Data Submitted (UTC 11): 10/23/2019 8:00:00 AM
First name: Winston
Last name: Smith
Organization:
Title:
Comments: Comments: Proposed Roadless Rule Revision and the Tongass National Forest

A fundamental aspect of prudently incorporating and applying relevant knowledge to a complex process is considering the source (thus the credibility) of the information. As the member of the team of Pacific Northwest Research Station Scientists assigned to review and analyze all information used to address wildlife viability issues for the 1997 TLMP, I contributed directly to the initial conceptual framework and subsequent species-specific elements that became the 1997 (now the 2016) TLMP conservation strategy. Over the 10 years following the 1997 ROD, I designed and implemented experimental research testing critical, underlying assumptions of the TLMP Conservation Strategy, the findings of which were presented at scientific conferences and published in numerous articles in national and international peer-reviewed journals. Therefore, I submit that the following comments represent a unique understanding and perspective reflecting both the direct knowledge and experience gained through developing the TLMP conservation strategy and the comprehensive and credible science experience and knowledge from more than two decades of published research examining its assumptions. Accompanying this document is a list of salient peer-reviewed publications that provide the scientific basis and support for the comments below.

Essential Considerations for Reviewing the Tongass Roadless Rule

Credible, scientific support for the following statements is summarized in the summary information and corresponding scientific publications provided below.

1. The Tongass National Forest is a collection of thousands of islands representing unique ecological communities (Smith 2005) comprised of different species that interact with each other in positive or negative ways that influence each species' persistence and viability (Smith 2012a). Roadless areas contribute varying degrees toward meeting essential habitat of unique ecological communities depending on the size and corresponding LUDs of the land unit (watershed, small or large island, mainland; Smith 2013) and the species composition (number and uniqueness of endemics; Smith 2005). Therefore, comparable changes in acreage of modified landscape will have different impacts on unique plant and wildlife communities. To measure, assess, examine, quantify, or report land use information about the Tongass as though it were a single land unit and ecosystem (e.g., only 5% of the Tongass has been affected in a certain way) is grossly inaccurate and misleading. Consider that the national unemployment rate is less than 5% but the employment rate of individual states or cities may be far greater or smaller. Thus, representing unemployment as a national average underestimates and misrepresents what is happening regionally or locally. Hence, the spatial scale at which an analysis occurs determines the precision and reliability of the analysis. This is especially essential for an analysis that seeks to understand how changes in roadless areas (integral components of the Wildlife Conservation Strategy) will impact each of the diverse assemblages of unique geographical, environmental, and ecological conditions that exists across southeastern Alaska. Accordingly, for all landscapes that are being considered, the scale of the analysis should not be greater than any of the smaller islands (e.g. Wrangell, Mitkof, Zarembo, Dall,

Long, etc.), and if deemed appropriate (spatial extent and wildlife species), should spatially explicitly consider previous and cumulative disturbance, fragmentation, and the prescribed habitat allotment for OGR design species: wolves - large OGR; American marten - medium OGR; Northern flying squirrel (endemic small mammals) - small OGR. Similarly, larger islands should spatially explicitly consider previous and cumulative disturbance, fragmentation, and the prescribed habitat allotment for OGR design species: wolves - large OGR; American marten - medium OGR; Northern flying squirrel (endemic small mammals) - small OGR. In all landscapes in which previous clearcut logging has occurred, the analysis should consider impacts of proposed changes in landscape condition on the watershed threshold limits of disturbance for Queen Charlotte Goshawk detailed in forest wide Standards and Guidelines.

2. The Tongass Wildlife Conservation Strategy is a grand experiment based on ecological theory and similar application of a framework developed for a different species in the Pacific Northwest with several underlying assumptions. ALL published research to date that has examined basic assumptions of the Wildlife Conservation has produced findings that do not support the assumptions (Flynn et al. 2004, Smith and Person 2007, Smith et al. 2011, Smith 2013). There is no credible scientific evidence that demonstrates the Wildlife Conservation Strategy is working as designed and expected according to the fundamental tenets of the conceptual framework and forest wide standard and guidelines.

a. Flynn et al. (2004) reported that medium OGRs supported significantly fewer (half or less) breeding females than was assumed in designing the Conservation Strategy.

b. Smith and Person (2007) reported that small OGRs do not have a high probability of supporting breeding populations of northern flying squirrels in isolation. OGRs would have to have 10 times more POG to have a high probability of supporting breeding populations over the planning horizon.

c. Smith et al. (2011) concluded that at least half of the small OGRs in north Prince of Wales Island were isolated and not functionally connected.

d. In a spatially explicit analysis of contributions of the Tongass Wildlife Conservation Strategy toward providing essential goshawk breeding habitat, Smith (2013) concluded that only about half of the needed secure habitat was available.

3. Roadless areas are an integral component of the Conservation Strategy providing secure, essential habitat for breeding Queen Charlotte Goshawks (Iverson et al. 1996, Smith 2013) and numerous forest dependent endemic species, most notably northern flying squirrels (Smith et al. 2004, Smith 2012b, Shanley et al. 2012), island endemic voles (Smith et al. 2005b, Smith and Fox 2017) and American marten (Flynn et al. 2004). Furthermore, construction of new or extension of existing roads will further fragment the landscape directly and through facilitating additional disturbance from logging in many landscapes that have already exceeded harvest thresholds (Smith 2013), thereby reducing functional connectivity and further isolating endemic wildlife populations (Flaherty et al. 2008, 20010a, 2010b, Scheibe et al. 2006, Shanley et al. 2012, Smith et al. 2011, Smith 2012b) and increasing the risk of local and regional extinctions (Shanley et al. 2012, Smith and Person 2007, Smith et al 2011).

Tongass Wildlife Conservation Fundamentals

Given the complex, interdependent relationship between the Wildlife Conservation Strategy (WCS) and other elements of the Tongass Land and Resources Management Plan designed to conserve wildlife viability (Iverson and Rene 1997), any amendment to or revision of the 1997 or 2016 Land and Resource Management Plan (USDA Forest Service 1997, 2016) that proposes land use designations facilitating continued harvest of old-growth forests within any conservation elements without a comprehensive analysis of the conservation strategy is fundamentally flawed. Consider further the reality that the multiple elements included in the Conservation Strategy to sustain biological diversity across the planning area were designed in the spatially explicit context of specific prescriptions regarding ownership, land-use designations (LUD), watershed restrictions (e.g., total harvest thresholds), old-growth reserve designations, future land management activities (e.g., thinning) and inclusion of roadless areas (notably 2016 TLMP), which are an integral component of providing essential habitat for old-growth dependent species such as Queen Charlotte Goshawk, American marten, northern flying squirrel, and Franklin's spruce grouse, and landscape functional connectivity for endemic small mammals, American marten and numerous other forest dependent endemics. That is, each part of the Conservation Strategy was inexorably linked to all other components, and thus a piecemeal effort to change portions of the Conservation Strategy (i.e., amending the roadless rule without simultaneously explicitly considering the implications to other components) without a comprehensive analysis of the remaining components compromises the integrity of those essential components (e.g., Old-growth Reserve System) that were not simultaneously analyzed and reconsidered.

TLMP Wildlife Conservation Strategy: what it is and what it isn't

"The 1997 Tongass Forest Plan established a comprehensive, science-based (emphasis added) Conservation Strategy (TLMP-WCS) to provide for wildlife sustainability and viability across the Tongass" (USDA Forest Service Draft EIS 2015: 3-207). "The Conservation Strategy contains two components: 1) a forest-wide network of large, medium and small OGRs allocated to the Old Growth Land Use Designation (LUD) and all non-developmental LUDs plus all small islands less than 1,000 acres; and 2) a series of standard and guidelines applicable to lands where timber harvest is permitted (matrix: USDA Forest Service Draft EIS 2015:3-207)."

A fundamental and frequently lauded feature off the TLMP-WCS is that it is science-based. But, what does that mean? One connotation is that it is based on tried and true scientific principles incorporated in a conservation framework, with an implication that the approach previously has been successfully implemented. A more conservative interpretation of 'science-based' is simply that it has some ideas or elements based on science. For the TLMP-WCS, the latter is the more appropriate connotation. That is, generic ecological or conservation theory from the corresponding scientific literature was considered or incorporated piecemeal in developing the strategy. TLMP-WCS was not a compilation of previously implemented and evaluated species-specific conservation plans applied to Southeast Alaska. Indeed, reserves had never been used as a conservation framework to maintain northern goshawk populations and many of the S&Gs were ill suited for northern goshawk (Smith 2013).

The network of OGRs came from the Northwest Forest Plan, which was implemented to maintain viable populations of the Northern Spotted Owl. The use of reserve systems in conservation planning is also described in the literature. However, species-specific habitat reserves of varying sizes had not previously been used to maintain viable populations of wolves, American marten, or northern flying squirrels (surrogate for endemic small mammals). More importantly, there was no credible science explicitly supporting an expectation that habitat reserves and other undeveloped areas in a managed matrix could sustain wolves, marten, or endemic small mammals. The assumption was that a network of large enough reserves and other old-growth set asides containing suitable habitat would support sufficient individuals to sustain populations indefinitely (or at least over the planning horizon); or in the case of endemic small mammals, the OGRs with the other conservation elements (i.e., buffers, Old Growth LUD, etc.) would be functionally connected (free movement throughout the matrix) and behave as a meta-population (network of connected subpopulations).

Forest-wide S&Gs were implemented in the matrix to maintain essential components of the Old Growth Ecosystem. Therefore, assertions (Appendix D; USDA Forest Service Draft EIS 2015:D2) that components of the Old Growth ecosystem are maintained through S&Gs to provide for important ecological functions such as sustaining breeding populations or dispersal are without merit because of the absence of supportive evidence for most wildlife species and because it is unsupported by the published credible science on endemic small mammals (i.e., northern flying squirrels; Pyare et al. 2010, Smith et al. 2004, 2011).

The fact of the matter is the TLMP-WCS is a grand experiment based on general principles of ecology and conservation biology, but without explicit scientific evidence that the two components (reserves and S&Gs), singularly or in concert, would achieve the expectation and stated goal of providing for wildlife sustainability and viability across the Tongass (USDA Forest Service Draft EIS 2015). Moreover, statements in oral presentations, agency reports, or disseminated throughout the media network (most notably after the midterm review) that the "Conservation Strategy" was working fine were completely unfounded and without merit. To date, there is no published credible science that supports a conclusion that the TLMP-WCS is working as expected for any one (much less the suite) of concerned wildlife species or groups. Indeed, the only credible science that exists does not support key assumptions of the TLMP-WCS specific to northern goshawk (Smith 2013) or northern flying squirrels (Smith and Person 2007, Smith et al. 2011).

Risks to wildlife viability: misconceived and misleading

Another critical process and component of the Tongass Forest Plan 1997 revision was the assessment of risks to wildlife viability, which were required to ensure that wildlife viability would be sustained across the planning area. Wildlife viability assessment panels (borrowed from the Northwest Forest Plan) were organized to estimate risk to viability of selected species and groups (Smith and Zollner 2005); notably wolves, brown bears, American marten, northern goshawk, and endemic small mammals, which represented about 30 endemic subspecies across the region (Smith, 2005). The 'risk likelihood scores' obtained from the assessment panels were used to characterize the risk to wildlife viability of each species or group of species for the array of forest plan alternatives being considered for the revision. The process was flawed in at least 2 ways (Smith and Zollner 2005), and for that reason the risk to wildlife viability was substantially underestimated.

First, the likelihood scores assigned for each of the selected species or groups were viewed as absolute estimates (albeit subjective) of the risk to viability posed by each alternative. Quigley et al. (1997, cited in Smith and Zollner 2005) provide a compelling rationale as to why the scores should be viewed in a relative sense, used to rank the alternatives with respect to the risk each poses to wildlife viability, rather than as an absolute assessment of wildlife viability risk for each. Secondly, and more importantly, the likelihood scores obtained from assessment panels were a gross underestimate of "risk to wildlife viability" posed by each of the forest plan alternatives and ultimately the 1997 Forest Plan. This is because the goal of each assessment panel was to assess the risk to viability for each individual species or endemic small mammals (which were more than 30 species viewed as a single entity). However, the goal for forest planning is to sustain wildlife viability (all species) across the planning area. So the appropriate question is "what is the likelihood of any species going extinct?" Not, what is the likelihood of goshawks going extinct, or wolves, or bears (etc.). Rather, the cumulative probability (collective instead of the individual species with the highest risk) of all species going extinct (Smith and Zollner 2005). Even without considering the flawed logic in using individual species scores to assess the risk to wildlife viability for each plan alternative as the highest score among the separate species, the process underestimated the risk to viability because endemic small mammals represent tens of unique taxa (species and subspecies); not a single species as was applied in this assessment.

A simple way to understand the difference is the example of throwing a single dice. The average probability of getting a 1 is one out of six. But if 30 people threw a single dice, the probability of any one of these people getting (not just a single individual) getting a 1 (i.e., cumulative probability) is far greater than one out of six. Smith and Zollner (2005) illustrate with examples from the Tongass Forest Plan and the Black Hills Forest Plan the magnitude of disparity in assessing the ""risk that the most sensitive species will go extinct" using the procedure employed in the 1997 Tongass Forest Plan as compared to the more appropriate calculation of the likelihood that any of those species will go extinct, which is the joint probability of marginal probabilities (Smith and Zollner 2005). The disparity between these two approaches increases as the likelihood of going extinct approaches 0.5 and the number of species assessed increases.

Literature Cited and other References

Everest, F. H., D. N. Swanston, C. G. Shaw, III, W. P. Smith, K. R. Julin, and S.D. Allen. 1997. Evaluation of the use of scientific information in developing the 1997 Forest Plan for the Tongass National Forest. USDA Forest Service PNW-GTR-415, Portland, OR. 69 pp.

Flaherty, E. A., M. Ben-David, and W. P. Smith. 2010a. Quadrupedal locomotor performance in two species of arboreal squirrels: predicting energy savings of gliding. Journal of Comparative Physiology B: DOI 10.1007/s00360-010-0470-1 (online April 10, 2010).

Flaherty, E. A., M. Ben-David, and W. P. Smith. 2010b. Diet and food availability of the endemic Prince of Wales flying squirrel (Glaucomys sabrinus griseifrons) in Southeast Alaska: implications for dispersal across managed landscapes. Journal of Mammalogy 91:79-91.

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.W., Schumacher, T.V., 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, Division of Wildlife Conservation, Douglas, AK. 43 pp.

Holloway, G. L., W. P. Smith, C. B. Halpern, R. A. Gitzen, C. C. Maguire, and S. D. West. 2012. Influence of forest structure and experimental green-tree retention on northern flying squirrel (Glaucomys sabrinus) abundance. Forest Ecology and Management 285:187-194.

Holloway G, and W. P. Smith. 2011. A meta-analysis of forest age and structure effects on northern flying squirrel densities. Journal of Wildlife Management 75(3):668-674; 2011; DOI: 10.1002/jwmg.77.

Iverson, G. C., and B. Rene. 1997. Conceptual approaches for maintaining well-distributed viable wildlife populations: a resource assessment. Pages 1-23 in K. R. Julin, compiler. Assessments of wildlife viability, old-growth timber volume estimates, forested wetlands, and slope stability. U.S. Forest Service, General Technical Report PNW-392. Portland, Oregon, USA.

Iverson, G. C., 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. USDA Forest Service General Technical Report PNW-GTR-387, Pacific Northwest Research Station, Portland, OR.

Pyare, S., W. P. Smith, and C. Shanley. 2010. Den use and selection by northern flying squirrels in fragmented landscapes. Journal of Mammalogy 91:886-896.

Quigley, T.M., Lee, K.M., Arbelbide, S.J., tech. eds. 1997. Evaluation of the environmental impact statement alternatives by the science integration team. 2 Volumes. USDA Forest Service General Technical Report PNW-

GTR-406, Portland, OR.

Scheibe, J. S., W. P. Smith, J. Basham, and D. Magness. 2006. Cost of transport in the northern flying squirrel, Glaucomys sabrinus. Acta Theriologica 51:169-178.

Shanley, C. S., S. Pyare, and W. P. Smith. 2012. Landscape requirements of an ecological indicator: implications for functional units of temperate rainforest ecosystems. Ecological Indicators http://dx.doi.org/10.1016/j.ecolind.2012.05.027 (2013, 24:68-74).

Smith, W. P. and B. J. Fox. 2017. Interspecific competition, habitat selection, and coexistence between a generalist (Peromyscus keeni) and specialist (Myodes gapperi) in rainforest of Southeast Alaska. Northwest Science 91(2):103-123.

Smith, W. P. 2013. Spatially explicit analysis of contributions of a regional conservation

strategy toward sustaining essential wildlife habitat. Wildlife Society Bulletin 37(3):649-658 DOI: 10.1002/wsb.271. June 2013.

Smith, W. P. 2012a. Flying squirrel demography varies between island communities with and without red squirrels. Northwest Science 86:27-38.

Smith, W. P. 2012b. Sentinels of ecological processes: The case of the northern flying squirrel. BioScience 62(11):950-961.

Smith W. P., D. K. Person, and S. Pyare. 2011. Source-sinks, metapopulations, and forest reserves: conserving northern flying squirrels in the temperate rainforests of Southeast Alaska. Pages 399 - 422 in Chapter 19. Sources, Sinks, and Sustainability across Landscapes (J. Liu, V. Hull, A. T. Morzillo, and J. Wiens, editors). Cambridge University Press.

Smith, W. P., and D. K. Person. 2007. Estimated persistence of northern flying squirrel populations in old-growth rain forest fragments. Biological Conservation 137: 626-636.

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, W. P., J. V. Nichols, and S. M. Gende. 2005a. The northern flying squirrel as a management indicator species of north temperate rainforest: test of a hypothesis. Ecological Applications 15:689-700.

Smith, W. P., J. V. Nichols, and S. M. Gende. 2005b. Correlates of microhabitat use and density of Clethrionomys gapperi wrangeli and Peromyscus keeni macrorhinus in temperate rainforests. Acta Zoologica 51:973-988.

Smith, W. P., and P. A. Zollner. 2005. Sustainable management of wildlife habitat and risk of extinction. Biological Conservation 125:287-295.

Smith, W. P., J. V. Nichols, and S. M. Gende. 2004. Ecological correlates of flying squirrel microhabitat use and density in temperate rain forests of southeastern Alaska. Journal of Mammalogy 85:663-674.

USDA Forest Service. 1997. Land and resource management plan: Tongass National Forest. U.S. Forest Service R10-MB-338dd, Juneau, Alaska, USA.

[Attachment is a PDF version of the same comment above.]

[Position]

[Attachment is a PDF version of the same comment above.]

[Position]