

United States  
Department of  
Agriculture

Forest  
Service

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Reply To: RS-G-10-b Date: January 31, 1996  
Subject: Alexander Archipelago Wolf Viability Assessment Panel Summary  
To: Tongass Land Management Plan (TLMP) Planning Fiie  
From: Chris Iverson, TLMP IDT

#### I. INTRODUCTION

A panel of wolf experts met on December 5 and 6, 1995 in Juneau, Alaska to assess the relative likelihood that TLMP Revision alternatives would support persistent and well distributed wolf populations across their historical range on the Tongass National Forest after 100 years of full alternative implementation. Wolf experts integrated their personal experience and knowledge of wolf ecology with technical information presented on local wolf ecology and details concerning design elements of TLMP alternatives. Using this information, they developed professional judgments about likely outcomes related to the longterm persistence and distribution of wolf populations on the Tongass National Forest. Wolf panelists were presented the following information:

- Overview of forest planning: Bruce Rene', TLMP.
- Overview presentation of alternatives; Chris Iverson/Terry Shaw, TLMP.
- Presentation on wolf ecology in southeast Alaska: Dave Persons, Univ. of Alaska.
- Copies of:
  - Alexander Archipelago Wolf, A Conservation Assessment.
  - Extinction Rates in Archipelagos: Implications for Populations in Fragmented Habitats.
  - TLMP Panel Assessment Procedures.
  - Tongass Land Management Plan Framework for Development of Draft Alternatives; Resource Assessment Panel Meetings, November 7-8 and 15-16, 1995.
- Wolf hunter/trapper harvest statistics (1979-1995).
- Draft TLMP Plan Wolf Forestwide Standards and Guidelines.
- Existing road density by Wildlife Analysis Area (WAA) table.
- Planned acres of productive old growth harvested by alternative by 2095.
- Deer habitat capability by Wildlife Analysis Area and Ecological Province.
- Tongass maps illustrating 9 alternatives; 1954 productive old growth; present productive old growth abundance and distribution by alternative; anticipated old growth condition in 2095 for all alternatives; current roads existing across the Tongass; planned road system for Prince of Wales Island at full implementation of Alternative 9 (current plan); road density by WAA; percent of old growth harvested by VCU from 1954 to present.

This summary provides an analysis of factors that evolved as important elements considered and debated among panelists that influenced their likelihood ratings. An analysis and comparison of ratings among alternatives is also presented.

A complete set of notes kept during the 2-day session are available in the TLMP Planning Record. This information is not repeated here except for important factors affecting likelihood outcomes.

## II. IMPORTANT ASSESSMENT FACTORS

### Deer Habitat Capability

The most significant factor that effected evaluators' ratings and discussion were estimates of deer habitat capability resulting from the Deer Panel habitat model. Deer are the primary prey of wolves in southeast Alaska; as such, the panel had significant discussion about predator/prey interactions based upon the panelists' varied experience with diverse wolf populations. The general conclusion reached through this discussion was that wolf persistence is directly linked to deer habitat capability. Based upon estimates of deer habitat capability, even under the most intensive timber harvest scenario of alternative 7, evaluators concluded that wolves would persist for 100 years at least somewhere within the Tongass NF planning area.

Estimated deer habitat capability by Wildlife Analysis Area (WAA) for 1954, 1995 and projections for 2095 with full plan implementation of all alternatives were provided. Initial inspection of these outputs by panelists prompted a request for a summary by larger spatial area to consider broader landscape changes in long term deer habitat capability by alternative. The WAA data were aggregated by the 21 ecological provinces and presented the second day for consideration. Panelists reaction to the deer habitat capability information was generally that the large magnitude of modeled deer populations in 100 years served to reduce significant viability concerns.

Panelists were asked to consider individual alternative design elements and if any specific feature was especially important to their likelihood outcome ratings. Design features were only considered important by panelists to the extent they affected deer habitat capability. There were no overall identified positive or negative contributions of major alternative design features such as reserves versus extended rotations, presence of an extended beach zone or any specific riparian option. Reserves were recognized for providing roadless areas that may minimize wolf mortality. Discussion also revealed that very often wolf dens were loosely associated with riparian habitat zones.

### Genetic Information

Genetic differentiation was considered but was not a major factor in outcome ratings. Recent genetic work by Dr. Shields at the University of Alaska suggests that the Alexander Archipelago wolf is a distinct subspecies that is distinct from wolves in the Yukon and interior Alaska. The study did not detect any evidence of isolation or differentiation among wolf populations within southeast Alaska, suggesting at least some degree of genetic exchange among various island populations and the mainland. Panelists questioned the degree of suggested isolation from interior British Columbia animals since wolves could disperse through the major river drainages linking interior B.C. and southeast Alaska (e.g. Stikine, Taku, Unik, Bradfield, etc.). Wolf samples from Yukon were considered to be too distant and of insufficient sample size to be adequate tests of this suggested isolation.

The key factor revealed from the genetic data was the indication that interchange among wolf populations was occurring across major island groups in southeast Alaska. This factor was a major point of disagreement between local experts and evaluators since direct ecological evidence suggests the existence of dispersal barriers or at least severe limitations to such dispersal, especially between Prince of Wales Island and neighboring islands and the mainland. Significant panel discussion was devoted to hypothetical dispersal corridors along the Stikine River Delta, across Zarembo, Shrubby, and Bushy Islands to Prince of Wales Island. However, the absence of wolves on Admiralty, Baranof and Chichagof Islands and the lack of dispersal of radio-marked wolves away from Prince of Wales Island during the radio-telemetry study suggests the apparent inability of wolves to successfully disperse across major water barriers. Thus, insular populations of wolves may indeed exist in southeast Alaska and this would have profound implications for conservation strategies and maintaining well distributed populations.

### Wolf Mortality.

There was considerable discussion about roads as a factor affecting wolf mortality. Rooding was also a major concern identified in the wolf conservation assessment and that increased road densities contributed to increased legal and illegal mortality. There was general agreement that mortality related to roads is a human education (illegal kills) and management (trapping and hunting seasons and bag limits) issue and not specifically a road issue. Thus, likelihood outcome ratings were not generally affected by existing or planned miles of road construction. Although some discussion focused on the extended rotation alternatives and general requirement for a relatively greater amount of road construction. However, some discussion clearly indicated a preference for a reserve based landscape strategy to provide roadless refugia for wolves.

The recommended solution to manage human-related wolf mortality within sustainable levels was a working partnership between the Forest Service to manage road access and the Alaska Department of Fish and Game to manage seasons and bag limits. Minimizing road construction and density and creating roadless areas through access management may serve to reduce human-related wolf mortality. Management should also demonstrate concern for the accessibility issue but that use of road density thresholds (e.g. 1.0 mile/mi<sup>2</sup> of landscape in the proposed standard and guides) as a management rule of thumb was not advised.

### Distribution

The concept of well distributed populations also received considerable discussion, specifically what constituted a "gap" in a species distribution that triggered an Outcome III rating. Wolf dispersal capabilities were an important element in this dialogue as wolves are capable of dispersing several hundred miles. Much discussion focused on fluxes in wolf populations in relation to prey and resettlement of previously vacant habitat (e.g. Italy, Minnesota, Wisconsin, and the not-them Rocky Mountains). Thus, some panelists initially considered a gap in distribution to be complete extirpation from major islands such as Prince of Wales Island and that a single wolf pack there could represent a well-distributed population. There was no agreement on this issue, especially from local experts that considered this single wolf pack scenario a much too liberal interpretation of a well-distributed population.

Panelists eventually agreed that a gap could be created in wolf distribution through the effects of timber harvest reducing deer habitat capability to the extent that a pack no longer occupied a former territory. Only ephemeral, dispersing individuals may occasionally occur in that formerly occupied range but habitat was insufficient to sustain a reproductively successful pack. Therefore, there would be some limitation in interaction among individuals and packs resulting from these gaps. The approximate size of a gap was at least 100 square miles, the average size of wolf pack home ranges on Prince of Wales Island.

## III. COMPARISON OF ALTERNATIVES

The 'after' likelihood outcome ratings are used to compare alternatives since these second ratings by panelists benefit from professional interaction and a likely greater understanding of both gross and subtle differences among features in alternatives. The average rating for all panelists is also used, rather than focusing on individual evaluator differences. The following key features emerged from the panelists' likelihood outcome ratings for 100 years of full alternative implementation.

There is virtually no chance of extirpation of the wolf from the Tongass National Forest as a result of implementation of any alternative. All alternatives received an almost negligible rating of 1 for Outcome V (extirpation from the planning area) for all alternatives. This rating likely represents the minor chance of a stochastic event that may occur within the next 100

rating of 1 for Outcome V (extirpation from the planning area) for all alternatives. This rating likely represents the minor chance of a stochastic event that may occur within the next 100 years that in combination with past Forest Service activity, would extirpate wolves from the Tongass National Forest.

Alternative 1 provided the greatest likelihood of maintaining stable, well distributed populations across their current range on the Tongass. However, panelists indicated that even with essentially no action, past management activities that have reduced deer habitat capability on some portions of the forest, specifically north and central Prince of Wales Island, would result in some likelihood (14) of locally reduced population levels. Outcome II for Alternative 1 was explained as the likely result of natural fluctuations in wolf populations in response to prey availability and other environmental factors.

Because of the intensity of proposed harvest activity and anticipated significant regional reductions in deer habitat capability, Alternatives 2, 7, 8, and 9 were rated with some likelihood (range 9-19) of creating populations that would exist in refugia with severely restricted interaction between populations (outcome IV).

The likelihood of an alternative resulting in a situation in 100 years where either gaps in distribution occur (Outcome III), populations exist in refugia (Outcome IV), or extirpated (Outcome V) is a general indication that wolf populations would not remain well distributed across the Tongass. This cumulative likelihood is the sum of Outcomes III, IV, and V. Alternatives 7 and 9 both have a relatively high cumulative likelihood's, 71 and 66 respectively (Table 1). Moderate cumulative likelihood's exist for Alternatives 8 (50), 2 (40), and 6 (36). These cumulative outcomes are generally related to the total timber harvest levels and associated reductions in deer habitat capability. In addition, they all have a 100 year timber harvest rotations that does not allow for development of additional, quality habitat. Conversely, alternatives 1, 3, and 5 have cumulative outcome ratings below 20 that suggests a high likelihood of maintaining well distributed wolf populations.

Average panel scores changed little between the first and second rating in alternatives 1, 2 and 3, possibly due to a clear understanding of the alternative features. However, scores declined somewhat between the two ratings for the remaining alternatives. Alternatives 4, 5, and 6 have in common either extended rotations or partial reserve allocation and panelists likely gained a greater understanding these features. Rating declines in Alternatives 7, 8 and 9 may be related to a stricter interpretation of what constitutes a gap for wolf populations.

Table 1. Average likelihood outcome ratings among 4 wolf panel experts for 9 Tongass Land Management Plan Revision alternatives.

	Outcomes	I	II	Total	III	IV	V	Total
		I and II			III, IV, V			
Alternative 1	Before	80	14	94	3	2	1	6
	After	80	14	94	3	2	1	6
Alternative 2	Before	35	28	63	27	9	1	37
	After	35	25	60	30	9	1	40
Alternative 3	Before	59	26	85	13	1	1	15
	After	59	25	84	14	1	1	16
Alternative 4	Before	44	35	79	19	1	1	21
	After	34	39	73	24	2	1	27
Alternative 5	Before	55	30	85	13	1	1	15
	After	48	34	82	16	1	1	18
Alternative 6	Before	35	34	69	26	1	1	28
	After	26	38	64	31	4	1	36
Alternative 7	Before	18	20	38	45	16	1	62
	After	3	26	29	51	19	1	71
Alternative 8	Before	30	37	67	26	6	1	33
	After	7	43	50	40	9	1	50
Alternative 9	Before	18	24	42	42	15	1	58
	After	3	31	34	48	17	1	66

## Evaluator Form

### Tongass Land Management Plan Revision -- Panel Assessments December 5 and 6, 1995

Panel Name: Wolf

Evaluator: 1

Outcomes	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7		Alternative 8		Alternative 9	
	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after
I	75	75	70	70	80	70	70	50	70	50	70	35	65	5	80	10	65	5
II	10	10	10	10	5	10	10	20	15	25	15	30	15	40	5	40	15	45
III	5	5	10	10	5	10	10	20	5	15	5	25	10	45	5	40	10	40
IV	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
V	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
<b>Total</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Did not feel comfortable to rate

Totals of outcomes must = 100

Notes on changed scores:

## Evaluator Form

### Tongass Land Management Plan Revision -- Panel Assessments December 5 and 6, 1995

Panel Name:

Wolf

Evaluator:

2

Outcomes	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7		Alternative 8		Alternative 9	
	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after
I	90	90	0	0	60	60	25	25	60	60	10	10	0	0	10	10	0	0
II	10	10	20	20	30	30	50	50	30	30	30	40	10	10	50	50	10	10
III	0	0	60	60	10	10	25	25	10	10	50	50	60	60	40	40	60	60
IV	0	0	20	20	0	0	0	0	0	0	0	0	30	30	0	0	30	30
V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	100	100	100	100	100	100	100	100	100	100	90	100	100	100	100	100	100	100

Did not feel comfortable to rate

Totals of outcomes must = 100

Notes on changed scores:

## Evaluator Form

### Tongass Land Management Plan Revision -- Panel Assessments December 5 and 6, 1995

Panel Name:

Evaluator:

Outcomes	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7		Alternative 8		Alternative 9			
	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after		
I	75	75	50	50	65	65	40	30	50	40	30	30	0	0	0	0	0	0	0	0
II	25	25	30	30	20	20	30	40	25	30	40	40	25	25	40	40	40	40	40	40
III	0	0	20	20	15	15	30	30	25	30	30	30	50	50	40	40	40	40	40	40
IV	0	0	0	0	0	0	0	0	0	0	0	0	25	25	20	20	20	20	20	20
V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Did not feel comfortable to rate

Totals of outcomes must = 100

Notes on changed scores:

## Evaluator Form

### Tongass Land Management Plan Revision -- Panel Assessments December 5 and 6, 1995

Panel Name: Wolf

Evaluator: 4

Outcomes	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7		Alternative 8		Alternative 9	
	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after
I	80	80	20	20	30	40	40	30	40	40	30	30	5	5	30	10	5	5
II	10	10	50	40	50	40	50	45	50	50	50	40	30	30	50	40	30	30
III	7	7	20	30	20	20	10	20	10	10	20	20	60	50	20	40	60	50
IV	3	3	10	10	0	0	0	5	0	0	0	10	5	15	0	10	5	15
V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Did not feel comfortable to rate

Totals of outcomes must = 100

Notes on changed scores:

## SUMMARY BEFORE

Panel Name: Wolf

### Tongass Land Management Plan Revision – Panel Assessments

December 5 and 6, 1995

Alternative 1					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	75	90	75	80	80
II	10	10	25	10	14
III	5	0	0	7	3
IV	5	0	0	3	2
V	5	0	0	0	1

Alternative 2					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	70	0	50	20	35
II	10	20	30	50	28
III	10	60	20	20	28
IV	5	20	0	10	9
V	5	0	0	0	1

Alternative 3					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	80	60	65	30	59
II	5	30	20	50	26
III	5	10	15	20	13
IV	5	0	0	0	1
V	5	0	0	0	1

Alternative 4					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	70	25	40	40	44
II	10	50	30	50	35
III	10	25	30	10	19
IV	5	0	0	0	1
V	5	0	0	0	1

Alternative 5					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	70	60	50	40	55
II	15	30	25	50	30
III	5	10	25	10	13
IV	5	0	0	0	1
V	5	0	0	0	1

Alternative 6					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	70	10	30	30	35
II	15	30	40	50	34
III	5	50	30	20	26
IV	5	0	0	0	1
V	5	0	0	0	1

Alternative 7					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	65	0	0	5	18
II	15	10	25	30	20
III	10	60	50	60	45
IV	5	30	25	5	16
V	5	0	0	0	1

Alternative 8					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	80	10	0	30	30
II	5	50	40	50	36
III	5	40	40	20	26
IV	5	0	20	0	6
V	5	0	0	0	1

Alternative 9					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	65	0	0	5	18
II	15	10	40	30	24
III	10	60	40	60	43
IV	5	30	20	5	15
V	5	0	0	0	1

**SUMMARY AFTER**

Panel Name: **Wolf**      **Tongass Land Management Plan Revision -- Panel Assessments**  
 December 5 and 6, 1995

Alternative 1					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	75	90	75	80	80
II	10	10	25	10	14
III	5	0	0	7	3
IV	5	0	0	3	2
V	5	0	0	0	1

Alternative 2					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	70	0	50	20	35
II	10	20	30	40	25
III	10	60	20	30	30
IV	5	20	0	10	9
V	5	0	0	0	1

Alternative 3					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	70	60	65	40	59
II	10	30	20	40	25
III	10	10	15	20	14
IV	5	0	0	0	1
V	5	0	0	0	1

Alternative 4					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	50	25	30	30	34
II	20	50	40	45	39
III	20	25	30	20	24
IV	5	0	0	5	3
V	5	0	0	0	1

Alternative 5					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	50	60	40	40	48
II	25	30	30	50	34
III	15	10	30	10	16
IV	5	0	0	0	1
V	5	0	0	0	1

Alternative 6					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	35	10	30	30	26
II	30	40	40	40	38
III	25	50	30	20	31
IV	5	0	0	10	4
V	5	0	0	0	1

Alternative 7					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	5	0	0	5	3
II	40	10	25	30	26
III	45	60	50	50	51
IV	5	30	25	15	19
V	5	0	0	0	1

Alternative 8					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	10	10	0	10	8
II	40	50	40	40	43
III	40	40	40	40	40
IV	5	0	20	10	9
V	5	0	0	0	1

Alternative 9					
Evaluator	1	2	3	4	Mean
<b>Outcomes</b>					
I	5	0	0	5	3
II	45	10	40	30	31
III	40	60	40	50	48
IV	5	30	20	15	18
V	5	0	0	0	1

