

CHAPTER 4

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CHAPTER 5
LIST OF DOCUMENT RECIPIENTS
AND THOSE NOTIFIED OR
CONSULTED

List of Document Recipients and Those Notified or Consulted

This section provides a list of the agencies that were notified of the draft EIS. This list includes federal, state, and local governments, elected officials, and federally recognized tribes who submitted comments or requested to be on the mailing list for this draft EIS. It does not include the thousands of individuals and organizations on the mailing list who were notified of the draft EISs availability on the Internet, depending on the preference they expressed. This information is available upon request.

Federal Agencies and Tribal Governments

Federal Energy Regulatory Commission, Environmental Compliance Branch
Federal Highway Administration, Division Administrator
Library of Congress
National Oceanic and Atmospheric Administration (NOAA), NWS Office of Strategic Planning and Policy
National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service, Habitat Conservation Division, Alaska Region
National Environmental Coordinator, NRCS
US Government Accountability Office
US Government Publishing Office, Federal Digital System
US Advisory Council on Historic Preservation, Planning and Review
US Army Corps of Engineers, Pacific Ocean Division
US Coast Guard, Environmental Management CG-443
US Coast Guard, Coast Guard Commandant CG47th
USDA, APHIS PPD/EAD
USDA, National Agricultural Library
USDA, Natural Resources Conservation Service
USDA, Rural Development, Rural Utilities Service
US Department of Energy, Office of NEPA Policy and Compliance
US Department of the Interior, Bureau of Land Management, Alaska State Office
US Department of the Interior, Bureau of Land Management, Anchorage District
US Department of the Interior, Bureau of Land Management, Fairbanks District
US Department of the Interior, Federal Subsistence Management Program
US Department of the Interior, Office of Environmental Policy and Compliance
US Department of the Interior, US Geological Survey Alaska Science Center
US Department of Transportation, Federal Aviation Administration, Office of the Regional Director
US Department of Transportation, Federal Highway Administration, Alaska Division Administrator
US Environmental Protection Agency, Environmental Review and Sediment Management Unit
US Environmental Protection Agency, Region 10
US Fish and Wildlife Service, Anchorage Field Office
US Fish and Wildlife Service, Juneau Field Office
US Navy, Energy and Environmental Readiness Division
US Navy, Office of the Chief of Navy Operations
USGS Alaska Science Center

5 List of Document Recipients and Those Notified or Consulted

Federal Congressional Representatives

Lisa Murkowski, U.S. Senator
Dan Sullivan, U.S. Senator
Don Young, U.S. Representative

Alaska Native Tribes and Corporations

Alaska Native Brotherhood Grand Camp
Alaska Native News
Alaska Tribal Leader Committee
Angoon Community Association
Alaska Native Sisterhood Grand Camp
Cape Fox Corporation
Central Council Tlingit & Haida Indian Tribes of Alaska
Chilkat Indian Village
Chilkoot Indian Association
Craig Tribal Association
Douglas Indian Association
Goldbelt, Incorporated
Haida Corporation
Hoonah Indian Association
Huna Totem Corporation
Hydaburg Cooperative Association
Kake Tribal Corporation
Kavilco Inc.
Ketchikan Indian Community
Klawock Cooperative Association
Klawock Heenya Corporation
Klukwan Inc.
Kootznoowoo Inc.
Metlakatla Indian Community
Organized Village of Kake
Organized Village of Kasaan
Organized Village of Saxman
Petersburg Indian Association
Sealaska Corporation

Individuals

Notifications of the availability of the draft Environmental Impact Statement were also sent to over 62,000 individuals.

Consultation

The following organizations and agencies were consulted with on the development of this DEIS:

- **Advisory Council on Historic Preservation:** The Advisory Council was contacted for advice on the determination of whether this rulemaking effort constitutes an undertaking as defined under Section 106 of the National Historic Preservation Act.

List of Document Recipients and Those Notified or Consulted 5

- **Alaska State Historic Preservation Office:** The Forest Service notified the Alaska State Historic Preservation office of the proposed rule and that the agency determined that the proposed rule was not an undertaking as defined under Section 106 of the National Historic Preservation Act.
- **Angoon Community Association; Central Council Tlingit and Haida Indian Tribes of Alaska; Hoonah Indian Association; Hydaburg Cooperative Association; Organized Village of Kake; and Organized Village of Kasaan:** These six tribes worked with the Forest Service as cooperating agencies providing input on the development of this DEIS.
- **State of Alaska:** The State of Alaska submitted the petition which provided the foundation for developing the proposed rule. The State worked with the Forest Service as a cooperating agency assisting in public meetings held throughout the state and providing input on the development of this DEIS.
- **U.S. Environmental Protection Agency:** The Forest Service contacted the Environmental Protection Agency early in the process to discuss their concerns regarding the proposed rule and analysis expectations.
- **U.S. Fish and Wildlife Service:** The Forest Service contacted the U.S. Fish and Wildlife Service early in the process to discuss the proposed rule and their concerns regarding wildlife issues and analyses.
- **U.S. National Marines Fisheries Service:** The Forest Service contacted the National Marine Fisheries Service early in the process to discuss the proposed rule and their concerns regarding wildlife issues and analyses.

5 List of Document Recipients and Those Notified or Consulted

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CHAPTER 6

REFERENCES

References

- Abrahamson, M. 2013. Alaska's Mining Industry. Strong growth in jobs, wages, and production value. *Alaska Economic Trends* 33(5): 4-11. May.
- ADED (Alaska Department of Economic Development). 2016. Trends and Opportunities in Alaska's Small Cruise Vessel Market. Draft. January. Available online at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd530432.pdf
- ADF&G (Alaska Department of Fish and Game). 2018. 2018-2019 Alaska Hunting Regulations. Available online at: <http://www.adfg.alaska.gov/index.cfm?adfg=wildliferegulations.hunting>
- ADFE&G. 2017. Deciphering Wolf Diets in Southeast Alaska Using Stable Isotope Analyses and Prey Remains in Scats. Annual Performance Report. Grant AKW-20. 4 pg.
- ADF&G. 2015. Deer Management Report of Survey-Inventory Activities 1 July 2012-30 June 2014. Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR-2015-3, Juneau. Patricia Harper and Laura A. McCarthy, editors. Available online at: <http://www.adfg.alaska.gov/index.cfm?adfg=wildliferesearch.smr20153>
- ADF&G. 2014. Community Subsistence Information System. Available online at: <https://www.adfg.alaska.gov/sb/CSIS/>
- ADF&G. 2006. Subsistence Community Profile Database. Available online at: <http://www.state.ak.us/local/akpages/FISH.GAME/subsist>
- ADF&G. 2000. Southeast Alaska Unit 4 Brown Bear Management Strategy. Available online at: http://www.alaskabears.alaska.gov/management/planning/planning_pdfs/u4rep.pdf
- ADF&G. 1998. Tongass Fish and Wildlife Resource Assessment.
- ADNR (Alaska Department of Natural Resources). 2013. Alaska Forest Resources & Practices Regulations, 2013. Division of Forestry. Anchorage, Alaska.
- ADNR. 1997-2005. Alaska's Mineral Industry. Special Reports 51-59 (annual reports for 1996 through 2004). Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys.
- ADOT&PF (Alaska Department of Transportation and Public Facilities). 2014. Draft Southeast Alaska Transportation Plan. Available online at: http://dot.alaska.gov/sereg/projects/satp/assets/SATP_2014_Draft_Final_Web.pdf
- ADOT&PF. 2004. Southeast Alaska Transportation Plan. August 2004.
- AKEPIC (Alaska Exotic Plants Information Clearinghouse). 2018. Non-Native Plant Species List. Alaska Center for Conservation Science, University of Alaska, Anchorage. Available online at: <http://accs.uaa.alaska.edu/invasive-species/non-native-plant-species-list>.
- AKNHPP (Alaska Natural Heritage Program). 2018. Rare Plant Data Portal. Alaska Center for Conservation Science. University of Alaska Anchorage. Anchorage, AK. Available online at: <http://accs.uaa.alaska.edu/botany/>.
- Alaska DCCED (Alaska Department of Commerce, Community, and Economic Development). 2018. Search and Database Download Information, Business License Download. Division of Corporations, Business and Professional Licensing. Available online at: <https://www.commerce.alaska.gov/cbp/main/>

6 References

- Alaska DCCED. 2017. Commercial Passenger Vessel Excise Tax: Community Needs, Priorities, Shared Revenue, and Expenditures. Fiscal Years 2007 to 2016. Alaska Department of Commerce, Community, and Economic Development (Alaska DCCED) February. Available online at: <https://www.commerce.alaska.gov/web/ded/DEV/TourismDevelopment/TourismResearch.aspx>
- Alaska DCCED. 2012. Report to the Alaska Timber Jobs Task Force, Division of Economic Development. Administrative Order 258, Task 8: Alaska's Timber Resource and Wood Products. March.
- Alaska DOL (Department of Labor). 2018. Alaska Population Estimates by Borough, Census Area, City, and Census Designated Place (CDP), 2010 to 2017. Last updated August 14. Available online at: <http://live.laborstats.alaska.gov/pop/index.cfm>
- Alaska DOL. 2017. Fish Harvesting Employment by Species and Month, 2000 – 2016. Southeast Region. Available online at: <http://live.laborstats.alaska.gov/seafood/seafoodsoutheast.cfm>
- Alaska DOL. 2016. Seafood Processing Workforce by Borough or Census Area, 2015. Southeast Region. Available online at: <http://live.laborstats.alaska.gov/seafood/seafoodsoutheast.cfm>
- Alaska Native Heritage Center. 2014. Eyak, Tlingit, Haida & Tsimshian. Cultures of Alaska. Available online at: <http://www.alaskanative.net/en/main-nav/education-and-programs/cultures-of-alaska/eyak-tlingit-haida-and-tsimshian/> Accessed on 12/29/2014
- Alaska Shorebird Group. 2008. Alaska Shorebird Conservation Plan. Version II. Alaska Shorebird Group, Anchorage, Alaska. Available online at: http://www.fws.gov/alaska/mbsp/mbm/shorebirds/pdf/ascp_nov2008.pdf
- Albert, D., and J. Schoen. 2007. A Conservation Assessment for the Coastal Forests and Mountains Ecoregion of Southeastern Alaska and the Tongass National Forest. In *The Coastal Forests and Mountains Ecoregion of Southeastern Alaska and the Tongass National Forest; a conservation assessment and resource synthesis*, edited by J. Schoen and E. Dovichin, Chapter 2. March 2007.
- Aley, T., C. Aley, W.R Elliott, and P. Huntoon. 1993. Karst and Cave Resource Significance Assessment Ketchikan Area, Tongass National Forest, Alaska. Final Report. Prepared for Ketchikan Area of the Tongass National Forest. 79 pp. and Appendix.
- Allen, B.M., and R.P. Angliss. 2014. Sperm Whale (*Physeter macrocephalus*): North Pacific Stock. In *Alaska Marine Mammal Stock Assessments, 2014*, 172–176. NOAA-TM-AFSC-301. Revised 10/09/2014.
- Andrén, H. 1994. Effects of Habitat Fragmentation on Birds and Mammals in Landscapes with Different Proportions of Suitable Habitat: A Review. *Oikos* 71: 355–366.
- Andres, B.A., and G.A. Falxa. 1995. Black oystercatcher (*Haematopus bachmani*). The Birds of North America Online. Cornell Lab of Ornithology, Ithaca, NY. Available online at: <http://bna.birds.cornell.edu/bna/species/155/articles/introduction>.
- APLIC. 2006. Suggest Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.
- As, S. 1999. Invasion of Matrix Species in Small Habitat Patches. *Conservation Ecology* [online] 3(1): 1. <http://www.consecol.org/vol3/iss1/art1/>
- Athey, J.E., and M.B. Werdon. 2018. Alaska's Mineral Industry 2017. Alaska Division of Geological & Geophysical Surveys Special Report 73, 92 p. <http://doi.org/10.14509/30075>
- Audubon Alaska and The Nature Conservancy. 2007. Coastal Forests and Mountains Ecoregions of Southeastern Alaska and the Tongass National Forest: A Conservation Assessment and Resource Synthesis. Available online at:

- <https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/alaska/seak/era/cfm/Pages/CA-AKCFM.aspx>
- Baichtal, J. 2006. Geologic Resources, Paleontology, Geologic Special Areas, and Listing of Significant Caves. Forest Plan Adjustment Proposal Report. Rationale and process used in making the recommended changes to the Plan. USDA Forest Service, Tongass National Forest. File Code 2880 Geology and Karst Resources. Letter to Lee Kramer, Forest Plan Adjustment Coordinator. March 24.
- Baichtal, J.F., and D.N. Swanston. 1996. Karst Landscapes and Associated Resources: A Resource Assessment. General Technical Report, PNW-GTR-383. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. 13 pp.
- Barrett, T.M. 2014. Storage and Flux of Carbon in Live Trees, Snags, and Logs in the Chugach and Tongass National Forests. USDA-FS. General Technical Report PNW-GTR-889. 44 pp.
- Bauder, P., and J. Heys. 2004. Exotic Plant Management at Wrangell-St. Elias National Park and Preserve; Summer 2004 Field Season Report. National Park Service. Wrangell-St. Elias National Park and Preserve.
- Beechie, T.J., and T.H. Sibley. 1997. Relationships between channel characteristics, woody debris, and fish habitat in northwestern Washington streams. *Transactions of the American Fisheries Society* 126:217-229.
- Bell, C. 2015. Tourism in Southeast. Visitor-related Jobs a Key Part of the Region's Economy. *Alaska Economic Trends* 35(8):4-8.
- Ben-David, M., R.T. Bowyer and J.B. Faro. 1996. Niche Separation by Mink and River Otters: Coexistence in a Marine Environment. *Oikos* 75(1):41-48.
- Benda, L., D. Miller, J. Sias, D. Martin, R. Bilby, C. Veldhuisen, and T. Dunne. 2003. Wood Recruitment Processes and wood budgeting. *American Fisheries Society Symposium* 37:49-73.
- Berg, E.C., C.B. Gale, T.A. Morgan, A.M. Brackley, C.E. Keegan, S.J. Alexander, G.A. Christensen, C.P. McIver, and M.G. Scudder. 2014. Alaska's Timber Harvest and Forest Products Industry, 2011. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-903. November.
- Bergman, R., M. E. Puetzman, A. Taylor, and K. E. Skog. 2014. The Carbon Impacts of Wood Products. *Forest Products Journal* 64: 220-231.
- Bettridge, S., C. S. Baker, J. Barlow, P. J. Clapham, M. Ford, D. Gouveia, D. K. Mattila, R. M. Pace III, P. E. Rosel, G. K. Silber, and P. R. Wade. 2015. Status review of the humpback whale (*Megaptera novaeangliae*) under the Endangered Species Act. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-SWFSC-540, 240 p.
- Birdsey, R. A., A. J. Plantinga, and L. S. Heath. 1993. Past and Prospective Carbon Storage in United States Forests. *Forest Ecology and Management* 58: 33-40.
- Bisson, P. A., R. E. Bilby, M. D. Bryant, C. A. Dolloff, G. B. Grette, R. A. House, M. L. Murphy, K.V. Koski, and J.R. Sedell. 1987. Large Woody Debris in forested Streams in the Pacific Northwest: Past, Present, and Future. In *Streamside Management: Forestry and Fishery Interactions*, edited by E. O. Salo and T. W. Cundy, 143-190. College of Forest Resources, University of Washington, Seattle, Washington. Contribution No. 57.
- Bissonette, J. A., D. J. Harrison, C. D. Hargis, and T. G. Chapin. 1997. The influence of spatial scale and scale-sensitive properties on habitat selection by American marten. In *Wildlife and Landscape Ecology*, edited by J. A. Bissonette, 368-385. Springer-Verlag, NY.

6 References

- Bjornn, T. C., and D. W. Reiser. 1991. Habitat Requirements of Salmonids in Streams. In *Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats*, edited by W.R. Meehan, 83-128. American Fisheries Society Special Publication 19. American Fisheries Society, Bethesda, Maryland
- BLM (Bureau of Land Management). 2006. Ring of Fire Proposed Resource Management Plan and Final Environmental Impact Statement. U.S. Department of the Interior, Bureau of Land Management, Anchorage Field Office. Anchorage, Alaska. July 2006.
- Boag, D. A., and M. A. Schroeder. 1992. Spruce Grouse. In: A. Poole, P. Stettenheim, and F. Gill, editors. *The Birds of North America*. Philadelphia: The Academy of Natural Sciences. Washington, DC. The American Ornithologists' Union.
- Boland, J. L., W. P. Smith, and J. P. Hayes. 2009. Survey of Bats in Southeast Alaska with emphasis on Keen's Myotis (*Myotis keenii*). *Northwest Science* 83(3):169-179.
- Bonsal, B. R., and T. D. Prowse. 2006. Regional Assessment of CCM-Simulated Current Climate Over Northern Canada. *Arctic* 59(2):33-40
- Bosakowski, T., B. McCullough, F. J. Lapsansky, and M. E. Vaughn. 1999. Northern Goshawks nesting on a private industrial forest in western Washington. *Journal of Raptor Research* 33:240-244.
- Bowker, J. M. 2001. Outdoor recreation by Alaskans: projections for 2000 through 2020. General Technical Report PNW-GTR-527. Portland, Oregon: USDA Forest Service, Pacific Northwest Research Station. 22p. Available online at: <http://www.fs.fed.us/pnw/pubs/gtr527.pdf>
- Bowyer, R. T., G. M. Blundell, M. Ben-David, S. C. Jewett, T. A. Dean, and L. K. Duffy. 2003. Effects of the Exxon Valdez Oil Spill on River Otters: Injury and Recovery of a Sentinel Species. *Wildlife Monographs* 153:1-53.
- Boyce, D. A., Jr., R. T. Reynolds, and R. T. Graham. 2006. Goshawk status and management: what do we know, what have we done, where are we going? In *The Northern Goshawk: A Technical Assessment of its Status, Ecology, and Management*, edited by M. L. Morrison, 312-325. Studies in Avian Biology No. 31, Cooper Ornithological Society.
- BPIF (Boreal Partners in Flight Working Group). 1999. Landbird Conservation Plan for Alaska Biogeographic Regions, Version 1.0. Unpublished report, U.S. Fish and Wildlife Service, Anchorage, AK. 45 pp.
- Bradner, T. 2014. Parnell Signs Bill to Boost Bokan, Niblack Mine Projects. *Alaska Journal of Commerce*. June 19. Available online at: <http://www.alaskajournal.com/business-and-finance/2014-06-19/parnell-signs-bill-boost-bokan-niblack-mine-projects>
- Brinkman, T. J. 2009. Resilience of a Deer Hunting System in Southeast Alaska: Integrating Social, Ecological, and Genetic Dimensions. Dissertation. University of Alaska Fairbanks, Fairbanks, AK.
- Brinkman, T. J. 2006. The Prince of Wales Island Deer Hunter Project. Preliminary Summary of Hunter Responses to Interview Questions. Community Report. Unpublished report. February.
- Bryant, M. 2009. Global Climate Change and Potential Effects on Pacific Salmonids in Freshwater Ecosystems of Southeast Alaska. *Climatic Change* 95(1-2):165-193. doi 10.1007/s10584-008-9530-x
- Burger, A. E. 2002. Conservation assessment of Marbled Murrelets in British Columbia: a review of the biology, populations, habitat associations, and conservation. Technical Report Series No. 387. Canadian Wildlife Service, Pacific and Yukon Region, British Columbia.
- Burgner, R. L., J. T. Light, L. Margolis, T. Okazaki, A. Tautz, and S. Ito. 1991. Distribution and Origins of Steelhead Trout (*Oncorhynchus mykiss*) in Offshore Waters of the North Pacific Ocean. Bulletin Number 51. International North Pacific Fisheries Commission.

- Burkey, T.V. 1995. Extinction Rates in Archipelagoes: Implications for Populations in Fragmented Habitats. *Conservation Biology* 9:527–541.
- Buskirk, S. W., and W. J. Zielinski. 1997. American marten (*Martes americana*) ecology and conservation. In *Mesocarnivores of northern California: biology, management, and survey techniques, workshop manual*, edited by J.E. Harris, and C.V. Ogan, 17-22. August 12-15, 1997, Humboldt State University, Arcata, CA. The Wildlife Society, California North Coast Chapter, Arcata, CA. 127 pp.
- Calambokidis, J., E. A. Falcone, T. J. Quinn, A. M. Burdin, P. J. Clapham, J. K. B. Ford, C. M. Gabriele, R. LeDuc, D. Mattila, L. Rojas-Bracho, J. M. Straley, B. L. Taylor, J. Urbán R., D. Weller, B. H. Witteveen, M. Yamaguchi, A. Bendlin, D. Camacho, K. Flynn, A. Havron, J. Huggins, and N. Maloney. 2008. SPLASH: Structure of Populations, Levels of Abundance and Status of Humpback Whales in the North Pacific. Final Report for Contract AB133F-03-RP-00078. 58 p. Available online: <http://www.cascadiaresearch.org/files/publications/SPLASH-contract-Report-May08.pdf>
- Calkins, D. G. 1986. Marine Mammals. In *The Gulf of Alaska Physical Environment and Biological resources*, edited by D.W. Hood and S.T. Zimmerman, 527-560. Mineral Management Service Publication number OCS Study: MMS 86-0095, US Government Printing Office, Washington, DC.
- Caouette, J. P., and E. J. DeGayner. 2005. Predictive Mapping for Tree Sizes and Densities in Southeast Alaska. *J. Land. Urban Planning* 72(1-3):49-63.
- Caouette, J. P., M. G. Kramer, and G. J. Nowacki. 2001. Deconstructing the Timber Volume Paradigm in the Management of the Tongass National Forest. General Technical Report PNW-GTR-482. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. Portland, OR. 20 pp.
- Carey, A.B. 2000. Ecology of Northern Flying Squirrels: Implications for Ecosystem Management in the Pacific Northwest, USA. In *Biology of Gliding Mammals*, edited by R. L. Goldingay and J. S. Scheibe, 45-66. Filander Verlag, Forth, Germany.
- Carlson, M.L. and J.R. Fulkerson. 2017. *Tanacetum camphoratum* Less. (syn. = *Tanacetum bipinnatum* (L.) Sch. Bip. pro parte): Conservation Assessment on the Tongass National Forest, Alaska Region. Alaska Natural Heritage Program, University of Alaska Anchorage. Anchorage, Alaska. 41 pp.
- Carlson, M., and M. Shephard. 2007. Is the Spread of Non-native plants in Alaska Accelerating? In *Meeting the Challenge: Invasive Plants in Pacific Northwest Ecosystems*. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. General Technical Report GTR-694. Portland, OR.
- Center for Biological Diversity and Greenpeace. 2011. Petition to List the Alexander Archipelago Wolf (*Canis lupus ligoni*) as Threatened or Endangered under the United States Endangered Species Act. Submitted to the U.S. Fish and Wildlife Service August 10, 2011.
- Chalfoun, A. D., F. R. Thompson, and M. J. Ratnaswamy. 2002. Nest Predators And Fragmentation: A Review And Meta-Analysis. *Conservation Biology* 16:306–318.
- Chamberlin, T. W., R. D. Harr, and F. H. Everest. 1991. Timber Harvesting, Silviculture, and Watershed Processes. In: *Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats*, edited by W.R. Meehan, 181-205. American Fisheries Society Special Publication 19.
- Chapin, T. G., D. J. Harrison, and D. D. Katnik. 1998. Influence of Landscape Pattern on Habitat Use by American Marten in an Industrial Forest. *Conservation Biology* 12: 96-227.

6 References

- Chapin, F.S., III, S.F. Trainor, P. Cochran, H. Huntington, C. Markon, M. McCammon, A. D. McGuire, and M. Serreze. 2014. Alaska. In *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, edited by Terese (T.C.) Richmond, and G. W. Yohe, 514-536 (Chapter 2). U.S. Global Change Research Program. doi:10.7930/J00Z7150.
- Chapman, D. W. 1988. Critical Review of Variables Used to Define Effects of Fines in Redds of Large Salmonids. *Transactions of the American Fisheries Society* 117:1-21.
- Chapman, D. W. and K. P. McLeod. 1987. Development of Criteria for Fine Sediment in the Northern Rockies ecoregion. EPA 910/9-87-162. U.S. Environmental Protection Agency, Seattle, Washington.
- Christensen, G. A., K. R. Julin, R. J. Ross, and S. Willits. 2002. Volume Recovery, Grade Yield and Properties of Lumber from Young-growth Sitka Spruce and Western Hemlock in Southeast Alaska. *Forest Products Journal* 52(5): 81-87.
- Colway, C., and D. E. Stevenson. 2007. Confirmed Records of Two Green Sturgeon from the Bering Sea and Gulf of Alaska. *Northwestern Naturalist* 88:188–192.
- Conant, R. T., Michael G. Ryan, Göran I. Ågren, Hannah E. Birge, Eric A. Davidson, Peter E. Eliasson, Sarah E. Evans, Serita D. Frey, Christian P. Giardina, Francesca M. Hopkins, Riitta Hyvönen, Miko U. F. Kirschbaum, Jocelyn M. Lavalley, Jens Leifeld, William J. Parton, Jessica Megan Steinweg, Matthew D. Wallenstein, J. Å. Martin Wetterstedt, and Mark A. Bradford. 2011. Temperature and Soil Organic Matter Decomposition Rates – Synthesis of Current Knowledge and A Way Forward. *Global Change Biology* 17(11): 3392-3404.
- Cook, J. A., N. G. Dawson, and S. O. MacDonald. 2006. Conservation of Highly Fragmented Systems: The North Temperate Alexander Archipelago. *Biological Conservation* 133: 1-15.
- Cook, J. A., A. L. Bidlack, C. J. Conroy, J. R. Demboski, M. A. Fleming, A. M. Runck, K. D. Stone, and S. O. MacDonald. 2001. A phylogeographic perspective on endemism in the Alexander Archipelago of southeast Alaska. *Biological Conservation* 97: 215–227.
- Cornejo, C., C. Derr, and K. Dillman. 2017. *Ricasolia amplissima* (Lobariaceae): one species, three genotypes and a new taxon from south-eastern Alaska. *The Lichenologist* 49(6): 579–596.
- Croke, J. C., and P. B. Hairsine. 2006. Sediment Delivery in Managed Forests: A Review. *Environmental Review* 14: 59–87. Available online at: <http://er.nrc.ca/> (Accessed April – May 2011).
- Dahlheim, M. E., J. M. Waite, and P. A. White. 2009. Cetaceans of Southeast Alaska: Distribution and Seasonal Occurrence. Publications, Agencies, and Staff of the U.S. Department of Commerce. Paper 157. Available online at: <http://digitalcommons.unl.edu/usdeptcommercepub/157>.
- D'Amore, D. 2016. Personal communication between Patricia Krosse and David D'Amore (USDA Forest Service Research Scientist) on 4/11/2016.
- D'Amore, D. V., and W. C. Lynn. 2002. Classification of forested Histosols in southeast Alaska. *Soil Science Society of America Journal* 66:554-62
- D'Amore, D., P. Herendeen, and E. Hood. 2015. Dissolved Organic Carbon Fluxes from Hydrogeomorphic Units in Alaska Coastal Temperate Rainforest Watersheds. *Soil Science Society of America Journal* 79:378-388.
- D'eon, R. G., S. M. Glenn, I. Parfitt, and M. Fortin. 2002. Landscape Connectivity as a Function of Scale and Organism Vagility in a Real Forested Landscape. *Conservation Ecology* 6:10. Available online: <http://www.consecol.org/vol6/iss2/art10>
- Daniel, T. W., J. A. Helms, and F. S. Baker. 1979. *Principles of Silviculture*. Second Edition, McGraw-Hill, New York.

- Daniels, J. M., M. D. Paruszkiewicz, and S. J. Alexander. 2016. Tongass National Forest timber demand: projections for 2015 to 2030. Gen. Tech. Rep. PNW-GTR-934. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 53 p.
- Darimont, C. T., and T. E. Reimchen. 2002. Intra-hair Stable Isotope Analysis Implies Seasonal Shift to Salmon in Gray Wolf Diet. *Canadian Journal of Zoology* 80: 1638-1632.
- Davidson, E., and I. Janssens. 2006. Temperature Sensitivity of Soil Carbon Decomposition and Feedbacks to Climate Change. *Nature* 440:165-73.
- Davis, H., A. N. Hamilton, A. S. Harestad, and R. D. Weir. 2012. Longevity and Reuse of Black Bear Dens in Managed Forests of Coastal British Columbia. *The Journal of Wildlife Management* 76: 523–527.
- Dawson, N.G., S.O. MacDonald, J.A. Cook. 2007. Endemic mammals of the Alexander Archipelago. In *The Coastal Forests and Mountains Ecoregion of Southeastern Alaska and the Tongass National Forest: A conservation assessment and resource synthesis*, edited by J.W. Schoen and E. Dovichin, Chapter 6.7. The Nature Conservancy and Audubon Alaska.
- Day, R.H., D. A. Nigro, A. K. Prichard. 2000. At-sea Habitat Use by the Kittlitz's Murrelet (*Brachyramphus brevirostris*) in Nearshore Waters of Prince William Sound, Alaska. *Marine Ornithology* 28: 105-114.
- Deal, R. L., and J. C. Tappeiner. 2002. The Effects of Partial Cutting on Stand Structure and Growth in Western Hemlock-Sitka Spruce Stands in Southeast Alaska. *Forest Ecology and Management* 159: 173-186.
- DeGange, A. 1996. A Conservation Assessment for the Marbled Murrelet in Southeast Alaska. U.S. Department of Agriculture, Forest Service General Technical Report PNW-GTR-388.
- DellaSala, D. 2016. The Tongass Rainforest as Alaska's First Line of Climate Change Defense and Importance to the Paris Climate Change Agreements.
- DellaSala, D. 2014. Why Forests Are Pivotal in Planning for Climate Change. PowerPoint presentation.
- DellaSala, D. A., K. A. Engel, D. P. Volsen, R. L. Fairbanks, W. C. McComb, and K. J. Raedeke. 1994. Effectiveness of Silvicultural Modifications of Young-Growth Forest for Enhancing Wildlife Habitat on the Tongass National Forest. Prepared under contract for USDA Forest Service Region 10. Enserch Environmental Corporation.
- Demboski, J. R., B. K. Jacobsen, and J. A. Cook. 1998. Implications of Cytochrome b Sequence Variation for Biogeography and Conservation of the Northern Flying Squirrel (*Glaucomys sabrinus*) of the Alexander Archipelago, Alaska. *Canadian Journal of Zoology* 76:1771–1776.
- Dickerman, R.W., and J. Gustafson. 1996. The Prince of Wales spruce grouse: a new subspecies from southeastern Alaska. *Western Birds* 27:41–47.
- Dillman, K. 2004. Epiphytic Lichens of the Forest-Marine Ecotone of Southeastern Alaska. M.S. Thesis, Arizona State University, Tempe.
- Dillman, K.L. 2008. Conservation Assessment for the Large Round-leaved Orchid (*Platanthera orbiculata* (Pursh.) Lindl. on the Tongass National Forest, Alaska Region. US. USDA Forest Service, Tongass National Forest.
- Dillman, K.L. 2011. Conservation Assessment of *Piperia unalascensis* (Spreng.) Rydb. Region 10 Sensitive Species. USDA Forest Service, Tongass National Forest.
- Dillman, K., M. L. Carlson, B. Bernard, and J. R. Fulkerson. 2017. *Ricasolia amplissima* (Scop.) De Not. subspecies *sheiyi* Derr & Dillman: Conservation Assessment on the Tongass National Forest, Alaska Region. Alaska.

6 References

- Douglas, G., G. Straley, D. Meidinger, and J. Pojar (eds.). 1999. Illustrated Flora of British Columbia, Vol. 3: Dicotyledons (Diapensiaceae through Onagraceae). Victoria, British Columbia: British Columbia Ministry of Environment, Lands and Parks and Ministry of Forests.
- Doyle, F. I., and J. N. M. Smith. 1994. Population Responses of Northern Goshawks to the 10-year Cycle in Numbers of Snowshoe Hares. *Studies in Avian Biology* 16: 122-129.
- Dugan, D., G. Fay, H. Griego, and S. Colt. 2009. Nature-Based Tourism in Southeast Alaska. ISER Working Paper 2009.1. March. Institute of Social and Economic Research, University of Alaska Anchorage. Available online at: www.iser.uaa.alaska.edu
- Dunlap, R. 1996. Fish/Riparian Assessment Panel Summary, Tongass National Forest, Juneau, Alaska. February 13, 1996.
- EcoAdapt. 2014. A Climate Change Vulnerability Assessment for Aquatic Resources in the Tongass National Forest. Bainbridge Island, WA. November.
- ECONorthwest. 2014. The Economic Importance of Alaska's Wildlife in 2011. Final Report prepared for Alaska Department of Fish & Game. May.
- eFlora. 2018. Flora of North America. Missouri Botanical Garden, St. Louis, MO and Harvard University Herbaria, Cambridge, MA. Available online at: <http://www.efloras.org/>.
- EIA (U.S. Energy Information Administration). 2013. How Much of U.S. Carbon Dioxide Emissions Are Associated with Electricity Generation? Available online at <http://www.eia.gov/tools/faqs/faq.cfm?id=77&t=11>
- EPA (Environmental Protection Agency). 2017. Final Project Report: EPA Region 10 Climate Change and TMDL Pilot—South Fork Nooksack River, Washington. EPA/600/R-17/281. U.S. Environmental Protection Agency, National Health and Environmental Effects Research Laboratory, Western Ecology Division, Corvallis, OR.
- EPA (U.S. Environmental Protection Agency). 2014a. EPA's Climate Impacts in Alaska website. Available online at: <http://www3.epa.gov/climatechange/impacts/alaska.html>
- EPA. 2014b. Sources of Greenhouse Gas Emissions. Available online at <http://www.epa.gov/climatechange/ghgemissions/sources/electricity.html>
- Fall, J. A. 2016. Subsistence in Alaska: A Year 2014 Update. Division of Subsistence, ADF&G. December. Available online at: https://www.adfg.alaska.gov/static/home/subsistence/pdfs/subsistence_update_2014.pdf
- Farmer, C. J., and M. D. Kirchhoff. 2007. Ecological classification of deer habitat in the Tongass National Forest, Alaska. *Northwestern Naturalist* 88:73–84.
- Farr, W. A., and M. H. McClellan. 1994. Size and Age Structure of Trees in the Old-Growth Forests of Southeast Alaska. USDA Forest Service, Pacific Northwest Research Station. Unpublished, non-peer-reviewed manuscript on file at Juneau Forestry Sciences Laboratory, Juneau, AK. Ref. R-721.
- Flaherty, E. A., W. P. Smith, S. Pyare, and M. Ben-David. 2008. Experimental Trials of the Northern Flying Squirrel (*Glaucomys sabrinus*) Traversing Managed Rainforest Landscapes: Perceptual Range and Fine-scale Movements. *Canadian Journal of Zoology* 86:1050–1058.
- Flynn, R., T. V. Schumacher, and M. Ben-David. 2004. Abundance, Prey Availability, and Diets of American Martens: Implications for the Design of Old-Growth Reserves in Southeast Alaska. Wildlife Research Final Report. Alaska Department of Fish and Game and U.S. Fish and Wildlife Service. USFWS Grant DCN 70181-1-G133. Douglas, AK.

- Flynn, R. W., and T. Schumacher. 2001. Ecology of martens in southeast Alaska, 1 July 2000-30 June 2001. Alaska Department of Fish and Game. Federal aid in wildlife restoration final research performance report, grants W-23-4 to W-27-4. Study 7.16. Juneau, AK.
- Franklin, J. F., D. R. Berg, D. A. Thornburgh, and J. C. Tappeiner. 1997. Alternative Silvicultural Approaches to Timber Harvesting: Variable Retention Harvest Systems. Pages in (eds). *Creating a Forestry for the 21st Century*, edited by K. A. Kohm and J. F. Franklin 111–140. Island Press, Washington, D.C.
- Furniss, M. J., T. D. Roelofs, and C. S. Yee. 1991. Road Construction and Maintenance. In *Influences of Forest Rangeland Management on Salmonid Fishes and Their Habitat*, edited by W.R. Meehan, 297-323. American Fisheries Society Special Publication 19.
- Galginaitus, M. 2004. Subsistence Resource Report for the Couverden Forest Service Project. Applied Sociocultural Research. Anchorage, Alaska.
- Gibson, J. R., R. L. Haedrich, and C. M. Wenerheim. 2005. Loss of Habitat as a Consequence of Inappropriately Constructed Stream. *Fisheries* 30(1):10-16.
- Goldstein, M. I., A. J. Poe, E. Cooper, D. Youkey, B. A. Brown, and T. L. McDonald. 2005. Mountain Goat Response to Helicopter Overflights in Alaska. *Wildlife Society Bulletin* 33(2): 688-699.
- Goldstein, M. I., D. Martin, and M. C. Stensvold. 2009. Forest Service Alaska Region Sensitive Species List. Assessment and Proposed Revisions to the 2002 List. Juneau. Available online at: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev2_037658.pdf. Accessed: December 15, 2014.
- Goldstein, M. I., L. H. Suring, C. D. Vojta, M. M. Rowland, and C. M. McCarthy. 2013. Developing a Habitat Monitoring Program: Three Examples from National Forest Planning. In *A Technical Guide for Monitoring Wildlife Habitat*, edited by M. M. Rowland and C. D. Vojta, 10-1 to 10-74. USDA Forest Service General Technical Report WO-GTR-89, Washington, D.C., USA.
- Gomi, T., R. D. Moore, and M. A. Hassan. 2005. Suspended Sediment Dynamics in Small Forest Streams of the Pacific Northwest. *Journal of the American Water Resources Association* 41(4): 877-898. June.
- Grant, G. E., S. L. Lewis, F. J. Swanson, J. H. Cissel, and J. J. McDonnell. 2008. Effect of Forest Practices on Peak Flows and Consequent Channel Response: A State-of-Science Report for Western Oregon and Washington. General Technical Report. PNW-GTR-760. Portland, Oregon: USDA Forest Service, Pacific Northwest Research Station. 76p.
- Gregory, S. V., and P. A. Bisson. 1997. Degradation and Loss of Anadromous Salmonid Habitat in the Pacific Northwest. In *Pacific Salmon and Their Ecosystems: Status and Future Options*, edited by D. J. Stouder, P. A. Bisson, and R. J. Naiman, 277-314. Chapman and Hall, New York, New York.
- Grewe, N. 2017. Tongass National Forest: Updated Timber Sale Procedures. USDA Forest Service, Alaska Region, R10-MB-823. May 8. Available online at: https://www.fs.usda.gov/detail/r10/landmanagement/resourcemanagement/?cid=fsbdev2_038785
- Groot, C., and L. Margolis (eds.). 1991. *Pacific Salmon Life History*. University of British Columbia, Vancouver BC.
- Gucinski, H., M. J. Furniss, R. R. Ziemer, and M. H. Brookes. 2001. Forest Roads: a Synthesis of Scientific Information. General Technical Report. PNW-GTR-509. Portland, OR, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 103p.
- Gullufsen, K. 2018. Controversial Timber Sale Can't Find A Bidder. *Juneau Empire*. June 6. Available online at: <https://www.juneauempire.com/news/controversial-timber-sale-cant-find-a-bidder/>

6 References

- Haggerty, M. 2009. Lake Ozette Sockeye Limiting Factors Analysis. Prepared for: The Makah Indian Tribe and NOAA Fisheries in cooperation with the Lake Ozette Sockeye Steering Committee.
- Hanley, T. A., W. P. Smith, and S. M. Gende. 2005. Maintaining Wildlife Habitat in Southeastern Alaska: Implications of New Knowledge for Forest Management and Research. *Landscape and Urban Planning* 72: 113-133.
- Hanley, T. A., D. E. Spalinger, K. J. Mock, O. L. Weaver, and G. M. Harris. 2012. Forage resource Evaluation System for Habitat – Deer: An Interactive Deer Habitat Model. USDA Forest Service General Technical Report PNW-GTR-858, January 2012.
- Happe, P. J., K. J. Jenkins, E. E. Starkey, and S. H. Sharrow. 1990. Nutritional Quality and Tannin Astringency of Browse in Clear-cuts and Old-growth Forests. *Journal of Wildlife Management* 54: 557-566.
- Harding, K. A., and D. C. Ford. 1993. Impacts of Primary Deforestation upon Limestone Slopes in Northern Vancouver Island, British Columbia. *Environmental Geology* 21:137-143.
- Hargis C. D., J. A. Bissonette, and D. L. Turner. 1999. The Influence of Forest Fragmentation and Landscape Pattern on American Martens. *Journal of Applied Ecology* 36:157-172.
- Harris, A. S. and D. L. Johnson. 1983. Western Hemlock-Sitka Spruce. In: *Silvicultural Systems for the Major Forest Types of the United States*, R. M. Burns (compiler), 5–8. Agriculture Handbook No. 445. Washington, D.C.: USDA Forest Service.
- Hassan, M. A., M. Church, T. T. Lisle, F. Brardinoni, L. Benda, and G.E. Grant. 2005. Sediment Transport and Channel Morphology of Small, Forested Streams. *Journal of the American Water Resources Association* 41(4):853-876. August.
- Haufler, J., C. Mehl, and S. Yeats. 2010. Climate Change: Anticipated Effects on Ecosystem Services and Potential Actions by the Alaska Region, U.S. Forest Service. Ecosystem Management Research Institute, Seeley Lake, Montana.
- Hayward, Gregory H.; Colt, Steve; McTeague, Monica L.; Hollingsworth, Teresa N., eds. 2017. Climate Change Vulnerability Assessment for the Chugach National Forest and the Kenai Peninsula. Gen. Tech. Rep. PNW-GTR-950. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 340 p.
- Heard, W.R. 1991. Life History of Pink Salmon (*Oncorhynchus gorbuscha*). In: *Pacific Salmon Life Histories*, edited by C. Groot and L. Margolis, 119-230. University of British Columbia in cooperation with the Government of Canada, Department of Fisheries and Oceans. British Columbia, Canada.
- Hejl, S. J., K. R. Newlon, M. E. McFadzen, J. S. Young, and C. K. Ghalambor. 2002. Brown Creeper (*Certhia americana*). In *The Birds of North America No. 669*, A. Poole and F. Gill, eds. Philadelphia, PA: The Birds of North America, Inc.
- Hennon, P. E., and C. G. Shaw. 1997. The Enigma of Yellow-Cedar Decline. *Journal of Forestry* 95(12): 4-10.
- Hennon, P. E.; C. M. McKenzie, D. V. D'Amore, D. T. Wittwer, R. L. Mulvey, M. S. Lamb, F. E. Biles, and R. C. Cronn. 2016. A Climate Adaptation Strategy for Conservation and Management of Yellow-Cedar in Alaska. Gen. Tech. Rep. PNW-GTR-917. Portland, OR: U.S. Department of Agriculture Forest Service.
- Hilderbrand, G. V., C. C. Schwartz, C. Robbins, M. E. Jacoby, T. A. Hanley, S. M. Arthur, and C. Servheen. 1999. Importance of Meat, Particularly Salmon, to Body Size, Population Productivity, and Conservation of North American Brown Bears. *Canadian Journal of Zoology* 77:132-138.

- Hodges, J. I. 2011. Bald Eagle Population Surveys of the North Pacific Ocean, 1967-2010. *Northwestern Naturalist* 92(1):7-12.
- Huff, D. D., S. T. Lindley, B. K. Wells, and F. Chai. 2012. Green Sturgeon Distribution in the Pacific Ocean Estimated from Modeled Oceanographic Features and Migration Behavior. *PLOS ONE* 7(9): 1–12 (e45852).
- Hupp, J. W., J. I. Hodges, Jr., B. P. Conant, B. W. Meixell, and D. J. Groves. 2010. Winter Distribution, Movements, and Annual Survival of Radiomarked Vancouver Canada Geese in Southeast Alaska. *Journal of Wildlife Management* 74(2):274–284.
- IPCC (Intergovernmental Panel on Climate Change). 2018. Summary for Policymakers. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P. R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp.
- IPCC. 2014. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
- IPCC. 2007. Mitigation of climate change. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- IPCC. 2000. Special Report on Land Use, Land Use Change and Forestry, Summary for Policy Makers, 2000. IPCC, Geneva, Switzerland. 20 pp.
- Isaacs, F. B., R. G. Anthony, R. W. Krahmer, B. D. Callahan, and J. P. Peck. 2005. Effects of Forest Management on Bald Eagles Nesting on State and Private Land in Oregon. Oregon Department of Fish and Wildlife. Bald Eagle Monitoring Report TR19. March 2005.
- ISLES (Island Surveys to Learn about Endemic Species). 2013. Welcome to ISLES. <http://msb.unm.edu/isles/> (Accessed March 2013).
- Iverson, C. G., G. D. Hayward, K. Titus, E. DeGayner, R. E. Lowell, D. C. Crocker-Bedford, P. F. Schempf, and J. Lindell. 1996. Conservation Assessment for the Northern Goshawk in Southeast Alaska. Gen. Tech. Rep. PNW-GTR-387, November 1996, Pacific Northwest Research Station, Portland, Oregon. USDA, Forest Service. 101 pp.
- Iwamoto, R. N., E. O. Salo, M. A. Madej, and R. L. McComas. 1978. Sediment and Water Quality: A Review of the Literature Including a Suggested Approach for Water Quality Criteria. EPA/910/9-78-048. U.S. Environmental Protection Agency, Region Ten, Seattle, Washington.
- Janisch, J. E., and M. E. Harmon. 2002. Successional Changes in Live and Dead Wood Carbon Stores: Implications for Net Ecosystem Productivity. *Tree Physiology* 22: 77-89.
- Jonsson, R., W. Mbongo, A. Felton, and M. Boman. 2012. Leakage Implications for European Timber Markets from Reducing Deforestation in Developing Countries. *Forests* 3:736-744.
- Juday, G. P., R. A. Ott, D. W. Valentine, and V. A. Barber. 1998. Forests, Climate Stress, Insects, and Fire. In: *Implications of Global Change in Alaska and the Bering Sea Region* – Proceedings of a Workshop. Center for Global Change and Arctic System Research.

6 References

- Kahklen, K., and W. Hartsog. 1999. Results of Road Erosion Studies on the Tongass National Forest. Unpublished report. 47 pp. On file with: USDA Forest Service, Pacific Northwest Research Station, Forestry Sciences Laboratory, 2770 Sherwood Lane, Suite 200, Juneau, AK 99801.
- Karwan, D. L., J. A. Gravelle, and J. A. Hubbart. 2007. Effects of Timber Harvest on Suspended Sediment Loads in Mica Creek, Idaho. *Forest Science* 53(2): 181-188.
- Keane, J. J., M. L. Morrison, and D. M. Fry. 2006. Prey and Weather Factors Associated with Temporal Variation in Northern Goshawk Reproduction in the Sierra Nevada California. *Stud. Avian Biol.* 31:85–99.
- Kelly, B. P., T. Ainsworth, D. A. Boyce Jr., E. Hood, P. Murphy, and J. Powell. 2007. Climate Change: Predicted Impacts on Juneau. Scientific Panel on Climate Change, City and Borough of Juneau. Report to Mayor Bruce Botelho and the City and Borough of Juneau Assembly. April 2007.
- Kendall, N. W., J. R. McMillan, M. R. Sloat, T. W. Buehrens, T. P. Quinn, R. R. Pess, K. V. Kuzishchin, M. M. McClure, and R. W. Zabel. 2015. Anadromy and Residency in Steelhead and Rainbow Trout (*Oncorhynchus mykiss*): A Review of the Processes and Patterns. *Canadian Journal of Fisheries and Aquatic Science* 72: 319–342.
- Keyser, T. L., and S. J. Zarnoch. 2012. Thinning, Age, and Site Quality Influence Live Tree Carbon Stocks in Upland Hardwood Forests of the Southern Appalachians. *Forest Science* 58(5): 407-418.
- Kissling, M. L. 2003. Effects of Forested Buffer Width on Breeding Bird Communities in Coastal Forests of Southeast Alaska with a Comparison of Avian Sampling Techniques. M.S. Thesis, University of Idaho, Moscow, Idaho.
- Kissling, M. L., and E. O. Garton. 2008. Forested Buffer Strips and Breeding Bird Communities in Southeast Alaska. *Journal of Wildlife Management* 72:674-681.
- Kissling, M. L., P. M. Lukacs, S. B. Lewis, S. M. Gende, K. J. Kuletz, N. R. Hatch, S. K. Schoen, and S. Oehlers. 2011. Distribution and Abundance of the Kittlitz's Murrelet *Brachyramphus brevirostris* in Selected Areas of Southeastern Alaska. *Marine Ornithology* 39: 3–11.
- Kline, J. D. 2006. Defining and Economics Research Program to Describe and Evaluate Ecosystem Services. USDA Forest Service, Pacific Northwest Research Station. General Technical Report PNW-GTR-700. December.
- Kreiger, R., S. Whitney, and S. Dapceovich. 2018. Nonresidents Working in Alaska: 2016. Alaska Department of Labor and Workforce Development. Research and Analysis Section. January. Available online at: <http://live.laborstats.alaska.gov/reshire/index.cfm>
- Krosse, P. C. 2016. Biological Evaluation for Plants. Tongass National Forest. Ketchikan, AK.
- Kruse, J., and R. Muth. 1990. Subsistence Use of Renewable Resources by Rural Residents of Southeast Alaska. August. 160 pp.
- Kuletz, K. J., D. K. Marks, N. L. Naslund, N. J. Goodson, and M. B. Cody. 1995. Inland Habitat Suitability for the Marbled Murrelet in Southcentral Alaska. In *Ecology and Conservation of the Marbled Murrelet*, edited by C.J. Ralph, G.L. Hunt, Jr., M.G. Raphael, and J.F. Piatt, 141-150. General Technical Report PSW-GTR-152. Pacific Southwest Research Station, Forest Service, U.S. Dept. of Agriculture, Albany, CA.
- Lafferty D. J. R., J. L. Belant, K. S. White, J. N. Womble, and A. T. Morzillo. 2014. Linking Wolf Diet to Changes in Marine and Terrestrial Prey Abundance. *Arctic* 67:143–148.
- Larsen, P., O. Goldsmith, O. Smith, M. Wilson, K. Strzepek, P. Chinowsky, and B. Saylor. 2007. Estimating the Future Cost of Alaska Public Infrastructure at Risk to Climate Change. Institute of Social and Economic Research.

- Larsen, C. F., R. J. Motyka, J. T. Freymueller, K. A. Echelmeyer, and E. R. Ivins. 2005. Rapid Viscoelastic Uplift in Southeast Alaska Caused by post-Little Ice Age Glacial Retreat. *Earth and Planetary Science Letters* 237(3-4):548-560. September 15. <https://doi.org/10.1016/j.epsl.2005.06.032>
- Law, B. 2014. Role of Forest Ecosystems in Climate Change Mitigation. PowerPoint presentation by Beverly Law, Professor, Global Change Biology and Terrestrial Systems Science, Oregon State University. February.
- Lee-Yaw, J. A., J. T. Irwin, and D. M. Green. 2008. Postglacial Range Expansion from Northern Refugia by the Wood Frog, *Rana sylvatica*. *Molecular Ecology* 17:867-884. <https://doi.org/10.1111/j.1365-294X.2007.03611.x>
- Leighty, W. W., S. P. Hamburg, and J. Caouette. 2006. Sequestration in Forest Biomass in Southeast Alaska. *Ecosystems* 9: 1051-1065.
- Lerum, L., and P. C. Krosse. 2005. *Tongass National Forest Invasive Plant Management Plan*. Tongass National Forest. Ketchikan, AK.
- Lewis, S. B. 2001. Breeding Season Diet of Northern Goshawks in Southeast Alaska with a Comparison of Techniques Used to Examine Raptor Diet. Thesis, Boise State University, Idaho, USA.
- Lewis, S. B., K. Titus, and M. R. Fuller. 2006. Northern Goshawk Diet during the Breeding Season on Southeast Alaska. *Journal of Wildlife Management* 70(4): 1151-1160.
- Lindley, S. T., M. L. Moser, D. L. Erickson, M. Belchik, D. W. Welch, E. L. Rechisky, J. T. Kelly, J. Heublein, and A. P. Klimley. 2008. Marine Migration of North American Green Sturgeon. *Transactions of the American Fisheries Society* 137:182–194.
- MacDonald, S. O., and J. A. Cook. 2007. Mammals and Amphibians of Southeast Alaska. Museum of Southwestern Biology, Special Publication No. 8. 191 pp.
- Malt, J., and D. Lank. 2007. Temporal Dynamics of Edge Effects on Nest Predation Risk for the Marbled Murrelet. *Biological Conservation* 140(1-2):160–173.
- Markon, C., S. Gray, M. Berman, L. Eerkes-Medrano, T. Hennessy, H. Huntington, J. Littell, M. McCammon, R. Thoman, and S. Trainor. 2018. Alaska. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II*. [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA. doi: 10.7930/NCA4.2018.CH26.
- May, C. L., B. Pryor, T. E. Lisle, and M. Lang. 2009. Coupling Hydrodynamic Modeling and Empirical Measures of Bed Mobility to Predict the Risk of Scour and Fish of Salmon Redds in a Large Regulated River. *Water Resources Research* 45: W05402, doi:10.1029/2007WR006498.
- McClaren, E. 2004. “Queen Charlotte” Goshawk. *Accounts and Measures for Managing Identified Wildlife. Accounts V*: 1-15.
- McClellan, M. H. 2005. Recent Research on the Management of Hemlock-spruce Forests in Southeast Alaska. *Landscape and Urban Planning* 72: 65–78.
- McDowell Group. 2018a. Economic Impact of Alaska’s Visitor Industry 2017. Prepared for the: Alaska Department of Commerce, Community, and Economic Development, Division of Economic Development. November. Available online at: <https://www.commerce.alaska.gov/web/ded/dev/tourismdevelopment/tourismresearch.aspx>
- McDowell Group. 2018b. The Economic Benefits of Alaska’s Mining Industry. Prepared for the Alaska Miners Association. March. 71 pp.

6 References

- McDowell Group. 2017. Alaska Visitor Statistics Program 7. Summer 2016. Prepared for the State of Alaska Department of Commerce, Community and Economic Development, Division of Economic Development and the Alaska Travel Industry Association. May. Available online at: <https://www.commerce.alaska.gov/web/ded/dev/tourismdevelopment/tourismresearch.aspx>
- McDowell Group. 2013. Bokan Mountain Rare Earth Element Mine Economic Impact Study. Prepared for Ucore Rare Metals, Inc. January. Available online at: <http://ucore.com/McDowell.pdf>
- McKee, C. 2006. Exotic Plants in Alaska's Parks. National Forest Service / University of Alaska. Available at: www.uaf.edu/snras/afes/pubs.
- McKinley, D., M. Ryan, R. Birdsey, C. Giardina, M. Harmon, L. Heath, R. Houghton, R. Jackson, J. Morrison, R. Murray, D. Pataki, and K. Skog. 2011. A synthesis of current knowledge on forests and carbon storage in the United States. *Ecological Applications* 21(6): 1902–1924.
- McNeil, W. J. 1964. Effect of Spawning Bed Environment on Reproduction of Pink and Chum Salmon. *Fishery Bulletin* 65:495-523.
- McNeil, W. J. and D. C. Himsforth (eds.). 1980. *Salmonid Ecosystems of the North Pacific*. Oregon State University Press, Corvallis, Oregon.
- McPherson, E. G., and R. J. Simpson 1999. Carbon Dioxide Reduction Through Urban Forestry: Guidelines for Professional and Volunteer Tree Planters. PSW-GTR-171. USDA Forest Service, Pacific Southwest Research Station. January.
- Millar, C., R. Neilson, D. Bachelet, R. Drapek, and J. Lenihan. 2006. Climate Change at Multiple Scales. Chapter 3 in: *Forest, Carbon and Climate Change: A Synthesis of Science Findings*. Oregon Forest Resources Institute. Oregon State University College of Forestry.
- Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-being: Synthesis*. Island Press. Washington DC. <http://www.maweb.org/en/Products.Synthesis.aspx>
- Morse, K. S. 2000. Responding to the Market Demand for Tongass Timber: Using Adaptive Management to Implement Section 101 of the 1990 Tongass Timber Reform Act. Management Bulletin R10-MB-413. Juneau, AK. U.S. Department of Agriculture, Forest Service, Alaska Region. 43p.
- Murcia, C. 1995. Edge Effects in Fragmented Forests: Implications for Conservation. *Trends in Ecology and Evolution* 10:58–62.
- Murphy, M. L., and A. M. Milner. 1997. Alaska Timber Harvest and Fish Habitat. In *Freshwaters of Alaska: Ecological Syntheses*, edited by A. M. Milner and M. W. Oswood, 229-263. Springer-Verlag: New York.
- Murphy, M. L., J. Heifetz, S. W. Johnson, K. V. Koski, and J. F. Thedinga. 1986. Effects of Clearcut Logging with and Without Buffer Strips on Juvenile Salmonids in Alaskan Streams. *Canadian Journal of Fisheries and Aquatic Sciences* 43: 1521–1533.
- Naiman, R. J., T. J. Beechie, L. E. Benda, D. R. Berg, P. A. Bisson, L. H. MacDonald, M. D. O'Connor, P. L. Olson, and E. A. Steel. 1992. Fundamental Elements of Ecologically Healthy Watersheds in the Pacific Northwest Coastal Ecoregion. In *Watershed Management: Balancing Sustainability and Environmental Change*, edited by R. J. Naiman, 127-188. Springer-Verlag, New York, New York.
- Nawrocki, T., J.R. Fulkerson, K.L. Dillman, and M.L. Carlson. 2017. *Platanthera unalascensis* (Spreng.) Kurtz (slender-spire orchid): Species Assessment for the Tongass National Forest, Alaska Region.
- Nawrocki, T., H. Klein, M. Carlson, L. Flagstad, J. Conn, R. DeVelice, A. Grant, G. Graziano, B. Million, and W. Rapp. 2011. Invasiveness Ranking of 50 Non-Native Plant Species for Alaska. Report prepared for the Alaska Association of Conservation Districts. Alaska Natural Heritage Program, University of Alaska Anchorage, Anchorage, AK. 253 pp.

- Niblack Project LLC. 2015. Economic Benefits. Available online at:
http://www.niblackproject.com/s/Project_Benefits.asp?ReportID=579363
- Nilon, C. H., C. N. Long, and W. C. Zipperer. 1995. Effects of Wildland Development on Forest Bird Communities. *Landscape and Urban Planning* 32:81-92.
- M. M. Muto, V. T. Helker, R. P. Angliss, B. A. Allen, P. L. Boveng, J. M. Breiwick, M. F. Cameron, P. J. Clapham, S. P. Dahle, M.E. Dahlheim, B. S. Fadely, M. C. Ferguson, L. W. Fritz, R. C. Hobbs, Y.V. Ivashchenko, A. S. Kennedy, J. M. London, S. A. Mizroch, R. R. Ream, E. L. Richmond, K. E. W. Shelden, R. G. Towell, P. R. Wade, J. M. Waite, and A. N. Zerbini. 2018. Alaska Marine Mammal Stock Assessments, 2017. U.S. Dept. Commer., NOAA Technical Memorandum NMFS-AFSC, 378. June 2018. 382 p. Available online at:
<https://repository.library.noaa.gov/view/noaa/18114>
- NMFS (National Marine Fisheries Service). 2016. Tongass Forest Plan Amendment Letter of Concurrence, NMFS (#AKR-2016-9574). October 18, 2016 letter to Earl Stewart, Forest Supervisor. NMFS Juneau, AK.
- NMFS. 2015a. ESA Species in Alaska. Endangered, Threatened and Candidate Species in Alaska. Update April 2014. Web access August 2015.
https://alaskafisheries.noaa.gov/protectedresources/esa/ak_nmfs_species.pdf
- NMFS. 2015b. Southern Distinct Population Segment of the North American Green Sturgeon (*Acipenser medirostris*). 5-Year Review: Summary and Evaluation. National Marine Fisheries Service, West Coast Region, Long Beach, CA.
- NMFS. 2009a. Marine mammal fact pages. Available online at:
<http://www.nmfs.noaa.gov/pr/species/mammals/>
- NMFS. 2009b. Green, Leatherback and Loggerhead sea turtle fact pages. Available online at:
<http://www.nmfs.noaa.gov/pr/species/turtles>
- NMFS. 1991. Recovery Plan for the Humpback Whale (*Megaptera novaeangliae*). Prepared by the Humpback Whale Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland.
- Nowacki, G. S., and M. G. Kramer. 1998. The Effects of Wind Disturbance on Temperate Rain Forest Structure and Dynamics of Southeast Alaska. USDA Forest Service. PNW GTR-421, April 1998.
- Office of Subsistence Management. 2016. The Federal Subsistence Management Program: An Overview. Available online at:
https://www.doi.gov/sites/doi.gov/files/uploads/subsistence_management_program_brochure_2016_weblayout_508_reduced.pdf
- Olliff, T., K. Legg, and B. Kaeding, editors. 1999. Effects of Winter Recreation on Wildlife of the Greater Yellowstone Area: A Literature Review and Assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Mammoth, Wyoming, USA.
- Olsen, D. H., J. B. Leirness, P. G. Cunningham, and E. A. Steel. 2014. Riparian Buffers and Forest Thinning: Effects on Headwater Vertebrates 10 Years After Thinning. *Forest Ecology and Management* 321: 81-93.
- Oswood, N. W., A. M. Milner, and J. G. Irons III. 1992. Climate Change and Alaskan Rivers and Streams. In: *Global Climate Change and Freshwater Ecosystems*, edited by P. Firth and S. G. Stuart, 192-210. Springer-Verlag. New York.
- Parker, D. I., J. A. Cook, and S. W. Lewis. 1996. Effects of Timber Harvest on Bat Activity in Southeastern Alaska's Temperate Rainforest. In: *Bats and Forests Symposium, October 19-21, 1995, Victoria*, edited by R. M. R. Barclay and R. M. Brigham., 277-292. Res. Br., B.C. Min. For., Victoria, B.C.

6 References

- Parks, N., and T. Barrett. 2013. Tangled Trends for Temperate Rain Forests as Temperatures Tick Up. Science Findings 149. Portland, OR: USDA Forest Service, Pacific Northwest Research Station. 6 p.
- Parrent, D., and N. Grewe. 2018. Tongass National Forest: 2017 Sawmill Capacity and Production Report. Report to Ecosystem Planning and Budget. USDA Forest Service. Alaska Region. September. Available online at: https://www.fs.usda.gov/detail/r10/landmanagement/resourcemanagement/?cid=fsbdev2_038785
- Parson, E. A., L. Carter, P. Anderson, B. Wang, and G. Weller. 2001. Alaska. In *Climate Change Impacts on the United States: Potential Consequences of Climate Variability and Change*, National Assessment Synthesis Team, 283-314 (Chapter 10). Cambridge: Cambridge University Press.
- Patriquin, K. J., and R. M. R. Barclay. 2003. Foraging by Bats in Cleared, Thinned and Unharvested Boreal Forest. *Journal of Applied Ecology* 40:646-657.
- Peacock, E., M. M. Peacock, and K. Titus. 2007. Black Bears in Southeast Alaska: The Fate of Two Ancient Lineages in the Face of Contemporary Movement. *Journal of Zoology* 271:445–454.
- Pearce, D. E., S. A. Hayes, M. H. Bond, C. V. Hanson, E. C. Anderson, R. B. Macfarlane, and J. C. Garza. 2009. Over the Fall? Rapid Evolution of Ecotypic Differentiation in Steelhead/Rainbow Trout (*Oncorhynchus mykiss*). *Journal of Heredity* 100(5): 515–525.
- Person, D. K., and T. J. Brinkman. 2013. Succession Debt and Roads: Short and Long-term Effects of Timber Harvest on a Large-Mammal Predator-Prey Community in Southeast Alaska. Pages 143-167 in Orians, G. and J. Schoen, editors. *North Pacific Temperate Rainforests: Ecology and Conservation*. University of Washington Press, Seattle, WA.
- Person, D. K., and B. D. Logan. 2012. A spatial analysis of wolf harvest and harvest risk on Prince of Wales and associated islands, southeast Alaska. Final Wildlife Research Report, ADF&G/DWC/WRR-2011-1. Alaska Department of Fish and Game, Division of Wildlife Conservation, Juneau, AK.
- Person, D. K., and A. L. Russell. 2009. Reproduction and Den Site Selection by Wolves in a Disturbed Landscape. *Northwest Science* 83:211–224.
- Person, D. K., and A. L. Russell. 2008. Correlates of mortality in an exploited wolf population. *Journal of Wildlife Management* 72:1540–1549.
- Person, D. 2001. Alexander Archipelago Wolves: Ecology and Population Viability in a Disturbed, Insular Landscape. Doctoral dissertation, University of Alaska Fairbanks, AK.
- Person, D. K., M. Kirchhoff, V. Van Ballenberghe, G. C. Iverson, and E. Grossman. 1996. The Alexander Archipelago Wolf: A Conservation Assessment. General Technical Report PNWGTR-384. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR.
- Piatt, J. F., K. J. Kuletz, A. E. Burger, S. A. Hatch, V. L. Friesen, T. P. Birt, M. L. Arimitsu, G. S. Drew, A. M. A. Harding, and K. S. Bixler. 2007. Status Review of the Marbled Murrelet (*Brachyramphus marmoratus*) in Alaska and British Columbia. U.S. Geological Survey Open-File Report 2006-1387. 258 pp.
- Porter, B. 2018. Wolf Management Report and Plan, Game Management Unit 2: Report Period 1 July 2010–30 June 2015, and Plan Period 1 July 2015–30 June 2020. Alaska Department of Fish and Game, Species Management Report and Plan ADF&G/DWC/SMR&P-2018-10, Juneau.
- Porter, B. 2010. Unit 1A Mountain Goat Management Report. Pages 1-5 in P. Harper, editor. Mountain Goat Report of Survey and Inventory Activities 1 July 2007 – 30 June 2009. Alaska Department of Fish and Game. Project 12.0. Juneau, AK.

- Pyare, S., and W.P. Smith. 2005. Functional Connectivity of Tongass Old-Growth Reserves: An Assessment Based on Flying-Squirrel Movement Capability. Progress report for Tongass monitoring grants, April 30, 2005.
- Pyare, S., W.P. Smith, and C.S. Shanley. 2010. Den Use and Selection by Northern Flying Squirrels in Fragmented Landscapes. *Journal of Mammalogy* 91:886–896.
- Rabe, D. 2009. Population Status of Prince of Wales Spruce Grouse in Southeast Alaska. Final performance report. Alaska Department of Fish and Game, Juneau. September. 8 pp.
- Ralph, C.J., and S.L. Miller. 1995. Offshore Population Estimates of Marbled Murrelets in California. In: *Ecology and Conservation of the Marbled Murrelet*, C.J. Ralph, G.L. Hunt, M. Raphael, and J.F. Piatt (tech. eds.). 353-360 (Chapter 33). General Technical Report PSW-GTR-152. Albany, CA. Pacific Southwest Experiment Station, Forest Service, U.S. Department of Agriculture. 420 pp.
- Raphael, M. G., K. V. Rosenberg, and B. G. Marcot. 1988. Large-scale Changes in Bird Populations of Douglas-fir Forests, Northwestern California. *Bird Conservation* 3:63-83.
- Reid, L.M. and T. Dunne. 1984. Sediment Production from Forest Road Surfaces. Water Resources Research, WRERAC 20(11) 1753-1761. November 1984.
- Reid, W.V., and K.R. Miller. 1989. *Keeping Options Alive: The Scientific Basis for Conserving Biodiversity*. World Resources Institute, Washington, D.C.
- Reynolds, R. T., R. T. Graham, and D. A. Boyce Jr. 2006. An Ecosystem-based Conservation Strategy for the Northern Goshawk. In *The Northern Goshawk: a Technical Assessment of its Status, Ecology, and Management*, edited by M. L. Morrison, 299-311. Studies in Avian Biology No. 31, Cooper Ornithological Society.
- Reynolds, R. T., R. T. Graham, M. H. Reiser, R. L. Bassett, P. L. Kennedy, D. A. Boyce, G. Goodwin, R. Smith, and E. L. Fisher. 1992. Management Recommendations for the Northern Goshawk in the Southwestern United States. General Technical Report RM-217. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.
- Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Iñigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, T. C. Will. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, NY. Partners in Flight website. http://www.partnersinflight.org/cont_plan/ (VERSION: March 2005).
- Robinson, S. K., F. R. Thompson III, T. M. Donovan, D. R. Whitehead, and J. Faaborg. 1995. Regional Forest Fragmentation and the Nesting Success of Migratory Birds. *Science* 267:1987–1990.
- Roffler, G., and D. Gregovich. 2018. Wolf Space Use During Denning Season on Prince of Wales Island, Alaska. *Wildlife Biology* 2018(1): doi: 10.2981/wlb.00468
- Rosenberg K. V., J. A. Kennedy, R. Dettmers, R. P. Ford, D. Reynolds, J.D. Alexander, C. J. Beardmore, P. J. Blancher, R. E. Panjabi, D. N. Pashley, T. D. Rich, J. M. Ruth, H. Stabins, J. Stanton, T. Will. 2016. Partners in Flight Landbird Conservation Plan: 2016 Revision for Canada and Continental United States. Partners in Flight Science Committee. 119 pp.
- Russell, A.L. 1999. Habitat Relationships of Spruce Grouse in Southeast Alaska. M. S. Thesis. Texas Tech University, Dallas, TX. May.
- Salafsky, S. R., R. T. Reynolds, B. R. Noon, and J. A. Wiens. 2007. Reproductive Responses of Northern Goshawks to Variable Prey Populations. *Journal of Wildlife Management* 71: 2274-2283.
- Salafsky, S. R., R. T. Reynolds, and B. R. Noon. 2005. Patterns of Temporal Variation in Goshawk Reproduction and Prey Resources. *Journal of Raptor Research* 39: 237-246.

6 References

- Salo, E. O. 1991. Life History of Chum Salmon. (*Oncorhynchus keta*). In *Pacific Salmon Life Histories*, edited by C. Groot and L. Margolis, 231-310. University of British Columbia in co-operation with the Government of Canada, Department of Fisheries and Oceans. British Columbia, Canada.
- Sauer, J.R., J. E. Hines, J. E. Fallon, K. L. Pardieck, D. J. Ziolkowski, Jr., and W. A. Link. 2014. The North American Breeding Bird Survey, Results and Analysis 1966 - 2013. Version 01.30.2015. USGS Patuxent Wildlife Research Center, Laurel, MD.
- Scheibe, J. S., W. P. Smith, J. Bassham, and D. Magness. 2006. Locomotor Performance and Cost of Transport in the Northern Flying Squirrel *Glaucomys sabrinus*. *Acta Theriologica* 51(2): 169–178.
- Schoen, J., and L. Beier. 1990. Brown Bear Habitat Preferences and Brown Bear Logging and Mining Relationships in Southeast Alaska. Federal Aid in Wildlife Restoration. Final report. Grant W-22. Alaska Department of Fish and Game, Juneau, AK.
- Schrader, B., and P. Hennon. 2005. Assessment of Invasive Species in Alaska and its National Forests. Compiled by Schrader and Hennon with contributing authors from USDA Forest Service Alaska Regional Offices. August 30, 2005. 26 pp.
- Schroeder, R., and R. Mazza. 2005. A Synthesis of Recent Subsistence Research in Southeast Alaska. Available on request.
- Sealaska. 2018. 2018 Q1 Shareholder Newsletter. Available online: <https://www.sealaska.com/sites/default/files/resources/2018%20Q1%20Shareholder%20Newsletter.pdf>
- Semlitsch, R. D., B. D. Todd, S. M. Blomquist, A. J. K. Calhoun, J. W. Gibbons, J. P. Gibbs, G. J. Graeter, E. B. Harper, D. J. Hocking, M. L. Hunter Jr., D. A. Patrick, T. A. G. Rittenhouse, and B. B. Rothermel. 2009. Effects of Timber Harvest on Amphibian Populations: Understanding Mechanisms from Forest Experiments. *BioScience* 59(10) 853-862.
- Shanley, C. S., S. Pyare, M. Goldstien, P. Alaback, D. Albert, C. Beier, T. Brinkman, R. Edwards, E. Hood, A. MacKinnon, M. McPhee, T. Patterson, L. Suring, D. Tallmon, and M. Wipfli. 2015. Climate Change Implications in the Northern Coastal Temperate Rainforest of North America. *Climate Change* 1355-9.
- Shanley, C. S., and D. M. Albert. 2014. Climate Change Sensitivity Index for Pacific Salmon Habitat in Southeast Alaska. *PLoS ONE* 9(8): e104799.
- Skog, K. E.; D. C. McKinley, R. A. Birdsey, S. J. Hines, C. W. Woodall, E. D. Reinhardt, and J. M. Vose. 2014. Managing Carbon. In *Climate Change and United States Forests*, edited by D. L. Peterson et al., Chapter 7. *Advances in Global Change Research* 57. doi 10.1007/978-94-007-7515-2__7 <http://digitalcommons.unl.edu/usdafsfacpub/274>
- Sloat, M. R., G. H. Reeves, and K. R. Christiansen. 2016. Stream Network Geomorphology Mediates Predicted Vulnerability of Anadromous Fish Habitat to Hydrologic Change in Southeast Alaska. *Global Change Biology* 23(2). <https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.13466>
- Smith, W. 2013. Spatially Explicit Analysis of Contributions of a Regional Conservation Strategy Toward Sustaining Northern Goshawk Habitat. *Wildlife Society Bulletin* 37: 1–10.
- Smith, N., R. Deal, J. Kline, D. Blahna, T. Patterson, T.A. Spies, and K. Bennett. 2011. Ecosystem Services as a Framework for Forest Stewardship: Deschutes National Forest Overview. Pacific Northwest Research Station General Technical Report PNW-GTR-852. August.
- Smith, W. P. 2005. Evolutionary Diversity and Ecology of Endemic Small Mammals of Southeastern Alaska with Implications for Land Management Planning. *Landscape and Urban Planning* 72:135–155.

- Smith, J. E., L. S. Heath, and P. B. Woodbury. 2004. How to Estimate Forest Carbon for Large areas from Inventory Data. *Journal of Forestry* July/August: 25-31.
- Southeast Conference. 2018. Southeast Alaska by the Numbers 2018. Prepared by Rain Coast Data. Available online at: <http://www.seconference.org/sites/default/files/Southeast%20Alaska%20by%20the%20numbers%202018%20FINAL-compressed.pdf>
- SNAP (Scenarios Network for Alaska & Arctic Planning). 2013. Community Charts: Juneau, Alaska.
- Soule, M. E. 1983. What do we really know about extinction? Pp 111-124 in C. M. Schonewald-Cox, S. M. Chambers, B. MacBryde, and W. L. Thomas, eds. *Genetics and Conservation*. Benjamin/Cummings, London. As Cited in Dawson et al. (2007).
- Spence, B. C., G. A. Lomnický, R. M. Hughes, and R. P. Novitzki. 1996. An Ecosystem Approach to Salmonid Conservation. Report prepared by Management Technology. Sponsored by the National Marine Fisheries Service, U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service, Washington, D.C.
- Spies, T. A. 2004. Ecological Concepts and Diversity of Old-growth Forests. *Journal of Forestry* 102(3):14–20. April 1.
- Spies, T. A., and J. F. Franklin. 1991. The Structure of Natural Young, Mature, and Old-growth Douglas-fir Forest in Oregon and Washington. In *Wildlife and Vegetation of Unmanaged Douglas-fir Forests*, edited by L. F. Ruggiero, K. B. Aubry, A. B. Carey, and M. H. Huff. General Technical Report PNW-285. USDA Forest Service, Pacific Northwest Research Station, Portland, OR.
- Straley, J. M., C.M. Gabriele, and T.J. Quinn II. 2009. Assessment of Mark Recapture Models to Estimate the Abundance of a Humpback Whale Feeding Aggregation in Southeast Alaska. *Journal of Biogeography* 36:427-438.
- Stephenson, N., A. Das, R. Condit, S. Russo, P. Baker, N. Beckman, D. Coomes, E. Lines, W. Morris, N. Ruger, E. Alvarez, C. Blundo, S. Bunyavejchewin, G. Chuyong, S. David, A. Duque, C. Ewango, O. Flores, J. Franklin, H. Grau, Z. Hao, M. Harmon, S. Hubbell, D. Kenfrack, Y. Lin, J. Makana, A. Malizia, R. Pabst, N. Pongpattananurak, S. Su, I. Sun, S. Tan, D. Thomas, P. Mantgem, X. Wang, S. Wisser, and M. Zavala. 2014. Rate of Tree Carbon Accumulation Increases Continuously with Tree Size. *Nature: International Weekly Journal of Science* 507(7490). Available online at: <http://www.nature.com/nature/journal/v507/n7490/full/nature12914.html>
- Stillwater Sciences. 2012. Forest Management and Coho Salmon Population Dynamics in Southeast Alaska's Staney Creek Watershed. Prepared by Stillwater Sciences, Portland, Oregon for The Wilderness Society, Anchorage, Alaska.
- Stone, K. D., and J. A. Cook. 2000. Phylogeography of Black Bears (*Ursus americanus*) of the Pacific Northwest. *Canadian Journal of Zoology* 78: 1218–1223.
- Strong, D. 2014. Seafood Processors. Large Segment of a Massive Industry. *Alaska Economic Trends* 34(11):9–11.
- Sullivan, P. F.; R. L. Mulvey, A. Brownlee, T. M. Barrett, and R. R. Pattison. 2015. Warm Summer Nights and the Growth Decline of Shore Pine in Southeast Alaska. *Environmental Research Letters* 10: 124007. <http://dx.doi.org/10.1088/1748-9326/10/12/124007>.
- Sullivan, K., T. E. Lisle, C. A. Dolloff, G. E. Grant, and L. M. Reid. 1987. Stream Channels: the Link between Forests and Fishes. In *Streamside Management: Forestry and Fishery Interactions*, edited by E. O. Salo and T. W. Cundy, 39-97. Institute of Forest Resources Contribution Number 57. University of Washington, College of Forest Resources, Seattle, Washington.

6 References

- Swanson, F. J., L. E. Benda, S. H. Duncan, G. E. Grant, W. F. Magahan, L. M. Reid, and R. R. Ziemer. 1987. Mass Failures and Other Processes of Sediment Production in Pacific Northwest Forest Landscapes. In *Streamside Management: Forestry and Fishery Interactions*, edited by E.O. Salo and T.W. Cundy, 9-38. Institute of Forest Resources Contribution Number 57. University of Washington, College of Forest Resources, Seattle, Washington.
- Swanson, F. J., G. W. Lienkaemper, and J. R. Sedell. 1976. History, Physical Effects, and Management Implications of Large Organic Debris in Western Oregon Streams. General Technical Report PNW-56. USDA Forest Service, Portland, Oregon.
- Szepanski, M. M., M. Ben-David, and V. Van Ballenberghe. 1999. Assessment of Anadromous Salmon Resources in the Diet of the Alexander Archipelago Wolf Using Stable Isotope Analysis. *Oecologia* 120: 327–335.
- Tessler, D. F., M. L. Snively, and T. A. Gotthardt. 2014. New Insights on the Distribution, Ecology and Overwintering Behavior of the Little Brown Myotis (*Myotis lucifugus*) in Alaska. *Northwestern Naturalist* 95: 251-263.
- Tessler, D. F., J. A. Johnson, B. A. Andres, S. Thomas, and R. B. Lanctot. 2007. Black Oystercatcher (*Haematopus bachmani*) Conservation Action Plan. International Black Oystercatcher Working Group, Alaska Department of Fish and Game, Anchorage, AK; U.S. Fish and Wildlife Service, Anchorage, AK; and Manomet Center for Conservation Sciences, Manomet, MA.
- Thompson, I. D., and A. S. Harestad. 1994. Effects of Logging on American Martens, and Models for Habitat Management. In *Martens, Sables, and Fishers: Biology and Conservation*, edited by S. W. Buskirk, A. S. Harestad, M. G. Raphael, and R. A. Powell, 355-367. Cornell University Press, Ithaca, NY.
- Thysell, D. R., and A. B. Carry. 2000. Effects of Forest Management on Understory and Overstory Vegetation: A Retrospective Study. USDA Forest Service. PNW-GTR-488. March 2000.
- Titus, K., and L. Beier. 1999. Suitability of Stream Buffers and Riparian Habitats for Brown Bears. *Ursus* 11:149-156 (abstract only).
- Tonina, D., C. H. Luce, B. Rieman, J. M. Buffington, P. Goodwin, S. R. Clayton, S. M. Ali, J. J. Barry, J. J., and C. Berenbrock. 2008. Hydrological Response to Timber Harvest in Northern Idaho: Implications for Channel Scour and Persistence of Salmonids. *Hydrological Processes* 22:3223-3235.
- Trudel, M., D. W. Welsh., J. F. T. Morris, M. E. Thiess, R. Candy, and T. D. Beacham. 2004. Using Genetic Markers to Understand the Coastal Migration of Juvenile Coho (*Oncorhynchus kisutch*) and Chinook Salmon (*O. tshawytscha*). North Pacific Anadromous Fish Commission Technical Report 5.
- Trudel, M., J. Fisher, J. Orsi, J. Morris, M. Thiess, R. Sweeting, S. Hinton, E. Fergusson, and D. Welch. 2009. Distribution and migration of Juvenile Chinook Salmon Derived from Coded Wire Tag Recoveries along the Continental Shelf of Western North America. *Transactions of the American Fisheries Society* 138: 1369–1391.
- Tucker, S., M. Trudel, D. W. Welch, J. R. Candy, J. F. T. Morris, M. E. Thiess, C. Wallace, and T. D. Beacham. 2011. Life History and Seasonal Stock-specific Ocean Migration of Juvenile Chinook Salmon. *Transaction of the American Fisheries Society* 140: 1101–1191.
- U.S. Census Bureau. 2018a. BO3002: Hispanic or Latino Origin by Race. 2013-2017 American Community Survey 5-Year Estimates. Available online at: <https://factfinder.census.gov/>
- U.S. Census Bureau. 2018b. B19013: Median Household Income in the Past 12 Months (in 2017 Inflation-Adjusted Dollars). 2013-2017 American Community Survey 5-Year Estimates. Available online at: <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

- U.S. Census Bureau. 2018c. S1701: Poverty Status in the Past 12 Months. 2013-2017 American Community Survey 5-Year Estimates. Available online at: <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- U.S. NABCI (U.S. National Bird Conservation Initiative Committee). 2000. Bird Conservation Region Descriptions: A Supplement to the North American Bird Conservation Initiative Bird Conservation Regions Map. Available online at: <http://www.nabci-us.org/aboutnabci/bcrdescrip.pdf>
- United Nations Environment Programme. 1991. Fourth Revised Draft Convention on Biological Diversity. United Nations Environment Programme.
- URS Corporation. 2006. Mineral Potential Report, Ring of Fire Planning Area, Alaska. Prepared for Bureau of Land Management, Anchorage Field Office. Anchorage, Alaska. July 2006.
- USACE (U.S. Army Corps of Engineers). 2004. Letter signed by John C. Leeds III, Juneau Field Regulatory Office, February 10, 2004.
- USDA Forest Service. In Review. Assessment of the Influence of Disturbance, Management Activities, and Environmental Factors on Carbon Stocks. Alaska Region. Office of Sustainability and Climate Change. Washington, D.C. 35 pp.
- USDA Forest Service. 2019. Natural Resource Manager (NRM): Threatened, Endangered, and Sensitive Plants (TESP) Inventory.
- USDA Forest Service. 2018a. Tongass Harvest and Employment, 2002 to 2017 Update. Data on file with Nicole Grewe, Ph.D. Regional Economist, USDA Forest Service, Alaska Region.
- USDA Forest Service. 2018b. Estimating the Range of Expected Tongass National Forest Timber Purchase and Sale Offer. Briefing paper. April. Available online at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd605841.pdf
- USDA Forest Service. 2018c. Tongass National Forest 5 Year Timber Sale Schedule 2018-2022. Available online at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd575055.pdf
- USDA Forest Service. 2018d. U.S. Forest Service, Alaska Region, Remaining Timber Sales Volumes and Values on November 30, 2018.
- USDA Forest Service. 2018e. Prince of Wales Landscape Level Analysis Project. Final Environmental Impact Statement. Alaska Region. Tongass National Forest, Thorne Bay Ranger District and Craig Ranger District. R10-MB-833e. October. Available online at: <https://www.fs.usda.gov/detail/tongass/landmanagement/projects/?cid=fseprd529245>
- USDA Forest Service. 2018f. Draft Decision Notice for the Vallenaar Young-growth Project. Ketchikan Misty Fjords Ranger District. February. Available online at: <https://www.fs.usda.gov/project/?project=51766>
- USDA Forest Service. 2018g. Tongass National Forest Log Exports and Interstate Shipments (MMBF) (Compiled by Tongass NF). Available online at: https://www.fs.usda.gov/detail/r10/landmanagement/resourcemanagement/?cid=fsbdev2_038785
- USDA Forest Service. 2018h. All Service Receipts (ASR) Final Payment Detail Report (ASR-10-03). Fiscal Year 2016. May 7. Available online at: <https://www.fs.fed.us/>
- USDA Forest Service. 2018i. All Service Receipts (ASR) Final Payment Detail Report (ASR-10-03). Fiscal Year 2017. May 7. Available online at: <https://www.fs.fed.us/>
- USDA Forest Service. 2018j. Natural Resource Information System (NRIS): Current Invasive Plants Inventory. NRIS Invasive Plants Product Page. Available online at: <http://data.fs.usda.gov/geodata/edw/datasets.php?dsetParent=InvasiveSpecies>. Accessed: November 2018.

6 References

- USDA Forest Service. 2017a. Estimating the Range of Expected Tongass National Forest Timber Purchase and Sale Offer. Briefing paper. May.
- USDA Forest Service. 2017b. U.S. Forest Service, Alaska Region, Remaining Timber Sales Volumes and Values on November 30. Available online at:
https://www.fs.usda.gov/detail/r10/landmanagement/resourcemanagement/?cid=fsbdev2_038785
- USDA Forest Service. 2017c. First Alaska timber sale sold under state-federal Good Neighbor Authority. Available online at: <https://www.fs.usda.gov/detail/tongass/news-events/?cid=FSEPRD559699>
- USDA Forest Service. 2017d. Wrangell Island Project Record of Decision. Forest Service Alaska Region. Tongass National Forest. R10-MB-634d. December. Available online at:
<https://www.fs.usda.gov/project/?project=34831>
- USDA Forest Service. 2017e. Shoreline II Outfitter/Guide Final Environmental Impact Statement. Alaska Region. Tongass National Forest. R10-MB-793c. March. Available online at:
<https://www.fs.usda.gov/project/?project=38181>
- USDA Forest Service. 2017f. Economic Effects of National Forest Recreation in Alaska. Alaska Region. Briefing Paper. March. Available online at:
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd511800.docx
- USDA Forest Service. 2016a. Tongass Land and Resource Management Plan. R10-MB-769g. June.
- USDA Forest Service. 2016b. Tongass Land and Resource Management Plan, Final Environmental Impact Statement Plan Amendment. R10-MB-769e, f. June. Available online at:
<https://www.fs.usda.gov/detail/tongass/landmanagement/planning/?cid=stelprd3801708>
- USDA Forest Service. 2016c. Tongass Land and Resource Management Plan Record of Decision. R10-MB-769l. December.
- USDA Forest Service. 2016d. All Service Receipts (ASR) Final Payment Detail Report (ASR-10-03). Fiscal Year 2015. January 22. Available online at: <https://www.fs.fed.us/>
- USDA Forest Service. 2016e. Tongass National Forest Amendment Biological Assessment for Species Under the Jurisdiction of the National Marine Fisheries Service. Tongass National Forest, Alaska. 40p.
- USDA Forest Service. 2015a. All Service Receipts (ASR) Final Payment Detail Report (ASR-10-03). Fiscal Year 2013. January 8. Available online at: <https://www.fs.fed.us/>
- USDA Forest Service. 2015b. All Service Receipts (ASR) Final Payment Detail Report (ASR-10-03). Fiscal Year 2014. April 22. Available online at: <https://www.fs.fed.us/>
- USDA Forest Service. 2015c. 2014 Tongass Land Management Plan Monitoring & Evaluation Report. Available online
<https://www.fs.usda.gov/detail/tongass/landmanagement/planning/?cid=stelprd3856205>
[February 2019].
- USDA Forest Service. 2015d. Baseline Estimates of Carbon Stocks in Forests and Harvested Wood Products for National Forest System Units; Alaska Region. 34 pp. Whitepaper.
<http://www.fs.fed.us/climatechange/documents/AlaskaRegionCarbonAssessment.pdf>
- USDA Forest Service. 2015e. Species Evaluations for 16 Plants and 3 Lichens on the Tongass National Forest: An Evaluation for Species of Conservation Concern. Unpublished, internal document. 170 pp.
- USDA Forest Service. 2014. 2013 Annual Tongass National Forest Monitoring and Evaluation Report. 14a Stream and Fish Habitat: Fish Passage. Available on line
<http://www.fs.usda.gov/detail/tongass/landmanagement/planning/?cid=stelprdb5368225>
[November 2014]

- USDA Forest Service. 2013a. Forest Service National Strategic Framework for Invasive Species FS-1017. Washington, DC.
- USDA Forest Service. 2013b. Environmental Assessment, Decision Notice and Finding of No Significant Impact, Wrangell-Petersburg Weed Management Project. Wrangell and Petersburg Ranger Districts, Tongass National Forest. R10-MB-758. July.
- USDA Forest Service. 2012a. 2011 Tongass Monitoring and Evaluation Report. Tongass National Forest.
- USDA Forest Service. 2012b. Alaska Region Sensitive Plants.
- USDA Forest Service. 2012c. Bell Island Geothermal Leases Final Supplemental EIS and Record of Decision. Ketchikan-Misty Fiords Ranger District, Tongass National Forest. R10-MB-750b. December 2012.
- USDA Forest Service. 2012d. Ketchikan-Misty Fiords Outfitter and Guide Management Plan Final Environmental Impact Statement. Tongass National Forest. R10-MB-737b. January. Available online at: <https://www.fs.usda.gov/project/?project=32817>
- USDA Forest Service. 2012e. Prince of Wales Outfitter and Guide Management Plan Environmental Assessment. Tongass National Forest. R10-MB-743a. March. Available online at: <https://www.fs.usda.gov/project/?project=27974>
- USDA Forest Service. 2011. Timber Supply and Demand: 2010. Alaska National Interest Lands Conservation Act Section 706(a) Report to Congress. USDA Forest Service, Alaska Region. Draft. October 12.
- USDA Forest Service. 2009a. Forest Service Alaska Region Sensitive Species List, Assessment and Proposed Revisions to the 2002 List. Prepared by Michael I. Goldstein, Donald Martin, and Mary C. Stensvold. Tongass National Forest, Alaska. Available online at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev2_037658.pdf
- USDA Forest Service. 2009b. Petersburg Outfitter and Guide Management Plan Environmental Assessment. Tongass National Forest. R10-MB-706. December. Available online at: <https://www.fs.usda.gov/project/?project=26239>
- USDA Forest Service. 2009c. Wrangell Outfitter and Guide Management Plan Environmental Assessment. Tongass National Forest. R10-MB-700. June. Available online at: <https://www.fs.usda.gov/project/?project=24426>
- USDA Forest Service. 2008a. Land and Resource Management Plan, Tongass National Forest. R10-MB-603b. January.
- USDA Forest Service. 2008b. Tongass Land and Resource Management Plan, Final Environmental Impact Statement and Record of Decision. R10-MB-603a, c, d, e. January.
- USDA Forest Service. 2007. Tongass National Forest, 2006 Annual Monitoring and Evaluation Report. USDA Forest Service, Tongass National Forest. R10-MB-609.
- USDA Forest Service. 2006. Invasive Species Strategy 2006-2010. Alaska Region. Juneau, AK.
- USDA Forest Service. 2005. Alaska Region Invasive Plant Strategy. Alaska Region. Juneau, AK.
- USDA Forest Service. 2004. Tongass National Forest: 2004 Annual Monitoring and Evaluation Report: Fish Habitat and Soil and Water. Available online at: <http://www.fs.fed.us/r10/tongass/projects/tlmp/monitoring/monitoring.shtml>
- USDA Forest Service. 2003a. Final Supplemental Environmental Impact Statement - Roadless Area Evaluation for Wilderness Recommendations. Volumes 1 through 4. R10-MB-481a, b, c, d. Ketchikan, Alaska.

6 References

- USDA Forest Service. 2003b. Final Supplemental Environmental Impact Statement - Roadless Area Evaluation for Wilderness Recommendations. Record of Decision. R10-MB-481g. Ketchikan, Alaska.
- USDA Forest Service. 2001. USDA Forest Service Handbook, FSH 2090.21 – Aquatic Habitat Management Handbook. USDA Forest Service, Alaska Region, Juneau, Alaska. Amendment No. 2090.21-2001-1. November.
- USDA Forest Service. 2000. Forest Service Roadless Area Conservation Rule Final Environmental Impact Statement. USDA Forest Service, Washington Office. November. Available online at: <http://roadless.fs.fed.us/documents/feis/>
- USDA Forest Service. 1997a. Tongass National Forest Land and Resource Management Plan. R10-MB-338dd. USDA Forest Service, Alaska Region. 1997.
- USDA Forest Service. 1997b. Tongass National Forest Land Management Plan Revision Final Environmental Impact Statement and Record of Decision. R10-MB-338a, b, c, e, f, g, h. USDA Forest Service, Alaska Region. January 1997.
- USDA Forest Service. 1995. Report to Congress, Anadromous Fish Habitat Assessment. Pacific Northwest Research Station and Region 10. R10-MB-279.
- USDA Forest Service. 1991. Title 2600 - Wildlife, Fish, and Sensitive Plant Habitat Management. Forest Service Manual 2600.
- USDA Forest Service. 1990. *Silvics of North America*. Volume 1, Conifers. Agricultural Handbook 654.
- USDA Forest Service. 1983. Silvicultural Systems for the Major Forest Types of the United States. Agriculture Handbook 445.
- USDA Forest Service and ADNR. 2014. Forest Health Conditions in Alaska – 2013: FHP Protection Report R10-PR-035. Edited by E. Graham and T. Huetten. R10-PR-035. February 2014. Available online at: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3797075.pdf
- USFWS (U.S. Fish and Wildlife Service). 2015. Species Status Assessment for the Alexander Archipelago Wolf (*Canis lupus ligoni*). Version 1.0, December 2015. Alaska Region, Anchorage, Alaska. 162 pp.
- USFWS. 2014. 5-Year Review: Summary and Evaluation of the Short-tailed Albatross. Anchorage Fish and Wildlife Field Office Anchorage, Alaska. 43p.
- USFWS. 2012a. The short-tailed albatross. Available online at: <http://alaska.fws.gov/fisheries/endangered/listing.htm>
- USFWS. 2012b. The spectacled eider. Available online at: <http://alaska.fws.gov/fisheries/endangered/listing.htm>
- USFWS. 2012c. The Steller's eider. Available online at: <http://alaska.fws.gov/fisheries/endangered/listing.htm>
- USFWS. 2012d. Aleutian tern counts from seabird colonies and nearshore marine bird surveys in the Kodiak Archipelago, Alaska 1975-2012. Unpublished Refuge Report 01-12. Prepared by R.M. Corcoran. U.S. Fish and Wildlife Service, Kodiak National Wildlife Refuge, Kodiak, AK.
- USFWS. 2010. Species assessment and listing priority assignment form: *Falci pennis canadensis isleibi* Prince of Wales spruce grouse. U.S. Fish and Wildlife Service, Region 7.
- USFWS. 2007. Queen Charlotte Goshawk Status Review. Alaska Region, Juneau Field Office.
- Vercessi, L. 2014. Alaska Salmon Fisheries Enhancement Program 2013 Annual Report. Alaska Department of Fish and Game, Fisheries Management Report 14-12, Anchorage, AK.

- Verschuyf, J., S. Riffell, D. Miller, and T.B. Wigley. 2011. Biodiversity Response to Intensive Biomass Production From Forest Thinning in North American Forests – A Meta-analysis. *Forest Ecology and Management* 261: 221-232.
- Walton, K., T. Gotthardt, and T. Fields. 2013a. Little Brown Myotis. Alaska Species Ranking System Summary Report. Alaska Natural Heritage Program. University of Anchorage. Anchorage, AK. 99501.
- Walton, K., T. Gotthardt, and T. Fields. 2013b. Silver-haired bat. Alaska Species Ranking System Summary Report. Alaska Natural Heritage Program. University of Anchorage. Anchorage, AK. 99501.
- Walton, K., T. Gotthardt, and T. Fields. 2013c. Keen's myotis. Alaska Species Ranking System Summary Report. Alaska Natural Heritage Program. University of Anchorage. Anchorage, AK. 99501.
- Walton, K., T. Gotthardt, and T. Fields. 2013d. California myotis. Alaska Species Ranking System Summary Report. Alaska Natural Heritage Program. University of Anchorage. Anchorage, AK. 99501.
- Walton, K., T. Gotthardt, and T. Fields. 2013e. Long-legged myotis. Alaska Species Ranking System Summary Report. Alaska Natural Heritage Program. University of Anchorage. Anchorage, AK. 99501.
- Weckworth, B., S. Talbot, G. Sage, D. Person, and J. Cook. 2005. A Signal for Independent Coastal and Continental Histories for North American Wolves. *Molecular Ecology* 14: 917–931.
- Weckworth, B.V., S.L. Talbot, and J.A. Cook. 2010. Phylogeography of Wolves (*Canis lupus*) in the Pacific Northwest. *Journal of Mammalogy* 91: 363–375.
- Weckworth, B.V., N.G. Dawson, S.L. Talbot, M.J. Flamme, and J.A. Cook. 2011. Going Coastal: Shared Evolutionary History between Coastal British Columbia and Southeast Alaska Wolves (*Canis lupus*). *PLoS ONE* 6(5): 1–8.
- Wemple, B.C., and J. A. Jones. 2003. Runoff Production on Forest Roads in a Steep, Mountain Catchment. *Water Resources Research* 39(8): 1220. doi: 10.1029/2002WR001744
- White, E., and D. Stynes. 2010. Characterization of Resident and Non-resident Visitors to Alaska National Forests. Joint Venture Agreement between the USDA Forest Service Pacific Northwest Research Station and Oregon State University. Joint Venture Agreement # 10-JV-11261955-018. August.
- Williamson, S. J., D. Keppie, R. Davison, D. Bureau, S. Carriere, D. Rabe, and M. Schroeder. 2008. Spruce Grouse Conservation Plan. Association of Fish and Wildlife Agencies. Washington, D.C. 73 pp.
- Wolfe, R. J. 2004. Local Traditions and Subsistence: A Synopsis from Twenty-Five Years of Research by the State of Alaska. Technical Paper No. 284. Alaska Department of Fish and Game, Division of Subsistence, Juneau, Alaska. July. Available online at: <http://www.subsistence.adfg.state.ak.us/>
- Wolf Technical Committee. 2017. Interagency Wolf Habitat Management Program: Recommendations for Game Management Unit 2. Management Bulletin R10-MB-822. USDA Forest Service, USDI Fish and Wildlife Service, and Alaska Department of Fish and Game.
- Wolken, J. M., T. N. Hollingsworth, T. S. Rupp, F. S. Chapin, S. F. Trainor, T. M. Barrett, P. F. Sullivan, A. D. McGuire, E. S. Euskirchen, P. E. Hennon, E. A. Beever, J. S. Conn, L. K. Crone, D. V. D'Amore, N. Fresco, T. A. Hanley, K. Kielland, J. J. Kruse, T. Patterson, E. A. Schuur, D. L. Verbyla, and J. Yarie. 2011. Evidence and Implications of Recent and Projected Climate Change in Alaska's Forest Ecosystem. *Ecosphere* 2(11): Article 124. November.

6 References

- Zaborske, R. R., M. H. McClellan, and T. A. Handley. 2002. Understory Vegetation Development Following Commercial Thinning in Southeast Alaska: Preliminary Results from the Second-growth Management Area Demonstration Project. In *Beyond 2001: a silvicultural odyssey to sustaining terrestrial and aquatic ecosystems – proceedings of the national Silviculture workshop, May 6-10, Hood River OR*, compiled by S. Parker and S. Stevens Hummel, 74–82. General Technical Report PNW-GTR-546. Portland, OR: USDA Forest Service, Pacific Northwest Research Station.
- Zaborske, R. R., M. H. McClellan, J. Barbour, T. L. Laufenberg, and C. G. Shaw III. 2000. The Southeast Alaska Timber Resource and Industry: What Might the Future Hold? In *Proceedings: Linking Healthy Forests and Communities Through Alaska Value-Added Forest Products*, edited by T. L. Laufenberg and B. K. Brady, 23–26. General Technical Report PNW-GTR-500. Portland, OR: USDA Forest Service, Pacific Northwest Research Station.
- Zegre, S. J., M. D. Needham, L. E. Kruger, and R. S. Rosenberger. 2012. McDonaldization and Commercial Outdoor Recreation and Tourism in Alaska. *Managing Leisure* 17: 333-348. Available online at: <https://www.fs.usda.gov/treearch/pubs/45837>

CHAPTER 7

GLOSSARY

Glossary

These definitions apply to Forest Service land management and planning. Meanings may differ when used in another context. Glossary definitions are not legal unless otherwise noted. Some definitions were shortened, paraphrased, or adapted to conditions in Southeast Alaska or on the Tongass National Forest and for ease of understanding.

A

Adjacent

Objects or parcels of land that are not widely separated, though perhaps they are not actually touching.

Alaska National Interest Lands Conservation Act (ANILCA)

Act of December 2, 1980. Public Law 96 487, 96th Congress, 94 Stat. 2371-2551.

Alaska Native corporation

One of the regional, urban, and village native corporations formed under the Alaska Native Claims Settlement Act of 1971.

Alaska Roadless Areas (ARA) (as proposed for Alaska Roadless Rule)

Areas identified in the set of ARA maps which the Alaska Roadless Rule applies to. These represent new roadless designations and are tied to new roadless rule language.

Alaska Roadless Categories (as proposed for Alaska Roadless Rule)

Areas identified with varying degrees of exceptions and prohibitions, designed based on land management priority.

Alpine

Parts of mountains above tree growth.

Alternative

An option proposed for decision making.

Anadromous fish

Fish that mature and spend much of their adult life in the ocean, returning to inland waters to spawn. Salmon and steelhead are examples.

Annual demand

As used in this document, the amount of timber that buyers are willing to purchase each year. Estimates of annual timber demand are based on a number of factors, including Pacific Northwest projections, installed mill capacity, utilization rates and market trends.

Aquaculture

Culture or husbandry of salmon or other aquatic fauna or flora.

7 Glossary

Aquatic ecosystem

A stream channel, lake or estuary bed, the water itself, and the biotic communities that occur therein.

B

Background

The visible area greater than 5 miles and less than 15 miles from a visual priority route. (See the definitions for foreground and middleground.)

Bank

The continuous margin along a river or stream where all upland vegetation ceases.

Beach fringe

The area inland from salt water shorelines that is typically forested.

Benthic

Pertaining to the sea bottom or organisms that live on the sea bottom.

Best Management Practices (BMPs)

Methods, measures, or practices selected by an agency to meet its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (36 CFR 219.19). BMPs are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility. BMPs are found in the National Core BMP Technical Guide, FS-990a (USDA Forest Service 2012) and Forest Service Handbook 2509.22, Alaska Region Amendment.

Biogeographic provinces

Twenty-one ecological subdivisions of Southeast Alaska that are identified by generally similar physiogeography, climate, vegetation patterns and physical barriers such as mountains or saltwater (distinct ecological and biogeographic features). Plant and animal species composition, climate, and geology within each province are generally more similar within than among adjacent provinces. Historical events (such as glaciers, wind, and tectonic uplifting) are important to the nature of the province and to the barriers that distinguish each province (Martin and Alaback 1990).

Biological assessment

A "biological evaluation" conducted for major federal construction projects requiring an environmental impact statement, in accordance with legal requirements under section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1536(c)). The purpose of the assessment and resulting document is to determine whether the proposed action is likely to affect an endangered, threatened, or proposed species. (FSM 2600, Ch. 2670)

Biological diversity

The variety of life forms and processes, including the complexity of species, communities, gene pools, and ecological functions, within the area covered by a land management plan.

The variety and abundance of life forms, processes, functions, and structures of plants, animals and other living organisms, including the relative complexity of species, communities, gene pools and ecosystems at the spatial scales that range from local through regional to global. 2. An index of richness in a community, ecosystem or landscape and the relative abundance of these species – Note: 1. There are commonly five levels of biodiversity: (a) genetic diversity, referring to the genetic variation within a

species; (b) species diversity, referring to the variety of species in an area; (c) community or ecosystem diversity, referring to the variety of communities or ecosystems in an area; and (d) regional diversity, referring to the variety of species, communities, ecosystems or landscapes within a specific geographic region – Note: each level of biodiversity has three components: (a) compositional diversity or the number of parts or elements within a system, indicated by such measures as the number of species, genes, communities or ecosystems; (b) structural diversity or the variety of patterns or organizations within a system, such as habitat structure, population structure, or species morphology; and (c) functional diversity or the number of ecological processes within a system such as disturbance regimes, roles played by species within a community, and nutrient cycling within a forest (Helm 1998).

Biological evaluation

A documented Forest Service review of Forest Service programs or activities in sufficient detail to determine how an action or proposed action may affect any threatened, endangered, proposed, or sensitive species. (FSM 2600, Ch. 2670)

Biomass

Organic matter available on a renewable basis; includes forest and mill residues, agricultural crops and wastes, wood and wood residues, animal wastes, livestock operation residues, aquatic plants, fast-growing trees and plants, and municipal waste and industrial residues; can be used to produce liquid transportation fuels, chemicals and other bioproducts, electric power, steam, and heat. Also refers to the total mass of living organisms in a given area or volume; recently dead plant material is often included as dead biomass.

Blowdown

See windthrow.

Board foot

A unit of timber measurement equaling the amount of wood contained in an unfinished board 1 inch thick, 12 inches long, and 12 inches wide.

Buffer

An area of vegetation of varying size, shape, and character managed to mitigate effects on a particular resource.

C

Catastrophic event

Events resulting from a great and sudden calamity or disaster. In the case of forest stands, such events may include windstorms, wildfire, floods, snow slides, and insect outbreaks. Whether a disturbance event is called catastrophic is dependent on the context within which the event occurs, the scale of the event, and the effects of the event.

Capability

The potential of an area of land to produce resources, supply goods, and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity.

Carrying capacity

The estimated maximum number (or biomass) of organisms of a given species that can be sustained or survive on a long-term basis within an ecosystem.

7 Glossary

Cave

Cave is legally defined under federal law as “any naturally occurring void, cavity, recess, or system of interconnected passages which occurs beneath the surface of the earth or within a cliff or ledge and which is large enough to permit an individual to enter, whether or not the entrance is naturally formed or human-made. Such term shall include any natural pit, sinkhole or other feature which is an extension of the surface,” (Federal Cave Resource Protection Act of 1988). Speleologists use “cave” to refer to all parts, regardless of size, of an underground system that links openings and chambers and that may connect the system to the surface. Included in the term caves are tree molds and lava tubes associated with lava flows, erosional caves, and those formed by dissolution of bedrock.

Census designated place (CDP)

A concentration of population identified by the United States Census Bureau for statistical purposes. CDPs are delineated for each decennial census as the statistical counterparts of incorporated places, such as cities, towns, and villages.

Channel

A natural waterway of perceptible extent that periodically or continuously contains moving water. It has a definite bed and banks that serve to confine the water.

The bed where a natural body of surface water flows or may flow; a natural passageway or depression of perceptible extent containing continuously or periodically flowing water, or forming a connecting link between two bodies of water, a water course (Haskins et al. 1998).

Clearcutting

An even-aged regeneration method in which essentially all trees have been removed in one operation to create an even-aged stand that is composed of a single age class in which tree ages are usually +/- 20 percent of rotation. The area harvested may be a patch, stand, or strip large enough to be mapped or recorded as a separate age class in planning.

Code of Federal Regulations (CFR)

The codification of the general and permanent rules published in the Federal Register by the departments and agencies of the Federal Government. It is divided into 50 titles that represent broad areas subject to Federal regulation. The 50 subject matter titles contain one or more individual volumes, which are updated once each calendar year, on a staggered basis. Each title is divided into chapters, which usually bear the name of the issuing agency. Each chapter is further subdivided into parts that cover specific regulatory areas. Large parts may be subdivided into subparts. All parts are organized in sections, and most citations to the CFR refer to material at the section level.

Commercial forest land

Forest land that is producing or is capable of producing crops of industrial wood and (a) has not been withdrawn by Congress, the Secretary, or the Chief; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed conditions; and (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be attained within 5 years after final harvesting.

Commercial timber

Trees, portions of trees, and other forest products on National Forest System lands may be sold for the purpose of achieving the policies set forth in the Multiple-Use Sustained-Yield Act of 1960, as amended (74 Stat. 215; 16 U.S.C. 528-531), the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended (88 Stat. 476; as amended, 16 U.S.C. 1600-161), and the Program thereunder. (See 36 CFR 223.1 Authority to sell timber.)

Connectivity (landscape)

A measure of the extent that forest areas between or outside Old-growth habitat reserves and other Non-development LUDs provide habitat for breeding, feeding, dispersal, and movement.

Connectivity (ecosystem)

Ecological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the exchange of flow, sediments and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to climate change (FSM 1909.12, Ch. 10; 36 CFR 219.19).

Convey

To pass or transmit the title to property from one to another.

Conveyance

An instrument by which some estate or interest in lands is transferred from one person to another (Black 1979); a transfer of legal title to land.

Corridor (transportation)

A linear strip of land defined for the present or future location of transportation rights-of-way within its boundaries.

Corridor (wildlife)

Habitats, often linear, that facilitate dispersal and movement of wildlife between patches of suitable habitat. (Also see the definition for connectivity.)

Created opening

Openings in the forest canopy created by silvicultural practices, including shelterwood regeneration cutting, clearcutting, seed tree cutting, or group selection cutting.

Critical habitat

For a threatened or endangered species, (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provision of section 4 of the Endangered Species Act (ESA) (16 USC 1533), on which are found those physical or biological features (a) essential to the conservation of the species, and (b) which may require special management considerations or protections; and (2) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the ESA (16 USC 1533), upon a determination by the Secretary that such areas are essential for the conservation of the species. ESA, sec. 3 (5) (A), (16 USC 1532 (3) (5) (A)). Critical habitat is designated through rulemaking by the Secretary of Interior or Commerce. ESA, sec. 4 (a) (3) and (b) (2) (16 USC 1533 (a)(3) and (b)(2)).

D

Demand

The quantity of a commodity or service that buyers are willing to purchase at a given price over a specific time period.

Demographic

Pertaining to the study of the characteristics of populations, such as size, growth, density, distribution, and vital statistics.

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Detrimental soil disturbance

The condition where established threshold values of soil properties are exceeded and result in significant change or impairment to long-term soil productivity.

Developed recreation

The type of recreation that occurs where modifications (improvements) enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

Developed Recreation Site

A discrete place containing a concentration of facilities, infrastructure, and services used to provide recreation opportunities to the public and evidencing a significant investment in facilities and management (FSH 2309.13- recreation site handbook) (such as campgrounds, picnic areas, and trailheads with recreation facilities.)

Development LUDs

Land use designations that permit commercial timber harvest and other commercial activities (Timber Production, Modified Landscape, Scenic Viewshed, and Experimental Forest) and convert some of the old-growth forest to early-to mid-successional, regulated forests.

Distance zone

Areas of landscapes denoted by specified distances from the observer (foreground, middleground, or background). Used as a frame of reference in which to discuss landscape characteristics of management activities. (Also see the definitions for foreground, middleground, and background.)

Distinct population segment (DPS)

A DPS, or a distinct population segment, is a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. The Endangered Species Act provides for listing species, subspecies, or distinct population segments of vertebrate species.

Disturbance

Any relatively discrete event in time that disrupts ecosystem, watershed, community, or species population structure and/or function and changes resources, substrate availability, or the physical environment (36 CFR 219.19).

E

Easement

An interest or right in land owned by another that entitles its holder to a specific limited use.

Ecological integrity

The quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence (36 CFR 219.19).

Ecological sections

Ecosystems may be subdivided into ecological sections that consist of ecological subsections. There are 14 ecological sections on the Tongass National Forest.

One mapping level of the National Hierarchical Framework of Ecological Units which delimits areas of different biological and physical potentials at varying geographical scales ranging from global to local. Ecological sections areas delimited at the sub regional scale and are characterized by combinations of climate, geomorphic processes, topography and stratigraphy that influence moisture availability and exposure to radiant solar energy, which in turn directly control hydrologic function, soil forming processes, and potential plant community distributions. Sections and subsections are the two ecological units mapped at this scale. Sections are broad areas of similar geomorphic process, stratigraphy, geologic origin, drainage networks, topography and regional climate. Such areas are often inferred by relating geologic maps to potential natural vegetation (series) groups as mapped by Kuchler (1964). The Tongass is divided into 14 ecological subsections, which are smaller areas of sections having similar surficial geology, lithology geomorphic processes; soil groups sub regional climate and potential natural communities (USDA 1993).

Ecosystem

A spatially explicit, relatively homogenous area that includes all interacting organisms and the abiotic environment components. An ecosystem can be of various sizes (e.g., a log, a pond, a forest, or the earth's biosphere).

Ecosystem services

Ecosystem services include the full suite of goods and services that are vital to human health and livelihood provided by ecosystems—in this case, ecosystems on the Tongass National Forest.

Edge effect

The effect of adjoining vegetative communities on the population structure along the margin, which provides for greater numbers of species and higher population densities than either adjoining community. Edge may also result in negative effects, since habitat along the edge is different than within the patch, reducing the effective area of the habitat patch.

The modified environmental conditions or habitat along the margins (edges) of forest stands or patches (Helms 1998).

Effects

Environmental effects and impacts as used in the Council on Environmental Quality's (CEQ) regulations (40 CFR parts 1508.7 and 1508.8) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. parts 4321 *et seq.*) are synonymous and include:

Direct effects, which are caused by the action and occur at the same time and place;

Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable; and

Cumulative impact, which is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

Endangered species

Any species that the Secretary of the Interior or the Secretary of Commerce has determined is in danger of extinction throughout all or a significant portion of its range. Endangered species are listed at 50 CFR sections 17.11, 17.12, and 224.101 (FSM 1090.12).

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Endemic

Living in or restricted to a particular locality. In this document the term endemic is used in two ways. First, it is used to describe plant and animal species, subspecies, or lineages that are native and restricted in their distribution to an island, a portion of Southeast Alaska, or Southeast Alaska. Second, it is used to describe a type of windthrow event that is a very localized windthrow event, where individual trees are blown over (see the definition for Windthrow in this Glossary).

Indigenous to (native) or characteristic of a particular restricted geographical area (Helms 1998).

Endemism

The ecological state of a species being unique to a defined geographic location, such as an island or other defined zone or habitat type; organisms that are indigenous to a place are not endemic to it if they are also found elsewhere.

Enhance

To improve, reinforce, enrich, or strengthen the existing condition, value, or beauty of a resource.

Environment

All the conditions, circumstances, and influences surrounding and affecting the development of an organism, or group of organisms.

Epikarst

The upper surface of karst, consisting of a network of intersecting fissures and cavities that collect and transport surface water and nutrients underground; epikarst depth can range from a few centimeters to tens of meters.

Erosion

The wearing away of the land surface by running water, wind, ice, gravity, or other geological activities.

Essential fish habitat (EFH)

Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity for federally managed species as per 50 CFR 600, "Magnuson-Stevens Act Provisions." For the purpose of interpreting the definition of essential fish habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities, "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding growth to maturity" covers a species full life cycle.

Estuary

An ecological system at the mouth of a stream where fresh water and salt water mix, and where salt marshes and intertidal mudflats are present. The landward extent of an estuary is the limit of salt-intolerant vegetation, and the seaward extent is a stream's delta at mean low water.

Exceptions (as proposed for Alaska Roadless Rule)

Activities that would be allowed in different categories of ARAs.

F

Falldown

The difference between the number of acres planned for timber harvest and those actually harvested, usually experienced as a reduction in acres. Falldown results from many factors, including unmapped unsuitable timber land, newly available information, and project-level consideration of site-specific issues and non-timber resource needs. (Also see the definition for Management Implementation Reduction Factor.)

Federally recognized Indian tribe

An Indian tribe, band, nation, or other organized group or community, including a native village, regional corporation or village corporation, as those terms are defined in Section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602)(ANCSA), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

Fiscal Year (FY)

October 1 to September 30. The Fiscal Year is referred to by the calendar year, which begins on January 1. For example, October 1, 1996, to September 30, 1997, is referred to as Fiscal Year 1997.

Fish passage

The ability of both adult and juvenile fish to move both up and down stream.

Foreground

The visible area within 0.5 mile of a visual priority route. (See the definitions for background and middleground.)

Forest health

The perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to disturbance.

Forest Plan

Source of management direction for an individual forest, specifying activity and output levels for a period of 10 to 15 years. Management direction in the Forest Plan is based on the issues identified at the time of the plan's development.

Forest transportation system

The system of National Forest System (NFS) roads, trails, and airfields on NFS lands (36 CFR 212.1).

Fragmentation

The process by which a landscape is broken into smaller patches of forest within a mosaic of other forms of land use or ownership.

G

Game Management Unit

Geographical areas defined by the Alaska Department of Fish and Game to manage wildlife populations. Legal hunting and trapping regulations govern each unit.

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Group selection

An uneven aged regeneration method in which trees are removed and new age classes are established in small groups where the widths of groups are commonly approximately twice the height of the mature trees. Note: the management unit or stand in which regeneration growth and yield are regulated consists of an aggregation of groups.

H

Habitat

A unit area of environment. 2. The place, natural or otherwise, (including climate, food, cover and water) where animal, plant, or populations naturally or normally lives and develops (Helms 1998).

Habitat capability

The estimated maximum number of fish or wildlife that can be supported by the amount and distribution of suitable habitat in an area.

Haul out

Areas used by marine mammals for resting and other social/biological activities that occur in the intertidal zone.

I

Industrial wood

All commercial roundwood products, except fuelwood.

Infrastructure

The facilities, utilities, and transportation systems needed to meet public and administrative needs.

Inherent capability

The ecological capacity or ecological potential of an area characterized by the interrelationship of its physical elements, its climatic regime, and natural disturbances (36 CFR 219.19).

Interdisciplinary Team (IDT)

A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view and a broader range of expertise to bear on the problem.

Interior old-growth forest

The region of a forested stand that has a stable microclimate relative to light, wind, humidity, moisture regime, etc. Natural forest ecotones “seal” a forest’s edge and stabilize these microclimate features. Ecotones created by management such as the old growth, clearcut edge may have “edge” effects that extend into a forest for several hundred feet (estimated 2 to 3 tree heights) before stable “interior forest” conditions are achieved and microclimatic effects of the edge are no longer evident.

Invasive species

An alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. A species that causes, or is likely to cause, harm and that is exotic to the ecosystem it has infested. Invasive species infest both aquatic and terrestrial areas and can be identified within any of the

following four taxonomic categories: Plants, Vertebrates, Invertebrates, and Pathogens (Executive Order 13112).

Inventoried roadless area (IRA)

Areas identified in a set of inventoried roadless area maps, contained in Forest Service Roadless Area Conservation, Final Environmental Impact Statement, Volume 2, dated November 2000, which are held at the National headquarters office of the Forest Service, or any subsequent update or revision of those maps. (36 CFR 294.11).

Invertebrates

Animals without backbones. Land invertebrates include insects, snails, and slugs; freshwater invertebrates include aquatic insects; and marine invertebrates include crab, shrimp, and clams.

Irretrievable commitments

A term that applies to the loss of production, harvest, or use of natural resources. For example, some or all of the timber production from an area is lost irretrievably while an area is serving as a winter sports site. The production lost is irretrievable, but the action is not irreversible. If the use changes, it is possible to resume timber production.

Irreversible commitments

A term that describes the loss of future options. Applies primarily to the effects of use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity, that are renewable only over long periods of time.

Issue

A point, matter, or section of public discussion or interest to be addressed or decided.

J K

Karst

A type of topography that develops in areas underlain by soluble rocks, primarily limestone. Dissolution of the subsurface strata results in areas of well-developed, surface drainage that are sinkholes, collapsed channels, or caves.

L

Land allocation

The decision to use land for various resource management objectives to best satisfy the issues, concerns, and opportunities, and meet assigned forest output targets.

Land exchange

A land adjustment transaction whereby the United States trades federal land, interests in land, and/or timber for not less than equal value of non-Federal land and/or interests in land needed for National Forest purposes, or programs. Some exchanges provide for cash equalization to equalize values.

Land Use Designation (LUD)

Defined areas of the Forest that are allocated for different uses or activities and have the same set of applicable plan components, but do not have to be spatially contiguous. (36 CFR 219.19)

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Landscape

A defined area irrespective of ownership or other artificial boundaries, such as a spatial mosaic of terrestrial and aquatic ecosystems, landforms, and plant communities, repeated in similar form throughout such a defined area (36 CFR 219.19).

Landslides

The moderately rapid to rapid downslope movement of soil and rock materials that may or may not be water-saturated.

Large woody debris (LWD)

Any piece of relatively stable woody material, having a diameter of 4 inches or greater and a length greater than 3 feet, that intrudes into a stream channel. Formerly called large organic debris.

A term used to describe logs, tree boles, rootwads, and limbs that are in, on or near the stream channel, having a diameter of 4 inches or greater and a length equal to or greater than 3 feet, that intrudes into a stream channel.

Leasable minerals

Generally includes minerals such as coal, oil, gas, phosphate, sodium, potassium, oil shale, sulfur, and geothermal steam.

Lease

A type of special use authorization (usually granted for uses other than linear rights-of-way) that is used when substantial capital investment is required and when conveyance of a conditional and transferable interest in National Forest System lands is necessary or desirable to serve or facilitate authorized long-term uses, and that may be revocable and compensable according to its terms.

Legacy trees

A tree, usually mature or old growth that is retained on a site after harvesting or natural disturbance to provide a biological legacy.

Locatable minerals

Includes minerals such as gold, silver, lead, zinc, copper, and mercury.

Log transfer facilities (LTF)

Log transfer facilities include the site and structures used for moving logs and timber products from land-based transportation forms to water-based transportation forms (or vice versa).

M

Managed stand

A forested stand whose natural structure has been purposely altered through some regeneration or stocking control treatment.

Management Indicator Species

Plant or animal species, communities, or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation to assess the effects of management activities on their populations and the populations of other species with similar habitat needs that they may represent.

Management practices

The activities applied to a defined area of land (land use designation as defined in the Forest Plan) to attain multiple-use and other goals and objectives.

Management prescription

Management practices and intensity selected and scheduled for application on a specific area (e.g., a land use designation) to attain multiple-use and other goals and objectives.

Mariculture

The cultivation of plants and animals in saltwater, with no freshwater component. Mariculture does not include anadromous fish farming.

Marine access point

An area that is used by humans to transfer items to saltwater generally where there is a trail that leads to saltwater and that has no associated structures.

Matrix

A term used in the Old-growth habitat conservation strategy that refers to the lands with LUD allocations where commercial timber harvest may occur.

Mean annual increment (MAI)

The total increment of a tree or stand, up to a given age in years, divided by that age.

Memorandum of Understanding (MOU)

An agreement between the Forest Service and other agencies resulting from consultation between agencies that states specific measures the agencies will follow to accomplish a large or complex project. A memorandum of understanding is not a fund obligating document.

Microsale

A microsale is a timber sale proposed by a prospective purchaser consisting of dead or down timber of approximately 50 thousand board feet (MBF) or less and the District Ranger agrees to offer for bidding.

Middleground

The visible area between foreground and background of a visual priority route. (See the definitions for foreground and background.)

Million board feet (MMBF)

A measurement of the number of millions of board feet of timber. The letter "M" is borrowed from Roman numerals, but instead of "MM" representing the value 2,000, the industry treats them as variables in algebra and interprets them based on the rules of mathematics (where two adjacent variables are multiplied), thus the product is 1 million (1,000 times 1,000) board feet of timber.

Mineral development

The activities and facilities associated with extracting mineral deposits.

Mineral entry

Filing a mining claim on public land to obtain the right to mine any minerals it may contain. Also the filing for a mill site on federal land for the purpose of processing off-site minerals.

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Mineral exploration

The search for valuable minerals on lands open to mineral entry.

Mineral lease

A lease that authorizes the development and production of leasable minerals from public lands.

Mining claims

A geographic area of the public lands held under the general mining laws in which the right of exclusive possession is vested in the locator of a valuable mineral deposit.

Mitigate

To avoid, minimize, rectify, reduce, or compensate the adverse environmental impacts associated with an action.

Mixed conifer

In Southeast Alaska, mixed conifer stands usually consist of the following species: western hemlock, mountain hemlock, and yellow-cedar, redcedar, and Sitka spruce. Shorepine may occasionally be present depending on individual sites. Redcedar is not usually in mixed conifer stands on the central and northern portions of the Tongass. Mixed conifer sites indicate poor drainage and/or shallow soils.

Model

An idealized representation of reality developed to describe, analyze, or understand it; a mathematical representation of the relationships under study (e.g., Woodstock, wildlife habitat capability models).

Model Implementation Reduction Factor (MIRF)

An adjustment made to the timber outputs of the computer model to account for anticipated effects on timber availability that cannot be accounted for in the computer model. (Also see the definition for falldown.)

Monitoring

A systematic process of collecting information to evaluate effects of actions or changes in conditions or relationships (36 CFR 219.19).

Multiple use

The management of all the various renewable surface resources of the National Forest System so that they are used in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output, consistent with the Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528–531) (36 CFR 219.19).

Municipal Watershed

A watershed, designated on the Forest Plan Land Use Designation Map, which provides municipal water supplies. On the Tongass these include the municipal watersheds for Ketchikan, Petersburg, Sitka, Juneau, Wrangell, Kake, Klawock, Craig, and Hydaburg. Compare to public water supply definition.

Muskeg

Algonquin term for peatland. Usually applied to areas with sphagnum mosses, tussocky sedges, and an open growth of scrubby trees.

N**National Environmental Policy Act of 1969 (NEPA)**

An act declaring a national policy to encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and the biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the Nation and to establish a Council on Environmental Quality.

National Forest Management Act (NFMA)

A law passed in 1976 that amends the Forest and Rangeland Renewable Resources Planning Act and requires the preparation of Forest Plans.

National Forest System (NFS) land

Federal lands that have been designated by Executive Order or statute as National Forests, National Grasslands, or Purchase Units, or other lands under the administration of the Forest Service.

National Forest System (NFS) road

A forest road other than a road which has been authorized by a legally documented right-of-way held by a state, county, or local public road authority (36 CFR 212.1). The term "National Forest System road" is synonymous with the term "forest development road" as used in 23 U.S.C. 205.

National Historic Preservation Act

The National Historic Preservation Act (NHPA), 54 U.S.C. § 300101 et seq., is the primary federal law governing the preservation of cultural and historic resources in the United States.

National Marine Fisheries Service

An office of the National Oceanic and Atmospheric Administration that is responsible for the stewardship of the nation's ocean resources and their habitat with authorities under the Marine Mammal Protection Act and the Endangered Species Act.

National Wild and Scenic River System

Rivers with outstanding scenic, recreational, geological, fish and wildlife, historic, cultural, or other similar values designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition.

Net sawlog volume

Trees suitable in size and quality for producing logs that can be processed into lumber.

No-Action Alternative

The most likely condition expected to exist in the future if current management direction were to continue unchanged. There are two distinct interpretations of "no action" depending on the nature of the proposal being evaluated. The first situation might involve an action such as updating a land management plan where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are developed. In these cases "no action" is "no change" from current management direction or level of management intensity. To construct an alternative that is based on no management at all would

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be a useless academic exercise. Therefore, the "no action" alternative may be thought of in terms of continuing with the present course of action until that action is changed.

The second interpretation of "no action" is illustrated in instances involving federal decisions on proposals for projects. "No action" in such cases would mean the proposed activity would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward.

Non-development LUDs

Land use designations that do not permit commercial timber harvest.

Wilderness and Natural Setting LUDs make up the non-development LUDs. These LUDs are:

- Wilderness
- Wilderness National Monument
- Non-wilderness National Monument
- LUD II
- Remote Recreation
- Semi-Remote Recreation
- Old-Growth Habitat (except young-growth as allowed by Chapter 5 plan content)
- Municipal Watershed
- Research Natural Area
- Special Interest Area
- Wild River
- Scenic River
- Recreational River

Non-System road (Unauthorized Road)

A road or trail that is not a Forest road or trail or a temporary road or trail and that is not included in a Forest transportation atlas (36 CFR 212.1).

O

Old-growth forest

The (usually) late successional stage of forest development. Old-growth forests are defined in many ways; generally, structural characteristics used to describe old-growth forests include a) live trees: number and minimum size of both seral and climax dominants; b) canopy conditions: commonly including multi-layering; c) snags: minimum number and specific size; and d) logs and large (coarse) woody debris.

Old-growth habitat conservation strategy

An integrated science-based old-growth forest habitat conservation strategy developed and adopted during the 1997 Forest Plan Revision process. The old-growth strategy has two basic components: 1) a forest-wide reserve network that protects the integrity of the old-growth forest by retaining blocks of intact, largely undisturbed habitat; and 2) management of the matrix (that is, lands that are suitable for timber harvest). (See Appendix D of the 2016 Forest Plan FEIS)

Old-growth reserve (OGR)

A contiguous unit of old-growth forest habitat to be managed to maintain the integrity of the old-growth forest ecosystem.

Overstory

The portion of trees in a forest that forms the uppermost canopy layer.

Overstory removal

The cutting of trees constituting an upper canopy layer to release trees or other vegetation in an understory.

P**Personal use (free use)**

Bona fide settlers, miners, residents, and prospectors for minerals in Alaska may take free of charge green or dried timber from the National Forests in Alaska for personal use but not for sale. Permits will be required for green saw timber. Other material may be taken without permit. The amount of material granted to any one person in one year shall not exceed 10,000 board feet of saw timber and 25 cords of wood, or an equivalent volume in other forms. Persons obtaining materials shall, on demand, forward to the supervisor a statement of the quantity taken and the location from which it was removed (36 CFR 223.10).

Plan components

The parts of a land management plan that guide future project and activity decision-making. Specific plan components may apply to the entire plan area, to specific management areas or geographic areas, or to other areas as identified in the plan. Every plan must include the following plan components: desired conditions, objectives, standards, guidelines, and suitability of lands. A plan may also include goals as an optional component. Plan components can only be changed through plan amendment or revision.

Plan implementation

To carry out or fulfill Standards and Guidelines contained in the Land and Resource Management Plan (Forest Plan).

Plan of Operations

A Plan of Operations is required from anyone who proposed operations, under the 1872 Mining Law, would cause, "significant surface disturbance." See 36 CFR 228, Subpart A.

Plan period

The period of time a Forest Plan is in effect, typically 10 years, but no longer than 15 years.

Planning area

All the lands addressed in a land management plan. For this document, it is the Tongass National Forest.

Planning cycle demand

As used in this document, the amount of timber that buyers are estimated to be willing to purchase over the next 10 to 15 years. Also see the definition for annual demand.

Planning horizon

The overall time period considered in the planning process that spans all activities covered in the analysis or plan, and all future conditions and effects of proposed actions that would influence the planning decisions more than 100 years.

Planning period

Generally a 10- to 15-year period. The time interval within the planning horizon that is used to show incremental changes to yields, costs, effects, and benefits.

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Planning record

A system that records decisions and activities that result from the process of developing a forest plan, revision, or significant amendment.

Plant association

A plant community type based on land management potential, successional patterns, and species composition.

Plant communities

An assemblage of plants that, in general, occur together on similar site conditions.

Population viability

Probability that a population will persist for a specified period of time across its range despite normal fluctuations in population and environmental conditions.

Precommercial Thinning

See the definition for thinning.

Prescribed fire

A wildland fire burning under planned conditions to accomplish specific land and resource objectives. It may result from either a management or natural ignition.

Priority use

A Forest Service commitment to the holder of a permit for outfitting and guiding to give priority consideration to granting the holder a specific amount of available future use.

Authorization of use for up to 10-years, based on the holder's past use and performance and applicable programmatic or project decisions to allocate use. Except as provided in 36 CFR 251, Subpart E, authorizations providing for priority use are subject to renewal (FSH 2709.14, section 53.1m).

Productive old growth (POG)

Old-growth forest capable of producing at least 20 cubic feet of wood fiber per acre per year, or having greater than 8,000 board feet per acre.

Programmatic Environmental Impact Statement (PEIS)

The document disclosing the environmental consequences of a program or plan that guides or prescribes the use of resources, allocates resources, or establishes rules and policies in contrast to disclosure of the environmental consequences of a site-specific project.

Prohibitions (as proposed for Alaska Roadless Rule)

Activities that would not be allowed in different categories of ARAs.

Project

An organized effort to achieve an outcome on National Forest System lands identified by location, tasks, outputs, effects, times, and responsibilities for execution (36 CFR 219.19).

Projected Timber Sale Quantity (PTSQ)

A subset of the projected wood sale quantity and is an estimate of the quantity of timber expected to be sold during the plan period. The volume in the projected timber sale quantity is the volume that meets utilization standards (FSH 1909.12, Chapter 60, section 64.34). Except as provided in section 64.33 of

FSH1909.12 (departure from sustained yield limit), the projected timber sale quantity must be equal to or below the sustained yield limit for each decade of the plan.

PTSQ must take into account the fiscal capability of the planning unit and be consistent with all plan components. Estimates of the projected timber sale quantity do not include any volumes anticipated from salvage or sanitation harvests.

Projected Wood Sale Quantity (PWSQ)

An estimate of the volume of all timber and other wood products that is expected to be sold during the plan period from expected harvests for any purpose (except salvage harvest or sanitation harvest) on all lands in the plan area. The projected wood sale quantity includes all woody material likely to be sold from these harvests whether or not the woody material meets the utilization standards (FSH 1909.12, Chapter 60, section 64.34).

PWSQ must take into account the fiscal capability of the planning unit and be consistent with all plan components. Estimates of the projected wood sale quantity do not include any volumes anticipated from salvage or sanitation harvests.

Public utility system

A system that provides a community or communities with services such as municipal water or wastewater, natural gas, telephone, and electricity. This applies whenever the project or proposal is developed to supply services for public use or consumption

Q R

Rare plants

Rare plants include plant species identified on the Alaska Natural Heritage Program (ANHP) Rare Vascular Plant Tracking List that are known to occur on the Tongass (ANHP, 2008), is considered globally rare (G1/T1, G2/T2) and/or rare in the State (S1, S2 and some S3 are considered); or is considered rare because of a range extension or disjunct populations on the Tongass but not yet given a state ranking on the ANHP list.

Recreation Opportunity Spectrum (ROS)

A system for planning and managing recreation resources that categorizes recreation opportunities into seven classes. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area and the relative density of recreation use. The seven classes are:

Primitive. An unmodified environment generally greater than 5,000 acres in size and located generally at least 3 miles from all roads and other motorized travel routes. A very low interaction between users (generally less than 3 group encounters per day) results in a very high probability of experiencing solitude, freedom, closeness to nature, tranquility, self-reliance, challenge, and risk. Evidence of other users is low. Restrictions and controls are not evident after entering the land unit. Motorized use is rare.

Semi-Primitive Non-Motorized. A natural or natural-appearing environment generally greater than 2,500 acres in size and generally located at least 0.5 mile (greater or less depending on terrain and vegetation, but no less than 0.25 mile) but not further than 3 miles from all roads and other motorized travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a high probability of

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experiencing solitude, freedom, closeness of nature, tranquility, self-reliance, challenge, and risk. There is a minimum of subtle on-site controls. No roads are present in the area.

Semi-Primitive Motorized. A natural or natural-appearing environment generally greater than 2,500 acres in size and generally located within 0.5 mile of primitive roads and other motorized travel routes used by motor vehicles; but not closer than 0.5 mile (greater or less depending on terrain and vegetation, but no less than 0.25 mile) from better-than-primitive roads and other motored travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a moderate probability of experiencing solitude, closeness to nature, and tranquility along with a high degree of self-reliance, challenge, and risk in using motorized equipment. Local roads may be present, or along saltwater shorelines there may be extensive boat traffic.

Roaded Natural. Resource modification and utilization are evident, in a predominantly naturally-appearing environment generally occurring within 0.5 mile (greater or less depending on terrain and vegetation, but no less than 0.25 mile) from better-than-primitive roads and other motorized travel routes. Interactions between users may be moderate to high (generally less than 20 group encounters per day), with evidence of other users prevalent. There is an opportunity to affiliate with other users in developed sites but with some chance for privacy. Self-reliance on outdoor skills is only of moderate importance with little opportunity for challenge and risk. Motorized use is allowed.

Roaded Modified. Vegetative and landform alterations typically dominate the landscape. There is little on-site control of users except for gated roads. There is moderate evidence of other users on roads (generally less than 20 group encounters per day), and little evidence of others or interactions at campsites. There is opportunity to get away from others but with easy access. Some self-reliance is required in building campsites and use of motorized equipment. A feeling of independence and freedom exists with little challenge and risk. Recreation users will likely encounter timber management activities.

Rural. The natural environment is substantially modified by land use activities. Opportunity to observe and affiliate with other users is important as is convenience of facilities. There is little opportunity for challenge and risk and self-reliance on outdoor skills is of little importance. Recreation facilities designed for group use are compatible. Users may have more than 20 group encounters per day.

Urban. Urbanized environment with dominant structures, traffic lights and paved streets. May have natural appearing backdrop. Recreation places may be city parks and large resorts. Opportunity to observe and affiliate with other users is very important as is convenience of facilities and recreation opportunities. Interaction between large numbers of users is high. Outdoor skills, risk, and challenge are unimportant except for competitive sports. Intensive on-site controls are numerous.

Recreation places

Identified geographical areas having one or more physical characteristics that are particularly attractive to people engaging in recreation activities. They may be beaches, streamside or roadside areas, trail corridors, hunting areas of the immediate area surrounding a lake, cabin site, or campground.

Reforestation

The re-establishment of forest cover either naturally (natural seeding, coppice, or root suckers) or artificially (direct seeding or planting).

Research Natural Area (RNA)

An area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic features. The area is set aside to preserve a representative

sample of an ecological community primarily for scientific and educational purposes; commercial and most public uses are not allowed.

Reserve Trees

Dead, dying, defective, or damaged trees left standing after harvest to provide wildlife habitat.

Resident fish

Fish that are not migratory and complete their entire life cycle in fresh water.

Resource values

The tangible and intangible worth of forest resources.

Responsible official

The Forest Service employee who has the delegated authority to make a specific decision.

Retention

The amount of commercial forest land removed from the timber base to protect other resource values.

Riparian area

Riparian areas encompass the zone of interaction between aquatic and terrestrial environments associated with streamsides, lakeshores, and floodplains, and display distinctive ecological conditions characterized by high species diversity, wildlife value, and resource productivity.

Riparian management area (RMA)

Land areas delineated in the Forest Plan to provide for the management of riparian resources. Specific standards and guidelines, by stream process group, are associated with riparian management areas. Riparian management areas standards and guidelines may be modified by watershed analysis.

Portions of a watershed where riparian-dependent resources receive primary emphasis, and for which plans include plan components to maintain or restore riparian functions and ecological functions (36 CFR 219.19).

Road

A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1).

Road construction or reconstruction

Supervising, inspecting, actual building of the subgrade, base course or surfacing course of a roadway, and incurrence of all costs incidental to the construction or reconstruction of a road (36 CFR 212.1).

Road decommissioning

Activities that result in the restoration of unneeded roads to a more natural state (FSM 7734).

Road density

The number of road miles per square mile of land area.

Roaded roadless

Portions of inventoried roadless areas (IRAs) that were roaded before the 2001 Roadless Rule or during the 2001 Roadless Rule exemption period for the Tongass. Includes areas that have been substantially altered due to road construction and/or timber harvest.

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Roadless area

See Inventoried roadless area (IRA) definition. Within this document, roadless areas may also be used to describe areas proposed to be designated as Alaska Roadless Areas.

Recreation Opportunity Spectrum (ROS)

The ROS system portrays the combination of activities, settings, and experience expectations along a continuum that ranges from highly modified to primitive environments. See Appendix I to the 2016 Forest Plan (USDA Forest Service 2016a).

Rotation

In even-age systems, the period between regeneration establishment and final cutting.

S

Sacred sites

Executive Order 13007 defines a sacred site as “any specific, discrete, narrowly delineated location on federal land that is identified by an Indian tribe or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.”

Salmonid

Any fish belonging to the family *Salmonidae*, which includes salmon and trout.

Salvage cutting/sales

The removal of dead trees or trees damaged or dying because of injurious agents other than competition to recover economic value that would otherwise be lost.

Sawlogs (Sawtimber)

The portion of a tree that is suitable in size and quality for the production of dimension lumber, collectively known as sawtimber.

Scenic Integrity Objective (SIO)

A desired level of scenic quality and diversity of natural features based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape. The adopted SIO is the SIO to be achieved as a result of management direction identified in the approved Forest Plan. SIOs are described below:

Very High: Landscapes where the landscape character is intact with only minute, if any, deviations. The existing landscape character and sense of place is expressed at the highest possible level.

High: Landscapes where the landscape character “appears” intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident.

Moderate: Landscapes where the landscape character “appears slightly altered.” Noticeable deviations must remain visually subordinate to the landscape being viewed.

Low: Landscapes where the landscape character “appears moderately altered.” Deviations begin to dominate the landscape character being viewed but borrow valued attributes such as size, shape, edge effect, and pattern of natural openings, vegetative type changes, or architectural

styles outside the landscape being viewed. They should not only appear as valued character outside the landscape being viewed but compatible or complimentary to the character within.

Very Low: Landscapes where the landscape character “appears heavily altered.” Deviations may strongly dominate the landscape character. They may not borrow from attributes such as size, shape, edge effect, and pattern of natural openings, vegetative type changes, or architectural styles within or outside the landscape being viewed. However, deviations must be shaped and blended with the natural terrain so that elements such as unnatural edges, roads, landings, and structures do not dominate the composition.

Unacceptably Low: Landscapes where the valued landscape character being viewed appears extremely altered. Deviations are extremely dominant and borrow little if any form, line, color, texture, pattern or scale from the landscape character. Landscapes at this level of integrity need rehabilitation.

Scoping

The issues for consideration in the planning phase are identified in the NEPA document through public and governmental participation opportunities provided in the early stages of the planning process. Governments, agencies, and the public may submit any additional or new scientific information for consideration in the planning process, and the Responsible Official shall determine whether any such information is the best available scientific information.

Second-growth forest

Trees that cover an area after the removal of the original stand, as by cutting or fire. (American Heritage Dictionary of the English Language, Fifth Edition 2011).

Also referred to as young-growth forest and used interchangeably in places within the 1997 Forest Plan revision, as amended.

Secondary succession

The process of re-establishing vegetation after normal succession is disrupted by fire, cultivation, lumbering, windthrow, or any similar disturbance.

Sediment

Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

Sensitive species

Plant or animal species that are susceptible or vulnerable to habitat alterations or management activities resulting in a viability concern for the species long-term persistence. Sensitive species may be those species under consideration for official listing as endangered or threatened species, are on an official state list, or are recognized by the Regional Forester as needing special consideration to ensure viable populations and to prevent their being placed on federal or state lists.

Sensitive travel route

A road system or marine water way that receives a moderate to high degree of use by the public, both Alaskan residents and tourists.

Silvicultural system

A planned series of treatments for tending, harvesting, and re-establishing a stand. Note: The individual system name is based on the number of age classes (even-aged, two-aged, uneven-aged) or the regeneration method (clearcutting, seed tree, shelterwood, selection) used.

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Small sale

Timber sales that are generally less than 10 million board feet (MMBF).

Smolt

A young silvery-colored salmon or trout that has undergone physiological changes to move from freshwater environment to saltwater.

Snag

A dead standing tree usually greater than 5 feet tall and 6 inches in diameter at breast height. The interior of the snag may be sound or rotted.

Soil productivity

The capacity of a soil, in its normal environment, to produce a specific plant or sequence of plants under a specific system of management.

Special Interest Areas (SIA)

A designation for areas possessing unique or unusual scenic, historic, prehistoric, geodesic scientific or other characteristics.

Special use authorization

A written permit, term permit, lease, or easement that authorizes use or occupancy of National Forest System lands and specifies the terms and conditions under which the use or occupancy may occur. (36 CFR 251.51)

Stand

A contiguous group of trees sufficiently uniform in composition, age class distribution, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.

Standard

A mandatory constraint on project and activity decision-making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. (36 CFR 219.12)

Size Density Model (SDM)

A forest-mapping model based on average tree size (quadratic mean diameter) and average tree density (stand density index), used to describe stand structural characteristics. SDM uses timber volume class, hydric soil class, and aspect to characterize forest structure.

State Historic Preservation Officer (SHPO)

The official appointed or designated pursuant to Section 101(b)(1) of the National Historic Preservation Act of 1966, as amended, to administer the State Historic Preservation Program.

Stream bed

The substrate plane bounded by the stream banks, over which the water column moves. Also called the stream bottom.

Stream bank

The portion of the channel cross section that restricts lateral movement of water at normal water levels. The bank often has a gradient steeper than 45 degrees and exhibits a distinct break in slope from the stream bottom. An obvious change in substrate may be a reliable delineation of the bank.

Stream class

A means to categorize stream channels based on their fish production values. There are four stream classes on the Tongass National Forest (*FSH 2090.21 (2001) Chapter 10, Section 12*).

Structure

A term in ecology referring to the arrangement of plant communities or ecosystems across a landscape and how they are connected, and to variations in tree heights and diameters within a stand or between stands.

Subsistence

Section 803 of the Alaska National Interest Lands Conservation Act defines subsistence use as, “the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.”

Subspecies

An aggregate of similar populations of a species generally inhabiting a geographic subdivision of the range of the species and differing taxonomically (e.g., different size or color) from other populations of the species.

Substantially altered areas

In this document, this includes areas where road construction and/or timber harvest have occurred (see roaded roadless.)

Suitability of Lands

A determination that specific lands within a plan area may be used, or not, for various multiple uses or activities, based on the desired conditions applicable to those lands. The suitability of lands determinations need not be made for every use or activity, but every plan must identify those lands that are not suitable for timber production (FSH 1909.12 chapter 20, section 22.15). (See FSH 1909.12 chapter 60 for timber production suitability.)

Suitable Timber Lands

Forested lands that have been determined to be suitable for timber production. See 2016 Forest Plan Appendix A.

Sustained yield

The yield that a forest can continuously produce at a given intensity of management.

T

Taxa

For the purposes of this Plan and FEIS, taxa are animal species or sub-species.

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Temporary roads

Roads authorized by contract, permit, lease, or emergency operation, not intended to be part of the forest transportation system and not necessary for long-term resource management.

The Nature Conservancy/Audubon conservation priority watersheds

Watersheds identified by The Nature Conservancy and Audubon Alaska that include high-value intact watersheds in primarily intact conditions and generally encompass the highest current ecological values within each province.

Thinning

A silvicultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality. Thinning may also be done to manipulate stand characteristics to improve wildlife or riparian habitat, or to enhance scenery. Types of thinning include:

Precommercial (PCT). The removal of trees not for immediate financial return but to reduce stocking to concentrate growth on the more desirable trees.

Commercial (CT). Any type of thinning producing merchantable material at least equal to the value of the direct costs of harvesting.

Threatened species

A plant or animal species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Threatened species are identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

Any species that the Secretary of the Interior or the Secretary of Commerce has determined is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Threatened species are listed at 50 CFR sections 17.11, 17.12, and 223.102.

Tiering

Elimination of repetitive discussions of the same issue by incorporating, by reference, the general discussion in an environmental impact statement (EIS) of broader scope. For example, a project environmental assessment could be tiered to the Forest Plan EIS.

Timber

Wood, other than fuelwood, potentially useable for lumber.

Timber classification

Forested land is classified under each of the land management alternatives according to how it relates to the management of the timber resource. The following are definitions of timber classifications used for this purpose:

Non-Forest. Land that has never supported forests, and land formerly forested where use for timber production is precluded by development or other uses.

Forest. Land at least 10 percent stocked (based on crown cover) by forest trees of any size, or formerly having had such tree cover and not currently developed for non-forest use.

Suitable. Land to be managed for timber production on a regulated basis.

Unsuitable. Land withdrawn from timber utilization by statute or administrative regulation (e.g., Wilderness), or identified as inappropriate for timber production in the Forest planning process.

Commercial Forest. Land tentatively suitable for the production of continuous crops of timber and that has not been withdrawn.

Timber harvest (as proposed for Alaska Roadless Rule)

The cutting and removal, and/or sale of trees.

Timber Land Suitability

See *suitability of lands*.

Timber production

The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. (36 CFR 219.19)

Timber production suitability (lands suited and not suited for timber production)

A forest plan must identify the lands that are suited and not suited for timber production. (FSH 1909.12, chapter 60).

Timber stand

A contiguous group of trees sufficiently uniform in age class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit, such as mixed, pure, even-aged, and uneven-aged stands.

Tongass 77 (T77)

The Tongass 77 (T77) refers to value comparison units (VCUs), which approximate major watersheds located on National Forest System lands that Trout Unlimited, Alaska Program identified as priority salmon watersheds.

Tongass Resource Use Cooperative Survey (TRUCS)

A study done to gather information on subsistence uses of the Forest.

Topography

The configuration of a land surface including its relief, elevation, and the position of its natural and human-made features.

Traditional Cultural Property (TCP)

A traditional cultural property is generally one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. Examples include a rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents; or a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice.

Transmission line (electric)

An interconnected group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.

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Transportation Systems Corridors (TSC)

Existing and future transportation systems such as those identified by the State of Alaska in the current version of the Southeast Alaska Transportation Plan (SATP) and applicable laws (for example, Section 4407 of Public Law 109-59, Title XI of the Alaska National Interest Lands Conservation Act (Public Law 96-487)).

Transportation/Utility corridor

A linear strip of land identified for the present location of transportation or utility rights-of-way within its boundaries.

Travel Management Plan

The plan for the system of access roads, trails, and airfields needed for the protection, administration, and utilization of the National Forests and other lands administered by the Forest Service, or the development and use of resources upon which communities within or adjacent to the National Forests are dependent (36 CFR 212.1). The plan also addresses permanent or temporary road closures necessary for resource protection or public safety.

Turbidity

An expression of the optical property that causes light to be scattered and absorbed rather than transmitted in straight lines through a water sample; turbidity in water is caused by the presence of suspended matter such as clay, silt, finely divided organic and inorganic matter, plankton, and other microscopic organisms.

Two-aged management

A regeneration method that regenerates and maintains a stand with two-age classes where the reserved trees are distributed somewhat evenly as individual or clumps and represent 15 percent or more of the stand's pre-treatment basal area. The resulting stand may be two-aged or trend towards an uneven-aged condition as a consequence of both an extended period of regeneration establishment and the retention of reserved trees that may represent one or more age classes. Two-aged stands are created using these regeneration methods:

1. Clearcutting with reserves
2. Seed tree with reserves
3. Shelterwood with reserves.

The reserved trees are not harvested to attain goals other than regeneration.

U

Understory vegetation

All forest vegetation growing under an overstory.

Uneven-aged management

A planned sequence of treatments designed to maintain and regenerate a stand with three or more age classes.

Unproductive forest land

Forest land incapable of yielding crops of industrial wood because of adverse site conditions.

Unsuitable lands

Forest land not managed for timber production because: 1) Congress, the Secretary, or the Chief has withdrawn it; 2) it is not producing or capable of producing industrial wood; 3) technology is not available to prevent irreversible damage to soils productivity or watershed conditions; 4) there is no reasonable assurance, based on existing technology and knowledge, that it is possible to restock lands within 5 years after final harvest; 5) there is, at present, a lack of adequate information about responses to timber management activities; or 6) timber management is inconsistent with or not cost efficient in meeting the management requirements and multiple-use objectives specified in the Forest Plan.

Upland

Areas that do not classify as wetlands or riparian areas.

V

Value Comparison Unit (VCU)

First developed for the 1979 Tongass Land Management Plan as distinct geographic areas that generally encompass a drainage basin containing one or more large stream systems. Boundaries usually follow easily recognizable watershed divides. There are 926 units established to provide a common set of areas for which resource inventories could be conducted and resource value interpretations made.

Viable population

For forest planning purposes, a fish or wildlife population that has the estimated number and distribution of reproductive individuals to insure its continued existence is well distributed in the National Forest.

A population of a species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments. (36 CFR 219.19)

Viewshed

An expansive landscape or panoramic vista seen from a road, marine waterway, or specific viewpoint.

The area that is potentially seen from a specific viewing point using a planimetric approach.

W

Watershed

A region or land area drained by a single stream, river, or drainage network; a drainage basin (36 CFR 219.19). Typically, watersheds are delineated as hierarchical Hydrologic Units in the national Watershed Boundary Dataset, cooperatively managed by state and federal agencies. In the context of the Forest Plan, watersheds may correspond to VCU or LUD boundaries which may or may not correspond to the boundaries delineated in the Watershed Boundary Dataset.

Wetlands

Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wild and Scenic Rivers

A river designated by Congress as part of the National Wild and Scenic Rivers System that was established in the Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 (note), 1271–1287) (36 CFR 219.19).

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Wilderness

Areas designated by congressional action under the 1964 Wilderness Act or subsequent Acts. Wilderness is defined as undeveloped federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable; have outstanding opportunities for solitude or for a primitive and confined type of recreation; include at least 5,000 acres or are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, educational, scenic, or historic value as well as ecologic and geologic interest. On the Tongass National Forest, Wilderness has been designated by the Alaska National Interest Lands Conservation Act of 1980 and Tongass Timber Reform Act of 1990.

Wildlife Analysis Area

A division of land used by the Alaska Department of Fish and Game for wildlife analysis (WAA).

Windthrow

The act of trees being uprooted by the wind. In Southeast Alaska, Sitka spruce and hemlock trees are shallow rooted and susceptible to windthrow. There are generally three types of windthrow—endemic where individual trees are blown over; catastrophic where a major windstorm can destroy hundreds of acres; and management related, where the clearing of trees in an area make the adjacent standing trees vulnerable to windthrow.

Withdrawal

The withholding of an area of federal land from settlement, sale, location, or entry under some or all of the general land laws for the purpose of limiting activities under those laws in order to maintain other public values in the area.

Y

Yarding

To convey logs or trees to a landing by cable, helicopter or other systems. Shovel- yarding is also used in Southeast Alaska.

Young growth

Forest growth that has regenerated naturally or has been planted after some disturbance (e.g., clearcut harvest, serious fire, catastrophic windthrow, or insect attack) to the previous forest growth.

The term young growth is synonymous with second growth.

Young-growth forest

A relatively young forest that has been regenerated naturally or artificially after some drastic interference such as extensive cutting, wildfire, insect or disease attack, or blowdown (Helms 1998). On the Tongass a forest younger than 150 years is considered young-growth forest.

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