 million in 2017,
but trollers harvested less than 1 million coho per year from 2018-2020, with a 750,000-?sh catch in
102 103
2020 being the lowest since 1988. Power trollers now account for nearly all of the troll harvest.
104
Roughly 85 percent of these vessels are local to Southeast Alaska. Between 2011 and 2020 an average
105
of 715 power trollers ?shed each year.
106
TABLE II.3: SOUTHEAST ALASKA POWER TROLL ECONOMY

Year	Million pounds	Ex-Vessel Value	Active Permits	Local Value	Local Active Permits
2011-2020	16.2	$33.3	715	$28.5	599

2020	7.9	$23.4	629	$20.5	537
2021	11.7	$30.6	629	$26.6	529
2022	15.4	$34.2	609	$26.3	511

The troll ?shery is essential for Southeast Alaska Tlingit and Haidas, who have ?shed for salmon[107] for thousands of years, and continue to do so. They trolled for Chinook salmon long before contact[108] [109] with Europeans. Many now depend on it for their livelihood and have for multiple generations. Tribal members comprise nearly a third of the troll ?eet and also hold roughly twenty percent of the[110] region's purse seine and drift gillnet permits. These ?shermen provide food, employment, and income for many people and support traditional communities that also depend on ?shing revenues to support[111] schools and maintain basic infrastructure.

Purse seine ?sheries, typically conducted by 50- to 58-foot vessels, occur throughout Southeast[112] Alaska south of Cape Spencer. Seiners mostly harvest pink and chum salmon, and catch over 70[113] percent of the total Southeast Alaska salmon ?shery volume each year. In general, ?shing districts near Ketchikan and Prince of Wales Island garner one-half to two-thirds of the ?shery value each

[99] Id.

[100] Id.

[101] Id.

[102] Id.

[103] Id.

[104] Stern, C., Robbins, B. & Strong, D. 201.

[105] Conrad, S. & Thynes, T. 2022.

[106] Id., Stern, C., Robbins, B. & Strong, D. 2021; Alaska Commercial Fisheries Entry Commission. 2023.

[107] NMFS. 2024. Draft Environmental Impact Statement (DEIS) for the Issuance of an Incidental Take Statement under the Endangered Species Act (ESA) for Salmon Fisheries in Southeast Alaska Subject to the Paci?c Salmon Treaty and Funding to the State of Alaska to Implement the 2019 Paci?c Salmon Treaty Agreement. Juneau, AK 99802. January 2024.

[108] Id.

[109] Id.

[110] Id. at 210.

[111] Id. at 209-210.

112
Langdon, S.J. 2015.
113
Thynes, T., Bednarski, J.A., Conrad, S.K., Dupuis, A.W., Harris, D.K., Meredith, B.L., Piston, A.W., Salomone, P.G. & Zeiser,
N.L. 2021. Annual management report of the 2020 Southeast Alaska commercial purse seine and drift gillnet ?sheries. Alaska
Department of Fish and Game, Fishery Management Report No. 21-30, Anchorage, AK.
12

114
year. Petersburg has the highest level of engagement in the seine ?shery, with 40 or more permit
115
holders ?shing each year. In 2021, Petersburg seiners caught over 30 million pounds of salmon worth
116
$17.0 million - twice as much as any other Southeast Alaska community. Most of the non-Alaska permit holders are from Washington State, who account for over one-third of the e?ort, catch volume
117
and value.
From 1975 to 2020, the purse seine ?shery's harvest value was roughly 61 percent from pinks
118
and 24 percent from chums. Due in large part to declining pink salmon runs, the 2020 seine ?shery
119
value was the lowest since 1975. Pink runs rebounded in 2021, with seiners catching 44.5 million
120 121
pinks out of the total 48.5-million-?sh harvest. In 2023, 204 seiners ?shed, and harvests were exceptional in areas near Ketchikan and Craig, where seiners caught 29.5 million pinks and 3 million
122
chum.
123
TABLE II.4: SOUTHEAST ALASKA SEINE ECONOMY

	Million pounds	Ex-Vessel Value	Active Permits	Local Value	Local Active Permits
2011-2020	144.2	$73.5	252	$42.0	132
2020	39.2	$18.3	201	$9.5	119
2021	146.0	$88.1	208	$48.1	120
2022	85.0	$69.5	195	$38.6	112

Among gillnetters, Southeast Alaskans own 330 of the active vessels and permits - over three-
124 125
fourths of the ?eet. Most of the vessels are between 32 and 40 feet in length. Gillnetters harvest a
126
mix of all ?ve salmon species and averaged nearly 5 million ?sh per year during the 2010s. Since 1975, sockeye salmon and chum salmon have comprised 32.7 percent and 41.7 percent of the gillnet
127
?shery harvest value, respectively. Chum salmon have become increasingly important in recent years,
128
comprising two-thirds of the gillnet ?shery value in 2021.

114
Id.

115
 Alaska Commercial Fisheries Entry Commission. 2023.
116
 Id.
117
 Id.
118
 Stern, C., Robbins, B. & Strong, D. 2021.
119
 Id.
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 Brenner, R.E., Donnellan, S.J. & Munro, A. 2022; Alaska Department of Fish and Game. 2023. Southeast Alaska Purse Seine
Fishery Announcement August 30, 2023.
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 Alaska Department of Fish and Game. 2023. Southeast Alaska Purse Seine Fishery Announcement August 30, 2023.
122
 Id.
123
 Conrad, S. & Thynes, T. 2022Stern, C., Robbins, B. & Strong, D. 2021; Alaska Commercial Fisheries Entry Commission. 2023.
124
 Id.
125
 Stern, C., Robbins, B. & Strong, D. 2021.
126
 Thynes, T., et al. 2021.
127
 Stern, C., Robbins, B. & Strong, D. 2021.
128
 Thynes, T., Bednarski, J.A., Conrad, S.K., Dupuis, A.W., Harris, D.K., Meredith, B.L., Piston, A.W., Salomone, P.G. & Zeiser, N.L.
2022. Annual management report of the 2021 Southeast Alaska commercial purse seine and drift gillnet isheries. Alaska
Department of Fish and Game, Fishery Management Report No. 22-25, Anchorage, AK.
 13

There are ?ve drift gillnet ?shing areas: Tree Point south of Ketchikan near the British Columbia border; the north Prince of Wales Island in Sumner Strait and Clarence Strait; the Stikine River gillnet ?shery near Petersburg and Wrangell; the Taku River/Port Snettisham gillnet ?shery south of Juneau;
129
and the Lynn Canal gillnet ?shery near Haines. This ?shery's most productive areas over the past decade are Lynn Canal and Taku River/Port Snettisham, particularly for sockeye and chum and often
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comprise over one-half the yearly gillnet ?shery value. In 2023 the two areas produced 76 percent of
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the gillnet sockeye harvest and 65 percent of the chum. The Sumner Strait ?shery produces the most
132
diverse mix of sockeye, coho, pinks and chum.
133

TABLE II.5: SEABANK GILLNET HARVESTS BY AREA

Area	Avg. Sockeye Harvest 2011-2020	Sockeye Harvest 2023	Avg. Coho Harvest 2011-2020	Coho Harvest 2023	Avg. Chum Harvest 2011-2020	Chum Harvest 2023
Tree Point	41,265	23,299	59,160	22,210	432,520	418,380
Sumner	63,312	42,300	118,590	42,300	149,300	179,200
Stikine	23,630	5,900	21,990	20,900	135,320	105,300
Taku	127,720	79,700	30,820	20,500	493,630	622,600
Lynn Canal	137,880	160,000	37,780	25,600	1,137,710	1,391,200

There is also a Yakutat setnet ?shery targeting sockeye and coho salmon, mostly bound for the
134
Situk River, which comprises nearly all of the ?shery's value. Between 90 and 120 permit holders ?sh
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each year, and roughly 70 percent of the permit holders live in Southeast Alaska.
During the 2010s, Alaska typically issued 474 drift gillnet permits each year and 80 to 90 percent
136
of the permit holders actively ?shed. Most communities have a signi?cant gillnet ?eet. The largest
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active gillnet ?eets are from Juneau and Yakutat, with over 60 active permit holders. There also are
138
roughly 50 active gillnetters operating out of Haines, Petersburg and Wrangell.

129
Thynes, T., et al. 2021.
130
Id.; Brees, J. & Crittenden, W. 2023. Section 1-B Drift Gillnet Post Season Review. Available at: https://www.adfg.alaska.gov/static/?shing/PDFs/commercial/southeast/meetings/gillnet/2023_d15_gillnet_review.pdf.
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Id.
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Fisheries 2023 Postseason Report. Available at:
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Vinzant, R. 2023. District 11 Drift Gillnet Fishery Taku Inlet, Stephens Passage and Port Snettisham 2023 Management
Summary. Available at:
https://www.adfg.alaska.gov/static/?shing/PDFs/commercial/southeast/meetings/gillnet/2023_d15_gillnet_review.pdf;
Zeiser, N. 2023. District 15 (Lynn Canal) Drift Gillnet Fishery 2023 Postseason Summary. Available at:
https://www.adfg.alaska.gov/static/?shing/PDFs/commercial/southeast/meetings/gillnet/2023_d11_gillnet_review.pdf.
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Ho?man, R.A. & Christian, H.L. 2021. Annual Management Report for the 2020 Yakutat commercial set

gillnet salmon
?sheries. Alaska Department of Fish and Game, Fishery Management Report No. 21-09, Anchorage, AK.
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Stern, C., Robbins, B. & Strong, D. 2021.
136
Stern, C., Robbins, B. & Strong, D. 2021.
137
Alaska Commercial Fisheries Entry Commission. 2023.
138
Id.
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TABLE II.6: SEABANK GILLNET HARVESTS AND VALUE (INCLUDES YAKUTAT)

	Million Pounds	Ex-Vessel Value	Active Permits	Local Value	Local Active Permits
2011-2020	37.4	$29.4	532	$24.5	413
2020	13.5	$9.0	460	$7.1	367
2021	17.1	$20.4	465	$16.2	359
2022	25.0	$30.2	375	$25.4	312

II. Double Jeopardy: Industrial Scale Logging and Climate Change risks for salmon

Federal land management that allows for industrial scale logging has reduced the value of the salmon economy (discussed in the preceding section) from what it could be. Forest Plan Standards direct the agency to maintain habitats for ?sh, prevent adverse e?ects to rearing and spawning habitat
140
and maintain features that regulate stream temperatures. The assessments recognize that riparian forests are essential for water quality and key habitat features such as temperature regulation, but fail
141
to fully recognize the extent to which these standards are not being met. ALFA submits that current Forest Plan provisions are not adequate to protect salmon habitat in light of the cumulative impacts of climate change and industrial logging. For example, the existing Forest Plan applies only a 100-foot no-cut bu?er only along Class I streams known to support salmon and Class II streams that ?ow directly
142 143
into a Class I stream. Other stream bu?ers are discretionary. Southeast Alaska's salmon have opportunities for resilience to climate change but will need more protective riparian bu?ers. ALFA submits that the assessments should more fully detail land management risks to salmon so that larger bu?ers, such as the 300-foot bu?ers for salmon streams and 150 foot bu?ers for headwaters streams
144
used on federal lands elsewhere in the Paci?c Northwest, are considered during the revision process. The Forest Service built most of the roads to bene?t the timber industry, frequently in ?sh
145
habitat. The timber industry never restored damaged areas, and the Forest Service has allowed timber companies to externalize these costs by forcing taxpayers to fund the habitat mitigation program, and Southeast Alaska commercial, sport and food ?shermen to absorb lower harvests when funding has been insu?cient to mitigate logging-caused habitat harms. Prince of Wales Island - the

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Stern, C, Robbins, B. & Strong, D. 2021.
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Forest Plan Standard RIP2 II.E; Noesser, E., R. Cross & G. Risdahl. 2024.
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See Reeves, G.H., D.H. Olson, S.M. Wondzell, P.A. Bisson, S. Gordon, S.A. Miller, J.W. Long & M.J. Furness. Chapter 7: The
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Stine, P.A., Gravenmier, R.A., Long, J.W. and Matthew, J., 2018. Volume 3-Synthesis of science to inform land management
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region's most important salmon producing ecosystem - has a higher road density than anywhere else on
146
the Tongass. The assessment recognizes that roads are major sources of sediment inputs into streams
147
and are initiation points for landslides that deposit in a valley ?oor stream.
In many cases, the agency can no longer a?ord to mitigate habitat harms from outdated
infrastructure, despite intentions to maintain infrastructure in ways that respond to ecological,
148
economic and social concerns. The assessments recognize that barrier culverts or other road
149
crossings impede ?sh passage by blocking or degrading their upstream or downstream movements. It
has long been known that the most e?cient use of limited agency restoration resources is culvert
150
replacements. Although the Forest Plan directs the agency to protect watersheds from road e?ects
and the Forest Service has done some replacements, failed culverts are prevalent throughout the road
151
system.
The assessments indicate that there are roughly 5,000 miles of forest roads with roughly 14,000
152
stream crossings in ?sh habitat. The Forest Service has surveyed 3,800 of these crossings in ?sh
habitat and found that nearly a third of them partially or fully obstruct ?sh passage because of debris,
153
failed culverts or other problems. Over the past quarter century, the Forest Service has addressed a
154
fraction of these ?sh passage barriers. Most of the work occurred between 1998 and 2006 when the
Forest Service had a speci?c program and ?xed roughly 50 sites per year before cancelling the program
155

due to funding reductions. Mitigation work since slowed even more, with an overall repair rate of 41
156
?sh passage barriers per year since 1998 that has dropped to 25 stream crossings per year since 2017.
157
There are currently 1,200 barrier culverts on the Tongass. Funding is currently inadequate and
158
decreasing while repair costs are on the rise.
This situation is unacceptable, particularly since the existing Forest Plan continues to authorize
logging, adding to the deferred maintenance backlog. At one time, the Paci?c Northwest supported the
159
largest salmon runs and ?sheries in the world. But habitat loss has been a major factor in the decline

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Id.
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commercial Paci?c salmon ?sheries. North American Journal of Fisheries Management, 39(6), pp.1119-1131.

160
of Paci?c salmon populations at the southern end of their range. Degradations of freshwater spawning and rearing habitat by industrial logging and timber road construction, past and present, are
161
signi?cant contributors to these run failures and reduced salmon abundance and diversity. Salmon that remain in heavily-logged watersheds for extended portions of their lifecycle are vulnerable to
162
signi?cant losses in productivity. Habitat destruction has necessitated billions of dollars of expenditures in the Paci?c Northwest on hatcheries and restoration actions to maintain salmon and
163
salmon ?sheries. Intact, functioning forested ecosystems previously provided ecosystem services needed for ?sh, such as clean water, at no cost.

Southeast Alaska remains one of the largest remaining productive salmon systems in the world,
164
in large part because there are still hundreds of pristine watersheds. The Tongass National Forest is
165
still by far the leading producer of wild salmon of any national forest. Although these salmon still support viable ?sheries, Forest Service researchers acknowledge that the same threats responsible for
166
reducing salmon populations in the Paci?c Northwest are present in the Tongass. During the initial phase of industrial logging in the Paci?c Northwest, impacts targeted the most productive watersheds
167
because the most valuable timber grew in riparian zones. Until the 1970s, no riparian bu?ers were required along anadromous streams, and riparian forest loss continued afterward because of prevalent
168
selective cutting within the bu?ers or clearcutting upslope of bu?er boundaries. The loss of habitat
th
was - and still is - signi?cant; by the end of the 20 century, industrial-scale logging had impacted
169
nearly one-half of the stream-miles of salmon habitat, to varying degrees. It is likely that the most
170
heavily impacted watersheds have been producing fewer salmon, but the extent of lost population
171
productivity remains unknown.

Scientists identify logging and timber roads, along with climate change, as the greatest risks to
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salmon habitat. The changing productivity of the marine environment increases the importance of
173
freshwater habitat. A major concern is the "double jeopardy" - that high levels of habitat degradation caused by logging and timber roads will coincide with periods of low marine productivity, which climate

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Id.
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change is making more frequent and severe. Although intensively- logged watersheds have some value
175
for fish during times of high marine productivity, during times when low marine productivity and
176
freshwater habitat degradation coincide, there may be long-term harm to salmon populations.
Avoiding further impacts from logging and timber roads will be important to maintaining a
salmon population portfolio in a changing climate. More severe climatic events such as atmospheric
rivers, summer droughts and winter snow droughts, and elevated stream temperatures are long-term
177
hazards to salmon productivity. Logging alone can cause stream temperature threshold exceedances
178
which will more frequently rise to lethal levels in a warming climate. Riparian vegetation is critical
179
for temperature regulation during summer solar radiation peaks. The shade is particularly important
for small forested streams where riparian vegetation is dense and maintains relatively cool and stable
180 181
water temperatures. Logging can increase temperatures in these streams by as much as 18° F.
The increasing frequency of landslides, a result of climate change, further threatens ?sh

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habitat. Landslides cause egg and embryo mortality by scouring spawning habitat and depositing
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sediments along downstream stretches. The scouring and deposition can depress spawning success
and impair winter survival for some salmon species such as coho that rear in-stream, with potential
184
long-term population harm. Logging and roads intensify these risks by reducing the watershed
185
regulating service of natural forests that mitigates severe weather events.
Even without considering climate change, clearcutting and timber road construction in salmon
habitat reduces productivity in numerous ways. This is widely recognized as a principal cause of
186
declining salmon runs in the Paci?c Northwest. In general, watersheds that are roadless or have a low
road density are two to three times as likely to support more abundant and diverse salmon populations
than watersheds with high road densities. This is because timber roads and clearcutting commonly
increase sedimentation, degrade water quality, fragment habitat and increase high-temperature
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events.

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aquatic communities. Conservation Biology, 14(1), pp.18-30.
18

Roads are a primary cause of accelerated, chronic sediment production that degrades salmon
188 189
spawning and rearing habitat. It is nearly impossible to mitigate this impact. Large volumes of
sediment from road surfaces, ditches and cut and ?ll surfaces traverse streamside riparian zones and
190
enter streams from multiple locations within a watershed. Tongass National Forest timber sales
environmental impact statements identify sedimentation as a chronic impact on ?sh habitat on islands
throughout Southeast Alaska that are heavily impacted by clearcutting and high road densities. Intact
riparian vegetation can capture and store some sediment, but once an area is disturbed by roads or
191
logging, most of the sediment passes through to stream channels. In river valleys, roads often run
parallel to salmon streams, replacing riparian forests and permanently altering ecosystem
192
productivity.
These and other adverse impacts to salmon are likely even when measures are in place to
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mitigate habitat harms. Significant habitat degradation occurs even with forested buffers on known
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anadromous streams. But many anadromous streams remain uncatalogued. In Southeast Alaska the
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buffers are narrow and tend to blow down, losing their effectiveness over time. Buffer requirements
196
are minimal for most landowners and most stream sizes. Even where buffers remain intact, they
provide little protection against landslides caused by upslope logging or against road-caused sediment
197
delivery. Because no buffers are required along smaller, non-anadromous headwaters streams, logging
adjacent to these steep stream segments is a big source of sediment, which degrades water quality far
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downstream. Because logging and road construction cause high stream temperatures in various ways,
buffers alone do not prevent temperature increases. Some studies found stream temperatures to be up
199
to 7 to 11° F warmer in logged areas. These warmer temperatures alter fish behavior and the timing

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of lifecycle events and can cause population declines or even collapses.
Because of these impacts, preventing further development in salmon habitats is the most cost-
201
e?ective way to improve ecosystem productivity for salmon. The second most e?ective measure is to
202
remove failed ("barrier" or "red") culverts. When less habitat is accessible to salmon for spawning,
rearing and other lifecycle needs, there can be a signi?cant loss of population productivity, to the point
203
of local extirpations.

The Forest Service currently is not allocating the funds necessary to maintain or decommission
roads on the Tongass, and instead plans for adverse e?ects to ?sh and water quality to continue and
204
worsen as older roads and stream crossings deteriorate. Culverts are the most common method used
205
by road builders to cross streams. They cost less than bridges but it is di?cult to maintain ?sh
passage with culverts because stream and debris ?ows change constantly, so they eventually impede
206
?sh passage or become complete barriers to ?sh movements. Culverts can also become barriers by
207 208
creating high-velocity stream ?ows. Floods magnify this impact. Over?ow that bypasses barrier
209
culverts also increases sedimentation and stream temperatures.
The risks to salmon populations go far beyond the obvious problem of spawning habitat being
210
degraded or lost. Salmon require habitat connectivity. In addition to the marine lifecycle migrations
of salmon, juvenile salmon will move within a watershed to rearing or overwintering habitat or explore
211
other habitats in pursuit of food. They also move to seek refuge from adverse environmental
212
conditions such as ?oods or debris ?ows from landslides. Coho salmon in particular use all stream
tributaries in all seasons, particularly in the fall when they move upstream in large numbers from main
213
channels and during their outmigration in the spring. Barrier culverts (often throughout a watershed)
block those movements, cumulatively reducing population productivity by impairing foraging

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Id.; Price, D.M. et al. 2010.
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Riley, C. 2003.

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opportunities that slow growth and development and by blocking access to refugia.
Barrier culverts and other stream crossings that impair ?sh habitat are prevalent throughout
Southeast Alaska. The cumulative impacts of road networks and multiple stream crossings commonly
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cause or threaten major adverse e?ects to ?sh habitat. Roughly two decades ago the Alaska
Department of Fish and Game surveyed 60 percent of the Forest Service's roads to assess ?sh passage
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problems in the region. Permanent roads crossed salmon streams more than 920 times and smaller
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streams more than 1,700 times. Only one-third of the stream crossings provided adult and juvenile
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?sh passage.
Another review of ?ve major salmon systems surveyed in heavily-logged portions of northeast
Chichagof Island during the late 1990s found some degree of blockage by 35 of 38 culverts, resulting in
219
a loss of over one-third of the high- and moderate-quality upstream salmon habitat. Many were
obvious barriers, veri?ed by the relative absence of upstream salmon - altogether, there were seven
220
times as many juvenile salmon downstream from the barrier culverts as there were upstream.
The loss and degradation of anadromous ?sh habitat is not an abstract matter - it is a gross,
region-wide loss of vital ecosystem services that support salmon ?sheries. Canadian researchers
developed methods to estimate the loss of salmon-related economic values caused by logging and
associated road construction. A conservative estimate is that each salmon spawning-stream-mile is
worth $10,000 per year. This means that barrier culverts in the Tongass National Forest alone (not
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counting non-federal forests in the region) cost commercial ?shermen $2.7 million annually.
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Removing barrier culverts is a primary means of restoring salmon populations. It improves

?sh passage, immediately increases the amount of available habitat, increases juvenile ?sh abundance
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upstream from the barrier and has higher certainty of e?ectiveness than other restoration actions.
Scientists recommend land managers of forested areas to focus on projects like barrier culvert removals
that, especially with climate change in mind, improve low-?ow passage and moderate stream
224
temperatures. A 2019 study found a tripling of coho smolt abundance shortly after culvert
225
replacement, and that results of other stream restoration measures were modest or undetectable.

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Increased logging by non-federal landowners on Prince of Wales Island is a signi?cant immediate
226
risk to salmon. Prince of Wales Island is the most important island ecosystem in Southeast Alaska for

commercial ?sh production, on the basis of sockeye habitat, numbers of stream-miles for coho and pink salmon and the number of Alaska Department of Fish and Game "Primary Salmon Producer"
227
watersheds. The island's watersheds have been one of the most important parts of Southeast Alaska's salmon system and primary producers of wild salmon stocks that support sport, subsistence, seine,
228
gillnet and troll ?sheries.

Another signi?cant concern is that Forest Service second-growth timber targets will negatively a?ect southern Southeast Alaska watersheds that are currently in recovery from past clearcutting.
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Forested aquatic ecosystems take decades to recover after logging. The Forest Service's second-growth logging program would once again degrade previously-logged watersheds, committing them to a succession of short timber rotation cycles. Scientists explain that "[f]ew refuges remain in a watershed
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that ?sh can use during such widespread, intense, and recurrent disturbances." Frequent cutting on a
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landscape scale prevents reestablishment of aquatic system stability provided by maturing forests.

III. Status of Southeast Alaska salmon populations

Two assessments describe the status of Southeast Alaska salmon and their habitats. The Non-Commercial Harvest Draft Resource Assessment identi?es most salmon populations as stable and
232
healthy, but acknowledges that stock productivity ?uctuates across the region and from year to year. The assessments suggest that past logging and timber road construction has damaged some ?sh habitat in some areas in the past and in some areas, but assert that overall these impacts are small and
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isolated. According to the watershed condition assessment, current declines in habitat conditions are
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associated with land exchanges and mining. While ALFA agrees that there are many healthy salmon populations due to the amount of intact habitat, past and ongoing logging and road impacts are likely reducing salmon population productivity to a much higher degree than acknowledged. Climate change also presents signi?cant risks to salmon. The assessments would bene?t from a more thorough analysis of salmon population trends and factors that a?ect their productivity.

Most regional watersheds produce multiple salmon species. Each salmon species has a unique life
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history and habitat needs, and is vulnerable to species-speci?c threats. Pink and chum rear in the
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marine environment while coho, chinook and sockeye rear in lakes or rivers. Pink and chum salmon

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spawn ?rst, beginning in early July. Adult coho return to the outer coast during the summer and
238 239
spawn throughout the fall. Sockeye and Chinook return to spawn in late spring/early summer.
The region's major mainland rivers - the Alsek, Chilkat, Stikine, Taku and Unuk - produce all ?ve
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salmon species and run sizes (escapement and harvests) can exceed over one million ?sh per year.
Some of the most economically-valuable salmon species - coho and sockeye salmon - comprise the
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largest numbers of ?sh spawning in these rivers. The two most prevalent species spawning in
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Tongass National Forest island ecosystems are coho and pink salmon. Overall, the Tongass National Forest is the breeding source of 95% or more of Southeast Alaska's pink salmon harvest and roughly
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two-thirds of the coho harvest.
The most common metric used for the health of salmon stocks is escapement, or the number of
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salmon that survive and return to freshwater to spawn. Fishery performance is a measure of salmon
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abundance. Escapement goals, which re?ect the number of spawning salmon needed to provide a
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salmon population that can support a sustainable ?shery. None of the assessments fully captured current resource ?uctuations - many of which support the hypothesis that industrial logging - whether past or present, may be contributing to lower productivity. The following discussions covers the three "forest ?sh" species most vulnerable to logging due to their prevalence on southern Southeast Alaska island ecosystems where timber industry impacts have been highest.
247
Pink salmon are the most abundant of the ?ve salmon species and the smallest in size. Nearly all the pink salmon in Southeast Alaska are wild. There are over 6,000 pink salmon populations that
248
utilize the lower reaches of over 3,000 streams for spawning. Prince of Wales Island has the most
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pink salmon spawning habitat in the region.
Because pink salmon have a ?xed, 2-year life cycle they also comprise reproductively isolated

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and distinct odd- and even-year runs. Even-year cycles of pink salmon runs have historically been
251
much lower than odd years, and odd-year productivity is spread more uniformly across the region.

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Id.
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Id.
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Id.
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Id.
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Halupka, K.C. 2000.
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Id.
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Albert, D. & Schoen, J. 2007.
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Halupka, K.C. 2000.
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Thynes, T. et al. 2021.

Northern and southern Southeast Alaska pink salmon populations have distinctly di?erent life
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histories, using di?erent migratory pathways, and do not intermingle. For the even-year runs, the southern Southeast area provides most of the region's pink salmon harvest - in some years as much as 90 percent of the harvest, with regulatory districts near Prince of Wales Island and Ketchikan being top
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producers.

Pink salmon marine survival estimates are based on a long time-series of data from Auke Creek
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near Juneau. On average just over 11 percent survive to return, but this can range from just over one
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percent to nearly 50 percent. Factors that in?uence marine survival include migration timing, ?shery
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e?ort and timing, predation, growth rates, genetic variation and stream conditions. Signi?cant
warming trends in Auke Creek are causing earlier out-migrations with juveniles entering the marine
257
environment earlier and adults returning earlier to spawn.
Pink salmon returns declined signi?cantly throughout the region during the late 2010s. The 2016
return of 18 million ?sh (which was a federally-declared ?shery disaster) parented a 2018 run in which
258
only 8 million ?sh were harvested - the lowest since 1976. The poor 2018 parent year and the
resulting near record-low juvenile pink salmon abundance estimates in 2019 led to another poor return
259
in 2020, with another harvest of only 8 million ?sh. Drought conditions and marine heat waves are
260
likely causes of the population decline. The 2019 pink harvest of 21.1 million ?sh was the lowest odd-
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year harvest in over three decades. Northern Southeast Alaska runs declined the most from 2016 to
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2020, with escapements falling well below targets for most surveyed stocks.
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Pink salmon runs have since rebounded, implying better freshwater and early marine survival.
The 2021 regionwide harvest of 48.5 million pink salmon, from 2019 juveniles, vastly exceeded recent
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harvests. The 2023 harvest was nearly 48 million ?sh and well over the preseason forecast of 19
265 266
million pinks. There may have been exceptional marine conditions for pink salmon in 2023. Runs

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forecast. November 17, 2023.
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Id.

were large throughout the species range, including Washington State, British Columbia and Russia with [267] record returns in some areas. Southeast Alaska returns were the third- highest escapement since [268] [269] 1960, meeting goals throughout the region. Even-year harvests are also improving. The 18.3- [270] million-harvest in 2022 was the largest even-year harvest since 2014. However, there were poor escapements in northern Southeast Alaska in 2022 and juvenile pink salmon sampled in 2023 were [271] below average in physical condition, indicating continuing concern for recovery of these runs.

Coho salmon

The assessments acknowledge that coho most frequently encounter habitat stressors from [272] logging. Coho spawn and rear in a variety of freshwater ecosystems for at least a year before [273] migrating to the marine environment. The availability of rearing habitat in small streams, ponds, lakes and o?-channel areas is a key factor in the viability of coho populations and they are highly [274] vulnerable to changes in freshwater habitat. After rearing, coho typically spend 16 months in the

marine environment before returning to Southeast Alaska's outer coast during the summer and entering [275]
streams to spawn in the fall. Like many Alaska salmon species, coho sizes are diminishing and they [276]
are shortening their marine life cycle and spawning at younger ages.

Southeast Alaska's cohos emanate from 4,000 streams, large transboundary mainland rivers and [277] [278]
13 hatcheries. Mainland rivers provide over 3,000 miles of coho freshwater habitat. Most of the
2,300 stocks are small populations of less than 1,000 spawners that utilize small to medium stream [279]
systems; they support 60 percent of the annual return. The region's most abundant stocks are from
larger mainland systems such as the Chilkat, Stikine and Taku Rivers and the Tsiu-Tsivat system, which [280]
provide over 3,000 miles of coho freshwater habitat. North Prince of Wales Island has 1,904 stream-miles of coho habitat, making it the most important island ecosystem for cohos, followed by eastern [281]
Chichagof Island and Mitkof and Kupreanof Islands.

[267] Id.

[268] Alaska Department of Fish and Game. 2023. Escapement Summary.

[269] Id.

[270] Id.

[271] Id.

[272] Noesser, E., R. Cross & G. Risdahl. 2024.

[273] Halupka, K. 2000.

[274] Id.

[275] Id.

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Albert, D. & Schoen, J. 2007.

Harvests have been lower in recent years, suggesting lower abundance. From 2011 to 2020
commercial ?shermen harvested an annual average of 2.4 million cohos, but over the last four years
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(2020-2023) annual harvests averaged 1.4 million cohos. 2020 returns were the poorest - four of the
eight Southeast Alaska indicator coho salmon systems failed to meet escapement goals - the ?rst time
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more than three systems failed. Other stocks were at the lower end of escapement goal ranges.
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Escapements improved in 2022 and 2023, with nearly all surveyed stocks meeting or exceeding goals.
Alaska salmon ?shery researchers have collected data on marine survival of Auke Creek coho
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since 1980. Survival rates vary from ?ve percent to nearly 50 percent, with an average survival rate
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of ~22 percent. Key factors include migration timing, juvenile growth rates and marine
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environmental productivity - both in nearshore areas and in the ocean. The 2020 marine survival
rate of just over eight percent was the fourth-lowest on record, compounding an overall survival rate of
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under 10 percent over the last ?ve years.

Sockeye salmon

Sockeye salmon can utilize various freshwater habitat but most of Southeast Alaska's roughly
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200 stocks spawn in systems that include lakes. Juveniles typically spend one year rearing in lakes.
Juveniles typically leave freshwater systems in the late spring and spend two to three years in the
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marine environment before returning to spawn.
The largest systems are on the mainland - the Alsek and Situk Rivers near Yakutat, the Chilkat
River and Chilkoot Lake near Haines and the Taku and Stikine Rivers near Juneau and Wrangell,

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Conrad, S. & Thynes, T 2021;
https://www.adfg.alaska.gov/static/?shing/pdfs/commercial/2019_preliminary_salmon_summary_table.pdf,
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Id.
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Id.
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Id.
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Halupka, K.C. 2000.
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Id.
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Id.

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respectively. Prince of Wales Island provides the most sockeye habitat of any island ecosystem.
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These larger systems support major drift gillnet ?sheries and signi?cant subsistence harvests.
The Draft Subsistence Report cites sockeye as example of a healthy population because 9 of the
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12 Sockeye Salmon stocks with escapement goals met or exceeded those goals in 2023. In 2023, over
80 percent of the gillnet harvest came from Lynn Canal and Taku River systems and there were below
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average harvests in all southern systems. This is not a new trend - since 2018 southern Southeast
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Alaska sockeye production has been mostly poor. In contrast, most northern sockeye systems were
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productive. One major di?erence between southern and northern sockeye productivity is that
southern stocks spawn in areas like Prince of Wales Island where past and ongoing logging has occurred
with much greater intensity.

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One southern sockeye stock is an ADF&G designated stock of concern: McDonald Lake.
McDonald Lake, on the mainland roughly 40 miles north of Ketchikan, is one of the largest sockeye
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salmon systems in southern Southeast Alaska. Average escapements exceeded 100,000 ?sh during the
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1990s. McDonald Lake sockeye supported the largest personal-use ?shery in southern Southeast
303
Alaska, with maximum harvests exceeding 10,000 ?sh. The stock failed to meet its minimum

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escapement goal of 55,000 sockeye salmon numerous times over the last two decades. In 2023, the
305
stock met its escapement goal for the ?rst time since 2015.

Salmon in double jeopardy: marine and freshwater environments

The warming and more volatile climate will change the environment in many ways that are
306
harmful for salmon. Alaska salmon bene?t from largely intact freshwater ecosystems and habitat
307
and population diversity that enable resiliency to natural and anthropogenic stressors. However,
climate change is accelerating habitat change more rapidly than any change they have adapted to in the
308
past. The recurring marine heatwaves during the 2010s, for example, created unfavorable ocean
conditions that contributed to the low abundance and poor marine survival of all salmon species in the
309
Gulf of Alaska.
Salmon use a combination of freshwater, estuarine and marine habitats at di?erent stages of
310
their life cycle, exposing them to multiple climate-change threats. Climate-change stressors include
lower summer stream ?ows, higher winter stream ?ows and warmer water in both the marine and
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freshwater environment. Water temperature is a major driver of salmon system productivity,
312
in?uencing spawn timing, incubation, growth, distribution and abundance. Each salmon stock is
313
adapted to local conditions in a watershed, including temperature and stream ?ow patterns. Climate
change is altering those conditions through more extreme fall and winter storms, drought and warming
314
stream temperatures. These events, even if short in duration, can impact multiple life stages,
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increasing mortality for adults and eggs and lowering survival rates for rearing juveniles.

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Increased air temperatures and lower contributions of cooler water from glacial melt and
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snowmelt will make watersheds warmer over time. Stream warming, summer droughts and changes
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in summer stream ?ow can reduce habitat suitability for spawning and survival. Alaska's water
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quality standards for temperature are 59 F for migration routes and rearing areas, and 56 F for
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spawning areas and egg and fry incubation. Stream temperatures in 2019 for many parts of Alaska
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far exceeded the 59 F threshold for migrating and rearing ?sh and the 56° F threshold for spawning
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?sh, in some cases reaching 80° F. A recent study con?rmed that temperatures above 68 F are a
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lethal threshold for salmon. In Staney Creek, a heavily-logged watershed near Klawock on Prince of
Wales Island, summer stream temperatures exceeded lethal levels for three years between 2017 and
321 322
2019. Even the glacially-fed Situk River near Yakutat exceeded temperature thresholds in 2019.
There is some variability in how Southeast Alaska's salmon systems will respond to warming
because of di?erences in elevation, terrain, lake coverage and the proportion of stream-?ow-derived
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rainfall run-o? or snowmelt. Scientists studying regional streams and other Alaska watersheds are
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identifying characteristics that may help predict stream susceptibility . Snow- and glacier-fed
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watersheds are less vulnerable to rising air temperatures and ?oods, and will be the most resilient.
Many of these systems occur in higher-than-average elevations with a higher proportion of snow and
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reduced ?ood risks. Meltwaters maintain higher, cooler and more stable summer stream conditions,
enabling upstream migrations in years when warm, drought conditions impede salmon spawning in
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rain-fed streams. These cooler watersheds, though historically thought to be less productive, will be
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important future climate refugia. Some have been too cool to reach high salmon productivity levels in
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the past buy may support more salmon as they warm.
Roughly one-third of regional watersheds rely on rain and already have higher water
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temperatures, making them more prone to drought than snow- and glacier-fed systems. Projected
decreases in summer rain and snow droughts in winter may lower summer stream ?ows and increase

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Pitman, K.J. et al. 2020,; Lader, R. et al. 2022.

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stream temperatures. Rain-fed, low-elevation watersheds with higher lake coverage will be most vulnerable to higher summer air temperatures. Warmer summer stream temperatures are likely because lakes have the most exposure to solar radiation and temperature. Salmon in these systems will face impacts from both warmer summers (accompanied by drought conditions) and projected wetter winters with higher ?ooding risks.

Warmer summertime waters are a signi?cant stressor for salmon migrating upstream to spawn. In many cases higher stream temperatures - or worse, streambed drying - can block migratory corridors and access to spawning habitat. During the hot summer of 2019, warm water and low stream flows caused salmon to stay in deeper, cooler offshore waters and spawn later than usual. There was one significant mortality event that occurred when salmon moved into a slough that later dried up. Southeast Alaska has a long history of pre-spawning mortality events in smaller watersheds, usually caused by low ?ows, warm temperatures and a high density of pink or chum salmon returning in the summer. Often these events correlated with historical periods of drought. Smaller watersheds and small streams utilized by salmon are prevalent in the region and are most vulnerable to pre-spawning die-o?s. These events may become more frequent and widespread as the climate continues to warm.

Some scientists suspect that extreme precipitation or ?ooding events in fall and winter may be more impactful than rising summer stream temperatures. Fall and winter storms are likely to occur more often, especially fall atmospheric rivers that impact freshwater habitat quality and quantity. These intensifying precipitation events will occur when salmon eggs are incubating. Increased precipitation, and more precipitation falling as rain instead of snow is, by 2050, likely to cause a 17 percent increase in fall and winter ?ooding. The impacts of these ?oods can be even worse when heavy rains fall on top of existing snowpack.

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An increased occurrence of high stream ?ows and ?oods in wintertime, especially during storms,

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is likely to result in more frequent streambed scouring, at a time when salmon eggs are in the gravel.
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Stream bed scouring reduces egg-to-fry survival and increases ?ne sediment levels. A related risk
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from these weather conditions is salmon egg mortality from landslide scour. Recent research from southcentral Alaska concluded that extreme precipitation events during fall spawning and early winter incubation periods had an even greater negative impact on salmon productivity across multiple
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populations than summer stream warming. Loss of coho spawning habitat may be signi?cant in steeper stream reaches because con?ning banks or terrain make it susceptible to streambed scour
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during high ?ows. The anticipated increase in high- ?ow events may eliminate as much as 10 percent
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of coho spawning habitat over the next two decades.
The loss of a bu?ering e?ect of snowpack on maximum stream temperatures is a signi?cant
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factor in life cycle timing as well. When less winter precipitation falls as snow, streams will be
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warmer at multiple stages of the salmon life cycle. Spring stream flows will be lower in spring and occur at di?erent times, changing migration timing for both juveniles moving downstream and adults
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returning upstream. Warmer winter stream temperatures are also altering the timing of life cycle
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events by accelerating egg incubation rates and emergence timing.
These changes can cause mismatches in migration even under optimal habitat conditions. In Auke Creek near Juneau, a low-elevation watershed, the long-term rise in water temperatures during
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incubation has caused pink salmon fry to enter the marine environment earlier. The earlier fry
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migration in turn caused earlier returns by adult spawners. Auke Creek could become unsuitable habitat for pink salmon in the long-term because this early return, when occurring during high summer
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stream temperatures will increase pre-spawning mortality. This same dynamic is occurring in Bristol
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Bay, where sockeye are leaving warmer freshwater lakes earlier. This earlier migration is also
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increasing the proportion of sockeye that spend one year instead of two in freshwater.
Changing migration patterns are a signi?cant factor in declining salmon body sizes because ?sh are
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returning to reproduce at a younger age than in the past. Most of the body size declines are recent -

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Id.
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sockeye, chum and coho all showed abrupt declines in body size starting in 2000 and intensifying after
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2010.

IV. The Assessments should provide additional discussion about industrial scale logging impacts to deer

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Many Tongass wildlife populations require an interconnected old-growth forest ecosystem. But industrial-scale logging has disproportionately impacted the most productive and contiguous old-growth forests, forcing many wildlife populations to instead persist with less resilience in isolated old-growth
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patches scattered within broader landscapes consisting of unproductive second-growth forests. The current landscape of expansive clearcuts and old-growth forest that is less abundant and diverse can no
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longer reliably support high levels of old-growth-dependent wildlife over future decades. Biologists fear that isolated, old-growth-dependent wildlife populations may face irreversible consequences as habitat loss and fragmentation and associated decreases in connectivity between patches of suitable
368
habitat isolate populations, increasing risks of inbreeding, local extirpations or extinctions.
Southeast Alaska has retained most of its historical large mammal (megafauna) populations whose abundance is important for healthy ecosystem function, as well as for providing other bene?ts to

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local communities and visitors. Most of world's remaining intact megafauna populations live in intact
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landscapes. Sitka black-tailed deer are the region's primary herbivore and an important species because of their well-studied need for large home ranges, dependence on old-growth forests and multiple habitats, and as a critical source of protein for game and subsistence hunters - and black bears
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and wolves. They are a subspecies of mule deer adapted to wet coastal rainforests in Southeast Alaska
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and north coastal British Columbia. They are present on nearly every island in the Alexander
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Archipelago. Deep snow keeps the number of deer on the mainland lower than on adjacent islands
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that generally accumulate lower snowpack.

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The current Forest Plan designates large portions of the region's old-growth forest for timber
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production or in other land use designations that allow for logging and timber road construction. Past logging, concentrated on Southeast Alaska's southernmost islands, disproportionately removed the
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largest old-growth trees. Industrial-scale logging, past and present, has changed ecological conditions for deer. Deer are the most heavily hunted large mammal in Southeast Alaska and are highly
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valued for food.

Most ALFA members reside in Southeast Alaska communities which, as acknowledged in the Socioeconomic Assessment, rely on hunting, ?shing, and gathering to provide food and o?set the high
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cost of living in the region. In particular, Sitka black-tailed deer are among the most important food sources for our members and have nutritional, cultural and recreational value for residents of
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communities throughout the region. Average annual harvests once exceeded 12,000 deer and provide
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nearly one-quarter of the region's subsistence food harvests. A typical rural resident may consume 40
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pounds of venison each year.

Figure 6 in the Subsistence and Non-Commercial Harvest Draft Resource Assessment illustrates deer harvest trends by Game Management Unit. Currently, Game Management Unit 4 provides over half the region's deer harvest (over 4,000 deer) while Game Management Units 1, 2 and provide less than half the harvest, and show a signi?cant diminishing trend for Game Management Unit 2, with harvests
382
dropping by more than half over the past decade. The Draft Assessment suggests that the declining harvests may not necessarily re?ect declining populations but acknowledges that intensive clearcutting on Prince of Wales Island "is an often-cited factor responsible for reduced deer numbers observed by
383
residents over the past decades." Deer populations and harvests are also low and trending downward in Game Management Units 1 and 3. There has been substantial highgrading of old-growth forests in these areas as well - timber companies disproportionately removed the very largest and most ecologically important old-growth stands. ALFA requests that the ?nal assessments provide additional discussion about logging impacts to deer, particularly the concept of "succession debt."

Severe winter weather is a primary cause of deer mortality, causing malnutrition, disease and
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higher predation and thus drives ?uctuations in abundance. Deer depend on old-growth forests that

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have overwinter forage and intercept snowfall, making food available during periods of deep snow.
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During severe snowfall, deer gather in low elevation old-growth forests or on beaches. Deer densities
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on winter ranges can exceed 60 deer per square mile. Because of this ecological function, large blocks
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of intact, low-elevation, old-growth forest are essential to maintaining healthy populations.
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Industrial-scale logging reduces the ability of deer to withstand severe winters. Young
clearcuts provide abundant forage during snow-free periods, but within several decades the newly
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growing forests shade out understory plants used by foraging deer. This creates large areas of
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unsuitable, sterile habitat causing long-term decline in a deer population's density. Declines are
periodically caused by a winter of severe weather or several in succession, particularly in central

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Southeast Alaska. These losses are intensi?ed when logging has reduced winter habitat capability or
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has disrupted predator-prey dynamics giving wolves and bears a heightened advantage. Population recovery has been slower than anticipated in that central area - taking several decades, likely because
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of the predators' advantage.

Industrial-scale, old-growth logging sets o? a succession of harmful habitat changes that worsen for decades. The new, second-growth forest area changes character decade by decade while
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regrowing. Roughly 25 years after clearcutting, a "stem exclusion" stage of forest succession begins when the forest canopy closes, creating unsuitable habitat for many old-growth-associated wildlife
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species, including deer. Low forage conditions last 100 to 150 years, a prolonged debt that can be repaid only by nature's work in returning to an old-growth condition (if given the chance) through
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successional changes in the growing forest's structure. Deer populations likely will decline because of the poor quality of forage in the extensive amount of second-growth forest, a debt in natural capital
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incurred by logging as far back as a half century or more ago.

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See, e.g. Bethune, S. 201.
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mammal predator prey community in Southeast Alaska. Pages 143-167 [In] G.H. Orians & J.W. Schoen, eds. North Paci?c
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Id.

Losses in habitat quality and quantity caused by clearcut logging, combined with severe winter
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weather and predation by wolves and bears, are the main threats to Sitka black-tailed deer. The disproportionate logging of low-elevation, productive old-growth forest - essential winter habitat for deer - worsens the impacts of severe winters, particularly in areas where deer are prey for wolves or
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bears. In areas with substantial wolf or bear predation, a sharp decline from one or more severe winters can cause a "predator pit," from which it can take many decades for a deer population to
401
recover.
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Climate change e?ects on deer and deer habitat are unknown. Warmer winters will not necessarily diminish the importance of winter habitat. Risks of severe snowfall associated with expected increases in precipitation and extreme storms may exacerbate risks to deer as a warming
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climate makes weather more chaotic. Sitka black-tailed deer populations likely will decline regardless
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of winter weather. The quantity and quality of habitat and forage in second-growth forests is lower
405
than in old-growth forests. Vulnerability to predators and hunters is higher because of road access
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and loss of protective shelter previously o?ered by old-growth forests.
Long-term deer carrying capacity in some portions of Baranof and Chichagof Islands is reduced
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because of past clearcutting. Admiralty, Baranof and Chichagof Islands have large, protected wilderness areas and less predation (there are no wolves or black bears) so that deer have been able to
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recover from population declines caused by recent severe winters. The three islands now produce
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over one-third of the statewide deer harvest.
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Impacts to deer are worse in the southern portions of the Alexander Archipelago. A severe deer population decline has occurred on central Tongass islands, where most of the logging occurred on low-
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elevation, south-facing slopes favored by deer. One-half of all the large-tree, old-growth forest from
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Kupreanof and Mitkof Islands and nearly one-quarter of the prime winter deer habitat is gone. Deer numbers are extremely low on Kuiu, Kupreanof and Mitkof Islands and have been since a series of harsh

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Id.

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winters in the 1970s. Record-setting snowfalls in the winters of 2006-2007 and 2007-2008 resulted
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in further declines. Other central Southeast Alaska islands such as Etolin and Zarembo (near
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Wrangell) have lost over 20 percent of their historical deer habitat capability due to logging. The
extensive habitat loss forced deer to concentrate in smaller old-growth stands during deep snow winters
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with less forage and more exposure to predation by wolves. Extensive clearcutting of Revilla and
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Gravina Islands and the Cleveland Peninsula has similarly reduced deer habitat in the Ketchikan area.
418
These changes have reduced hunting opportunities.

Biologists expect the Prince of Wales Island deer population to decline because of habitat loss
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caused by logging. The substantial and disproportionate 40 percent loss of large-tree forest to logging
on northern Prince of Wales Island contributes to the loss of one-half of the winter deer habitat to
420
date. Recent federal timber sales targeted most of the last remaining stands of high-quality winter
421
deer habitat and deer travel corridors in the north and central parts of the island.

The decline in deer carrying capacity has long-term consequences in terms of reductions in deer
422
hunting opportunity and inability to meet hunter demand and subsistence needs. Prince of Wales
Island once produced nearly one-quarter of the statewide deer harvest and is the second most important
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provider of deer in the region. The island's deer support a substantial and increasing hunting e?ort -
Prince of Wales Island residents, hunters from other Southeast Alaska communities and non-resident
424
hunters harvest as many as 3,600 deer each year. The increased hunting pressure concerns
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subsistence hunters who are having increasing di?culty harvesting deer on the island. The Alaska
Department of Fish and Game has concerns about the cumulative adverse e?ects of past, ongoing and
future industrial-scale clearcutting on future deer dividends:

We should better inform the public regarding the e?ects of logging on deer populations, so
they are aware of trade-o?s between timber harvest and wildlife. We anticipate that logging
related reductions in important winter habitat will reduce deer carrying capacity for

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decades to come. The long-term consequences of habitat loss include loss of hunting
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opportunity and the inability to provide for subsistence needs of rural residents.

V. Protect Forests for Carbon Sequestration

The draft carbon stocks assessment recognizes that Tongass carbon stocks are of national
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signi?cance. There was a net increase in forested area between 2005 and 2023, increasing both the
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overall carbon stocks and the carbon density per acre. The assessment acknowledges that carbon
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stocks would have been higher under a no-logging scenario. A ?nal assessment would bene?t from a more thorough discussion of how logging reduces the carbon sequestration potential of the Tongass, including a discussion of losses through soil disturbance.
Land use change, including logging and other causes of forest loss, accounts for nearly one-
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quarter of anthropogenic greenhouse gas emissions. Industrial logging is one of the major drivers of global forest and biodiversity loss and undermines one of the most cost-effective climate change
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mitigation strategies - the conservation of green carbon. Globally, forest loss and degradation cause
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more climate-harming emissions than the entire transportation network.
Protecting forests is one of the most cost-e?ective ways to mitigate climate change; that is,
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reduce CO emissions. Terrestrial ecosystems, primarily forests, have been removing almost one-third
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of CO_2 emissions caused by human activities for six decades. Some of the stored carbon returns to the
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atmosphere through soil respiration, ?res and decomposition. Forests store accumulated carbon in ?ve di?erent pools: aboveground biomass (leaves, trunks, limbs and brush), below ground biomass

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(roots), deadwood, detritus (fallen leaves, stems) and soils. In general, forests store over 50 percent
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of the carbon in soils and over 25 percent in aboveground biomass.
U.S. forests are a net carbon sink and currently offset between 11 and 13 percent of the
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greenhouse gas emissions released from the U.S. into the atmosphere. Existing older and maturing
second growth forests in the U.S. - most of them publicly-owned - could sequester 120 gigatons of
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carbon by 2100, offsetting over a decade's worth of global CO2 emissions. Whether a forest is a sink
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or a source depends on the degree of disturbances such as logging or wildfires.
While most northern hemisphere forests have been carbon sinks in recent decades, wild?res are
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becoming an increasing source of emissions. For example, wild?res, combined with other
disturbances such as logging and insect infestations have transformed British Columbia's interior
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forests into carbon sources. Southeast Alaska forests are more likely to remain a carbon sink if
conserved than other U.S. forests, which will become drier and experience larger maximum
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temperatures over the next century, increasing wild?re vulnerability. Thus, while climate change is
likely to increase the frequency and severity of disturbances (wind, landslides, ?re) to regional forests,
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the cooler wetter conditions will make them relatively stable compared to other U.S. forests.
Cutting down old-growth forests releases one-half of the forest carbon as CO2 into the
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atmosphere and losses can continue for years as logs and snags left after harvest decompose. It takes
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centuries for regrowing trees to compensate for these losses. Logging is the primary cause of CO2
emissions from U.S. forests, releasing over 700 million tons of CO2 into the atmosphere - equivalent to
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burning more than 3.7 billion pounds of coal. Because of the sequestration capacity of forests and the
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impacts of logging, reducing emissions from forest degradation is as urgent as halting fossil fuel use.
Southeast Alaska's forest is one of just four remaining relatively intact temperate rainforests in

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the world, making it globally-significant and irreplaceable for their carbon stores and biodiversity.
The Tongass National Forest is essential to climate change mitigation both because of its size and its
large remaining area of intact forest - even after substantial forest loss caused by extensive industrial
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logging during the latter half of the 20th century. The Tongass holds more biomass per acre than any
other rainforest in the world and stores more carbon than any other national forest in the United
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States. Its carbon stores amount to 20 percent of total carbon for the entire national forest system
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and are irreplaceable as a carbon sink. Total live and dead tree carbon storage capacity is roughly
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twice as high as other U.S. forests. Live trees in the old-growth remove 2,800 pounds of atmospheric
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CO_2 per acre per year. The aboveground biomass (live trees, snags and logs) alone amounts to an
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estimated 650 million tons of carbon, equivalent to 2.4 billion tons of CO_2. Adding in the carbon

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stored in soils, the Tongass National Forest stores a total of 2.7 billion metric tons of carbon.
Old-growth forests are a primary driver of the carbon storage capacity, continuing to accrue
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biomass and carbon at high rates. Trees accumulate carbon continuously so that the largest, oldest
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trees and oldest forests store a disproportionate amount of carbon over time. The largest one percent
of old-growth trees may store between 40 and 50 percent of the forest stand level above ground
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carbon. At the stand level, old-growth forests store 35 to 70 percent more carbon, including in the
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soils, compared to logged stands.
The carbon sequestration potential is less than optimal because ongoing logging of old-growth

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and maturing forests undercuts sequestration by returning stored carbon to the atmosphere. The Tongass National Forest is the only national forest subjected to substantial amounts old-growth logging
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in recent decades. Logging has offset sequestration gains by aboveground biomass because of the
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substantial amount of CO2 lost to the atmosphere. Researchers estimate that logging in the Tongass
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National Forest from 1909 through 2021 caused over 69 million metric tons of CO2 emissions. The social cost of this carbon loss could exceed five billion dollars using the recent U.S. estimated social cost
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at the recommended discount rate of $76 per ton. Recent research indicates the social cost of carbon
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emissions may be much higher, with median costs exceeding $400 per ton.
Past logging has created roughly 450,000 acres of previously clearcut forests on federal land in Southeast Alaska that are now regenerating (not counting a nearly equal amount on non-federal
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lands). The Forest Service plans to clearcut signi?cant portions of these recovering forests. Many
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of these forests are "middle-aged," between 50 and 100 years old. These forests sequester carbon
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quickly and are "carbon hotspots." There is also a signi?cant number of stands that are 30 to 50 years
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old and approaching ages where they could similarly increase live tree carbon storage.
There is wide recognition that preserving these forests would increase sequestration rates, by avoiding the simultaneous CO2 emissions caused by logging and the consequent loss of future carbon
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storage capacity. Proforestation (allowing forests to continue to grow) is the most rapid means to

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accumulate additional carbon in forests and out of the atmosphere. Emphasis on proforestation is
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increasing, as a cost-e?ective strategy for mitigating climate change. Proforestation allows maturing
trees that are already rapidly sequestering carbon to fully mature into natural forests of diverse species,

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maximizing their potential as carbon sinks. Allowing maturing forests to grow would generate rapid,
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additional carbon sequestration and signi?cantly help in o?setting CO2 emissions in the U.S.
The amount of future logging will determine the extent to which the Tongass National Forest and state- and privately-owned forests in the region will continue to sequester carbon - or become a
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potentially large source of emissions. The key to increasing the amount of accumulated forest carbon
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is to implement policies that maintain existing intact forests and allow maturing forests to grow.
Under a no-logging scenario, forest carbon stocks would increase by 27 percent - from just over one
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billion metric tons to 1.3 billion metric tons by the end of the 21 century.
VI. Comments on Designated Areas

Southeast Alaska's Estuaries are exceptionally high value habitats

The Draft Designated Areas Assessment notes that the changing climate can threaten unique values
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of areas where it is important to maintain ecosystem integrity. Alaska Region sta? are considering designating some areas as "Key Coastal Wetlands" because of their importance to ?sh and wildlife
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populations. Potential designated areas include the Yakutat Forelands and the Lower Stikine, both of
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which are biodiversity "hot spot" stopover habitat for hundreds of thousands of migratory birds. As explained in the following discussion, excerpted from the Alaska Sustainable Fisheries Trust's 2024 SeaBank Report, ALFA supports further consideration of protections for estuarine habitat.
Natural resource economists identify estuaries as the highest-valued ecosystems - providing
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$15,000 per acre in ecosystem services each year ($5.3 billion). This value is second only to coral reef
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ecosystems, and higher than all terrestrial ecosystems combined. This disproportionate ecological importance is because terrestrial, freshwater and marine ecosystems in these areas connect and provide
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numerous services.

Southeast Alaska's estuaries are globally signi?cant because of their high productivity. There
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are 12,000 estuaries in Southeast Alaska occupying 350,000 acres. Nearly 3,000 of the estuaries are

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Id.
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roughly 250 acres in size. The largest estuaries are on the mainland, including the 21,000-acre
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Stikine River Delta. The Yakutat Forelands area includes the 13,859-acre Dangerous River estuary and
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the 6,811-acre Dry Bay estuary. Two of the region's other ?ve largest estuaries are on Kupreanof
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Island at Duncan Canal (9,446 acres) and Rocky Pass (5,823 acres). Those estuaries drain freshwater
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systems that are much smaller than transboundary rivers. The Chilkat River and Gustavus and Taku
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estuaries are all larger than 4,000 acres.
Estuaries provide important resource values for nearly all Southeast Alaska's ?sh and wildlife
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assets. This includes spawning and nursery areas for diverse species of ?n?sh, forage ?sh, shell?sh
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and other invertebrates. For migratory birds, sea birds, marine mammals and terrestrial mammals,
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estuaries provide areas for breeding, refuge and forage. They also support ocean health and water
quality, as bu?ers between ocean and land that ?lter sediment and pollutants from freshwater before
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they enter the ocean.
Estuaries provide protection, nutrient exchanges and abundant food sources for ?sh and
shell?sh, including numerous forage ?sh such as herring, eulachon, Paci?c sand lance and capelin that
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support other species. Three-fourths of all ?sh caught in Alaska utilize estuaries and estuarine
vegetation during some part of the life history, including major ground?sh species such as halibut,
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sable?sh, paci?c cod and rock?sh. Juvenile sable?sh occur only in a few estuaries, heightening the
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value of those locations.
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Salmon ?shery production often corresponds to productive estuaries.
Estuaries are transitional habitats between the marine and freshwater environments for salmon.
Critically, salmon pass through estuaries twice, during outmigration as smolts (rearing there
501
extensively as juveniles) and when returning to spawn. Multiple studies of juvenile salmon show that
their initial growth and survival depend on the capacity of these systems to produce forage and
502
protection from predators.
Estuarine vegetation such as salt marsh grasses, seagrass meadows and kelp forests provide
critical ecological functions for numerous SeaBank assets. These species are ecosystem engineers that

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Id.
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Carstensen, R. 2007.
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Id.
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Id.
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Id.
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Id.
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Id.
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Id.

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form habitats that are essential to biodiversity and marine productivity. Seagrasses such as eelgrass
are ?owering plants that form underwater meadows along coastal shorelines and provide some of the
504
most biodiverse and productive coastal habitats. They grow below salt marshes in wave-sheltered
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shallow marine habitats such as the lower intertidal and nearshore subtidal portions of estuaries.
Seagrass meadows, one of the planet's most productive ecosystems, provide critical services
506
for coastal communities, economies and lifestyles. The multiple ecosystem services they provide
include food sources, coastal protection and erosion control, water puri?cation, maintenance of
507
?sheries and carbon sequestration. They also support important forms of tourism, recreation,
508
education and research.
Eelgrass is the most widespread seagrass species in the northern hemisphere and most common
509
seagrass along the North American Paci?c Coast. Most of Southeast Alaska's eelgrass meadows grow
510
in soft sand and mud substrates in protected bays and inlets that have freshwater in?uence. Peak
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growth occurs in the late spring. The 3,500 shoreline miles of continuous or patchy eelgrass meadows
512
in Southeast Alaska likely exceed that of the combined shorelines in Oregon and Washington. The
513
outer coast also contains surfgrass meadows which have higher wave tolerances.
Eelgrass is one of the most important habitats of Southeast Alaska's estuarine ecosystems.
Dozens of marine ?n?sh, commercially-utilized invertebrates such as crab and shell?sh and numerous
514
other invertebrates occupy eelgrass habitats. Southeast Alaska eelgrass meadows are the top
515
estuarine habitat for species diversity (relative to kelp and salt marshes). In areas where eelgrass is

less common, such as the mainland and adjacent inside waters, the beds that are present may be
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disproportionately important for local ?sh populations.
Eelgrass is a productive habitat that supports a high abundance and diversity of Southeast
517
Alaska's marine species, including dozens of forage ?sh and commercially important species. Juvenile

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Johnson, S.W., et al. 2003.
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?sh are dominant in surveys of Southeast Alaska's eelgrass meadows in di?erent parts of the region,
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showing their importance as nursery areas that provide food and predator protection.
In particular, surveys have found large numbers of juvenile pink, chum and Chinook salmon in
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estuarine eelgrass meadows where they grow and transition to the marine environment. They occupy
eelgrass meadows extensively during May and June, and feed on a rich invertebrate community that can
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comprise up to 80 percent of the juvenile chum salmon diet. Juvenile salmon grow rapidly during this
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life cycle phase, which is critical because larger ?sh are more likely to survive early marine residence.
Studies have shown that large-scale eelgrass loss in many estuaries can decrease invertebrate densities,
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reduce salmon survival rates and drastically diminish salmon returns.
Eelgrass supports other marine species such as juvenile shell?sh. There is a rich invertebrate
community of mussels, shrimps and crabs. Dungeness crab and spot shrimp are the most common
invertebrates in some areas and use the meadows as nursery habitat. Paci?c herring use eelgrass as a
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spawning substrate.
Eelgrass is susceptible to coastal development and environmental changes both in nearshore
waters and on adjacent uplands. Direct disturbances such as dredging and marine construction or
scouring from motorized boat propellers and excess sediment or other pollution from mining,
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agriculture and other industrial activity are a major cause of seagrass declines. Excessive runo? from
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timber roads and deposition of logging waste has been known to destroy eelgrass habitats.
Salt marshes are a diverse grassland plant community that occupies the upper intertidal zone at
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the border of an estuary. The marshes utilize wave-protected shorelines and grow behind barrier
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island systems and in bays and estuaries. In Southeast Alaska they are common at river deltas and the
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heads of inlets. There are nearly 34,000 acres of salt marshes in Southeast Alaska, making them the
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most common shoreline plant community. Salt marshes occur continuously or in patches along at
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least 8,000 miles of the Southeast Alaska shoreline.
Ecosystem services provided by salt marshes include coastal protection from waves and storm
surges because they attenuate waves by as much as 40 percent, controlling erosion, ?ood defense and
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protecting coastal areas. Salt marshes have signi?cant habitat values for economically and
ecologically important ?sh species, including protection from larger ?sh predators and plant material

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Id.
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Id.
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for forage. They also take on excess nutrients from rivers and terrestrial runo?, purifying and
improving water quality entering the estuary and bene?tting adjacent ecosystems such as seagrass
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meadows.
Estuarine and coastal ecosystems are heavily used and threatened on a global and regional
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scale. There is rapid global loss of coastal wetlands, including one-half of the salt marshes and nearly
535 536
one-third of the seagrasses. Global loss of seagrasses continues at a rate of 5 to 7 percent annually.
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Changes in sea level are a main threat to seagrasses. In northern Southeast Alaska, the rate of
sea level fall (i.e., northern Southeast Alaska is rising from the sea) is outpacing sea level rise.
"Postglacial isostatic rebound" occurs when land rebounds after glaciers and ice?elds melt and retreat.
The rates of uplift are as high as 1.2 inches annually in some portions of the region, with Yakutat
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experiencing the greatest uplift rates in the world.
The expected sea level lowering of between 2 to 8 feet throughout much of the region is likely to

be a major cause of a projected 30 percent decrease in estuary shoreline lengths over the next
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century. The greatest projected change in shoreline lengths will occur in low-slope gradient
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shorelines within protected bays and estuaries - particularly those dominated by eelgrass.
Researchers project a cumulative eelgrass loss of 14 percent over the next century with the greatest loss
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- roughly one-third - around Kake. Some of the southern portions of the region may receive increases
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in shore eelgrass length in Kasaan and Klawock.
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This land emergence has signi?cant consequences for protected-bay coastlines. Naturalists
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project a rapid loss of coastal marshes, which will transition to meadows. The "uplift meadows" will
replace salt-tolerant grasses in the salt marsh zone and the areas will eventually transition to spruce
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forests. Uplift meadows are emerging near Gustavus, the Chilkat estuary and in Port Frederick near
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Hoonah. The largest uplift meadows are emerging in estuaries in the vicinity of Icy Strait and Lynn
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Canal.

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Id.
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Id.
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Id.
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The numerous ecosystem services provided by tidewater vegetated ecosystems include
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signi?cant CO_2 uptake and long-term carbon storage. Blue carbon is the organic carbon sequestered
and stored by or released from coastal tidewater wetlands and estuaries - most of it stored in
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sediments. Blue carbon ecosystems like salt marshes and sea grasses cover two-tenths of a percent of
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the ocean ?oor but account for one-third of oceanic carbon uptake. The living plant biomass
sequesters carbon only for short periods of time, but once captured in coastal soils the carbon can
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remain place for millennia and build up into large carbon stocks.
Coastal wetlands, like forests, become sources of CO_2 emissions when degraded by industrial
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development or other causes. Seagrasses and salt marshes store most of the blue carbon in sediments
so that conversion or degradation of these ecosystems causes the release of blue carbon accumulated
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over centuries or even millennia to the atmosphere. While there is signi?cant global loss of salt
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marshes and seagrass estuaries each year, most of these ecosystems in Alaska remain intact.
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Salt marshes comprise one to two percent of the annual carbon sinks in the U.S. They are most
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valuable for climate mitigation in areas of large coastal expanse. Salt marsh sediments accrue 95
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percent of the stored carbon. Scientists studying salt marshes in British Columbia found that salt
marshes in that area are sequestering carbon at high rates of roughly one metric ton per 2.5 acres per
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year. Assuming similar sequestration and storage capacity, Southeast Alaska's 42,500 acres of salt

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marshes may sequester enough CO_2 to o?set emissions from 85,000 vehicles per year, in storing an
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additional 1.4 to 2.1 million metric tons of carbon.
Seagrasses use CO_2 dissolved in seawater to grow, and once the plant completes its life cycle,
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carbon accumulates in the sediment. Alaska has some of the largest eelgrass beds in the world.
Seagrass carbon burial rates are highly variable, making it di?cult to use extrapolated rates from other
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areas. Recent research suggests that meadow size, particularly the presence of large and continuous
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meadows, may elevate carbon sequestration capacity. Some of the most highest sequestration rates occurred in meadows in Scandinavia that were similar to Southeast Alaska in latitude and ocean
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exposure.
In a recent study of eelgrass meadows from Oregon to Prince of Wales Island in Southeast Alaska, sampled sites showed similarities to other studied eelgrass systems in the north Paci?c and north
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Atlantic oceans. Some of the Southeast Alaska sites studied had high organic carbon content values
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that were close to the global average for all types of seagrass meadows while others had low values.
In general Prince of Wales Island sites had higher organic carbon content than Paci?c Northwest
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eelgrass meadows.

Roadless Rule

The Designated Areas Assessment explains that the purpose of the 2001 Roadless Area Conservation Rule (Roadless Rule) is to provide lasting protection for inventoried roadless areas (IRAs) within the
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National Forest System (NFS). It recognizes that protection of these roadless characteristics on the
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Tongass National Forest is of local and national importance.
ALFA submits that the assessments could review and describe widespread public support for protecting intact forested areas on the Tongass from logging and timber road construction. There are nearly 2 million acres of Tongass inventoried roadless areas allocated to development land use
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designations in the current forest plan. These areas provide large, relatively undisturbed blocks of
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important habitat for a variety of species.

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Available at: https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references.
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For example, the Roadless Rule is critical to maintaining the provisioning and cultural ecosystem services provided by SeaBank deer. The Rule protects substantial proportions of remaining winter deer habitat in heavily logged areas - on North Prince of Wales Island, large roadless areas protect over one-
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half of the remaining winter deer habitat. Large roadless areas also protect over 60 percent of the remaining winter deer habitat on other islands with high levels of past logging, such as Gravina, Kuiu,
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Kupreanof, Mitkof and Revillagigedo.
In 2023, the USDA reinstated Roadless Rule protections of Tongass National Forest roadless
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areas, reversing a 2020 rule exempting the Tongass. . After conducting a regulatory process, the
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agency removed all 9.4 million acres from Roadless Rule protections in October 2020. That 2020 decision to exempt the Tongass was unpopular. Over 96 percent of the over 15,000 individual commenters opposed exempting the Tongass, and only 1 percent of the commenters supported the
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exemption. When the agency then initiated a widely supported regulatory process to reinstate Roadless Rule protections, it received over 9,000 unique individual comments and over 100,000 form
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comment letters mostly supporting reapplying the Roadless Rule. Another 130,000 individuals signed
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a total of 14 petitions requesting reinstatement. Nineteen tribes in Southeast Alaska also requested
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restoring Roadless Rule protections to their ancestral lands.

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VII. The cumulative impacts of past logging concentrated on high-grading old-growth trees from island ecosystems

The assessments notes that there have been changes in landownership in Southeast Alaska,
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including the conveyance of 240,000 acres to other entities. Several assessments have characterized timber removals over past several decades as small and compared the acreage removed overall as a modest percentage of the overall Forest. It is important to recognize that these ongoing removals occur in a landscape where past industrial logging has removed the largest tree old-growth forests that had the highest value for ?sh and wildlife. Between 1954 and 2004 industrial-scale logging on a mix of land ownerships - federal, State of Alaska and private - removed much of the large, contiguous old- growth
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forest, leaving fragmented forest habitats and degraded watersheds on a landscape scale. Timber companies targeted the largest old-growth trees, removing roughly two-thirds of the highest volume forest by 2004 with disproportionate impacts on the most productive ?sh and wildlife habitat, and
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created a network of about 5,000 miles of logging roads to enable that extraction.

The most intensive clearcutting of larger-tree, old-growth forests occurred in federal and non-federal forestlands on several major islands: Etolin, Kuiu, Kupreanof, Mitkof, Wrangell and Zarembo Islands in central Southeast Alaska and Prince of Wales and Revillagigedo Islands in southern Southeast
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Alaska. These areas suffered habitat loss at a much greater rate than other portions of Southeast
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Alaska. Prince of Wales Island is by far hardest hit: as of 2018, timber companies had already logged

380,950 acres on the island, including 80,445 acres over the last 30 years, with thousands of acres of non-
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federal old-growth at risk in the near future. Federal and non-federal logging combined, the island has
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the highest density of clearcuts in Southeast Alaska.
The assessments should provide a more detailed description of recent logging patterns - which
are currently occurring in these same areas, further fragmenting ?sh and wildlife habitat. Although
there has been less old-growth logging on Forest Service lands in recent years, annual forest loss has
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ranged from 3,000 to 5,000 acres over the past decade, and continues to increase. Nearly half that
logging occurs on formerly public lands transferred from the Forest Service to state or private entities
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through Congressionally approved land exchanges. The Alaska Division of Forestry, the Alaska Mental

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Health Trust, the University of Alaska and corporate landowners have been responsible for most of the
st 589
logging in the region in the 21 century.

The Alaska Division of Forestry plans to o?er nearly 62 million board feet of mostly old-growth
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timber from 3,000 acres of state-owned lands over the next ?ve years. Two-thirds of the timber
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would come from Prince of Wales Island and nearby smaller islands. Over 100 Southeast Alaskans and visitors, particularly Prince of Wales Island residents, requested that the Alaska's Division of Forestry
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cease plans for intensive old-growth logging, mostly on Prince of Wales Island. The biggest concern is
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loss of old-growth forests that have high values for local and visitor recreation.
Other proposed Alaska Division of Forestry timber sales would add to an already massive
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expanse of recently clearcut forest near Edna Bay on Kosciusko Island. During the 1960s, timber companies removed over one-third of the original productive old-growth on Kosciusko Island, creating
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some of the oldest second-growth forests in Southeast Alaska. Federal, University of Alaska, State of Alaska and private corporate landowners recently clearcut both the recovering forest and much of the
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remaining old-growth, instead of allowing recovery of the forest and its habitat values. That

remaining old-growth forest had previously provided deer winter range, supported bear denning habitat
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and sheltered the community of Edna Bay, its harbor facilities and mariners from severe windstorms.
The Division of Forestry also plans four large timber sales that each would o?er between 3 and 6 million board feet of timber, to be taken from community recreation and subsistence use areas near
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Petersburg, Wrangell and Ketchikan. Past logging on these islands was extensive, with substantial losses of large-tree, old-growth forests and losses of nearly one-third or more of key habitats for old-
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growth dependent wildlife species.

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Thus, although the Forest Service has been unable to attain planned logging levels in recent
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years, annual forest loss continues, ranging from 3,000 to 5,000 acres per year over the past decade.
Alaska's Division of Forestry and other state entities and corporate landowners removed large amounts
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of old-growth forest during the 20 century - over 400,000 acres - and have been responsible for most
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of the logging in the 21 century. Nearly half that logging occurs on formerly public lands transferred
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from the Forest Service to state or private entities through Congressionally approved land exchanges.

VII. Forests are invaluable for climate resilience

The Climate Change Assessment describes projected changes for Southeast Alaska, with both
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temperature and precipitation expected to increase as the century progresses. Other projected
changes include accelerated loss of glacial ice, sea level changes (both up and down), yellow cedar
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decline, and increases in insect outbreaks.
ALFA requests that the ?nal climate assessment include a discussion of forest regulating ecosystem services. The forest's provisioning services, supply the easily recognizable economic values of scenery, recreation opportunities and habitat for ?sh and wildlife. In contrast, the economic value of the forest's regulating ecosystem services is much less noticed, with the exception of considerable attention on carbon sequestration. These increasingly important services of intact forested habitat and roadless watersheds include maintaining air quality, water quality and regulating temperatures of the terrestrial
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and aquatic environments. The economic value of these contributions by forests are increasingly
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important, particularly regulating services that reduce risks caused by severe weather events. Old-
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growth forests in particular are a natural bu?er against extreme climate conditions.
Intact forested ecosystems will increase in value in a warming climate because of their higher

resilience to climate change, bu?ering e?ect against disturbance events, and increasing global rarity.
Studies of the Paci?c Northwest's old-growth forests have found that maximum air temperatures in old-
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growth stands (compared to logged areas) were as much as 2.5° C lower in spring and summer. Intact

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forests protect against extreme weather impacts by reducing ?ood and landslide risks. Forests also regulate and purify water and the air, and as "natural air conditioners" act as a climate bu?er that stabilizes microclimates and can mitigate the damage of heatwaves to aquatic life.
Regulating services provided by naturally-functioning forest ecosystems reduce risks from severe weather and include ?ood control, wind protection, water regulation and puri?cation, air quality
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maintenance and air temperature regulation. For example, forested ecosystems moderate water ?ows
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into streams during peak storm events and mitigate the e?ects of heatwaves on stream warming.
Industrial-scale logging and timber road construction reduce the functional and economic values of
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these regulating ecosystem services, and worse, exacerbate damage caused by severe weather events.
Logging increases landslide risks by altering underground and surface hydrology and by reducing the anchoring and reinforcing e?ect of tree roots that is critical to maintaining soil stability in high risk
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areas. Intense rainfall on saturated soils - particularly during fall and winter multi-day storms - is
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the primary cause of landslides in Southeast Alaska. Landslides during heavy precipitation events are
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most common in large clearcuts. Southeast Alaska-speci?c studies show that logging makes
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landslides in logged areas typically three to ?ve times more frequent than in unlogged areas. Similar studies in British Columbia's Haida Gwaii archipelago and other areas in western North America have
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identi?ed even higher landslide occurrence rates after logging and logging road construction.

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Conclusion

Thank you for the opportunity to review and comment on the draft assessments.
ALFA requests that you include the information in these comments in the ?nal assessment
to inform decision making about the need to revise the current Forest Plan.

Sincerely,

Linda Behnken
Executive Director, ALFA