

United States
Department of
Agriculture

Forest
Service

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Reply To: RS-G-10-b

Date: May 6, 1997

Subject: Summary of the 1997 American Marten Risk Assessment Panel

To: Tongass Land Management Plan (TLMP) Revision Planning File

From: Gene DeGayner, TLMP IDT, Marten Panel Facilitator

A risk assessment panel of American Marten experts was held in Juneau, Alaska on March 25-26 to evaluate the likelihood that newly developed TLMP alternatives would maintain habitat sufficient to support a persistent and well distributed population of marten throughout their range on the Tongass National forest. The general process used in the 1995 risk assessment panel was followed with the addition of a specific, qualitative appraisal of alternative features by panel evaluators.

Two of the four 1995 marten panel evaluators participated. Panel evaluators integrated their personal knowledge and experience with technical information presented on marten ecology in southeast Alaska and details concerning design elements for forest plan alternatives. They then used this background to develop professional judgments about likely outcomes of habitat condition sufficient to support the long term persistence and distribution of marten on the Tongass National Forest.

This summary provides an analysis and discussion of factors that emerged as major concepts considered and debated by panelists. These are the factors that appear to have had the most influence on the assignment of likelihood points to the various outcomes by panel evaluators. An analysis and comparison of their ratings by alternative also is presented.

Panel evaluators were instructed to evaluate the likelihood that implementation of TLMP alternatives 1, 2, 5, 9, 9', 10, or 11 for 100 years would have on the abundance and distribution of habitats suitable to support well distributed and persistent marten populations. In addition, panel evaluators were asked to appraise features used to construct alternatives (e.g. reserves, beach buffers) as to their contribution to maintaining marten habitat. These qualitative appraisals of specific features and the panel discussions were used to interpret the quantitative evaluation of alternatives as indicated by the assignment of likelihood points by outcome and to identify important ecological considerations.

Detailed notes were recorded by a scribe during the 2day session. These notes include all processes, rating procedures, and names and roles of all people who participated in the panel. The maps, reports, and other information made available to panel evaluators to conduct this assessment are detailed in these notes, which are available in the TLMP Planning Record, and are listed in Appendix 1.

Important Ecological Considerations

Forest Structure

Forest structure at the stand scale and integrated across the landscape was the dominant factor in panel evaluations and discussion. Panel evaluators agreed, based upon their personal experience, the scientific literature, and local southeast Alaska data, that marten are clearly associated with late seral and old-growth forests and that they function ecologically at broad landscape scales.

As a mid-level predator, habitat to support adequate prey populations of small mammals was considered important. Reserves were deemed to be important for marten, but the condition of the matrix also **was** important. Thus, based primarily upon forest succession in southeast Alaska and small mammal habitat relationships, panel evaluators concluded that continued 100-year timber harvesting rotations, primarily implemented by clear-cutting in blocks, was adverse to providing resilient prey populations for marten.

The stem exclusion stage of forest succession persists for at least 70% of a 100-year rotation with a greatly simplified overall forest structure that is generally devoid of understory vegetation. In addition, large trees, snags, and downed logs, features that enhance structural diversity, are not regenerated during these short, clear-cut rotations. These structures are important as they provide prey habitat and are used as den sites by marten. Conversely, a 200-year rotation, which increases structural complexity of seral stages and thus may better support marten prey, was viewed as a superior landscape management approach. The concept of using two-aged silvicultural management prescriptions as an approach other than clear-cutting to harvest old growth was also considered to enhance structural diversity in managed seral forest stands.

Thus, a 100-year timber harvesting rotation, when applied primarily through clear-cutting in blocks across a "large proportion" of the landscape, was viewed as an unsustainable approach to managing habitat sufficient to support persistent (including resiliency to low prey years), well distributed marten populations across the Tongass National Forest. Even though many alternatives retain a considerable portion of productive old growth (POG) within matrix lands (for example, 57% after 100 years in alternative #11), panel evaluators still believed that marten were sensitive to the amount of even-aged young growth within the matrix. The evaluators assignment of likelihood points to outcomes and their appraisal of alternative features (see Appendix 2) were generally consistent with this conclusion.

Maintaining POG within beach and riparian habitat zones was considered to be important by panel evaluators. These features were particularly important to maintaining landscape connectivity and prey habitat diversity. The wider the "no-cut" riparian zone, the better. A "no-cut" 1000' beach zone was specifically considered to be important because of the highly dissected and naturally fragmented nature of forest habitat on islands in southeast Alaska. Beach habitat was generally considered to be more important than altitudinal riparian corridors.

This and the previous marten panel agreed that large and medium reserves as designated by the Interagency Viable Population Committee (VPOP) provide important habitat features for marten. Both panels indicated, however, that the VPOP approach to establishing a system of well distributed old-growth reserves was only minimally acceptable for marten. The approach was judged to be minimal primarily because its spatial distribution of reserves could allow for the creation of "gaps" in marten distribution within harvested matrix lands.

Roads

There was relatively little discussion about road density and trapping in relation to persistent and well distributed marten populations. Human access facilitated by roads was considered exogenous to the rating process. Rather, panel evaluators focused on forest structure at the stand and landscape scales and net marten habitat capability.

Habitat Sufficient to Support Viable and Well Distributed Populations

Because martens were released on some island^{1/} historical distribution was assumed to be after introductions were completed. A gap was considered to be a spatial area within which habitat capability was reduced to a point that reproductively successful marten populations may no longer exist or would exist in such low densities as to significantly increase the probability of local extirpation. Individuals may occasionally disperse and move through these landscapes, but interaction among somewhat distant populations is minimized.

Panel evaluators defined the spatial scale of a gap to be one vacant marten territory. A marten territory was considered to be from one to three square miles. The consequence of a gap is some measure of reduced gene flow within the population. Panel evaluators indicated that a population can accommodate a certain, but unknown, level of gaps and still remain viable. The greater the size and number of gaps, however, the higher the risk of reducing gene flow. To avoid creation of gaps by forest management practices, panel evaluators suggested that some type of uneven aged silviculture, in contrast to clear cutting in blocks, be coupled with a reduced level of timber harvest in the matrix lands.

The panel recognized the high degree of natural fragmentation on the Tongass NF. The panel could not, however, identify the threshold of POG remaining at which a landscape or a territory would not be suitable for marten reproduction.

Panel evaluators generally indicated that their concepts of viable and well distributed populations fell somewhere within the higher portion of Outcome iii with well distributed being a more stringent criterion than viable. Opinions varied, however, as one panelist thought Outcome I represented viable and well distributed, but could also see how Outcome II could be considered to encompass these concepts. Another panelist thought that viable and well distributed was somewhere within Outcome III. Therefore, the assignment of likelihood points by alternative are presented as a range: Outcomes I and II combined, and Outcomes I, II, and III combined (see table 1). Alternatively, the sum of points in Outcomes IV and V represent the likelihood of marten populations not persisting in a distributional pattern other than refugia.

III. Discussion of Rating of Specific Alternatives

Alternatives are discussed below in the order (highest to lowest) that they were scored by panel evaluators. Mean scores for the sum of Outcomes i and II and Outcomes I, ii, and III are presented in table x. Alternatives #1 and #9 have not changed since the 1995 panel while alternatives #2, #5, and #9 have reduced acreages of harvested POG after 100 years from what was evaluated by the previous panel. To provide an understanding of the consistency of the rating process, the 1995 assignment of likelihood points by outcome and the projected acreages to be harvested after 100 years of implementation for these alternatives also are presented in table 1. Notes on panel discussions and the features appraisal worksheets were used to interpret these assignment of likelihood points.

^{1/} If and where these were true introductions or were supplementations to existing populations is unclear and under study.

Alternative #1 The historical benchmark and Alternative #1 received the highest mean scores, 99-100 and 93-100, for the sum of Outcomes I & II and Outcomes I & II & III, respectively, for alternative #1 (table x). These ratings suggest that marten were well distributed in 1954 and the subsequent 40 years of timber harvest on over than 400,000 acres of primarily high volume POG has created few gaps in marten distribution. The 1995 panel scored Alternative #1 somewhat lower (79-100) however, indicating that some gaps may be present.

Alternative #5 Alternative #5 received the 2nd highest rating, scoring 66-95 for the sum of Outcomes I & II and Outcomes I & II & III, respectively. These scores are attributed to a relatively low harvest of POG (462,800 acres) over the next 100 years and to the implementation of a silvicultural system other than clearcutting. During the discussion it was clear that panel evaluators did not feel that they had sufficient information to endorse two-aged management as presented, but strongly supported attempts to regenerate stands with methods other than clearcutting. They also supported the 200-year rotation. Thus, longer rotations (for example, 200-years versus 100-years) and silvicultural practices other than clear-cutting that maintained habitat features were considered to be available and desirable tools to use to help prevent gaps in marten distributions within matrix lands.

Alternative #11 Alternative #11 received the 3rd highest scores. Although this alternative has a level of POG harvest over 100 years equivalent to that in alternative #5 and implements a mapped version of the V-POP reserve strategy (Alternative #5 had V-POP reserves only in four high risk biogeographical provinces), it scored lower (36-91) than alternative 5. This difference is primarily associated with clearcut silviculture and a 100-year rotation in harvested matrix lands. This result reinforces the point that habitat conditions for marten within the matrix lands were important to this panel. With only 9 likelihood points assigned to Outcome IV and none assigned to Outcome V, the results clearly indicate the high likelihood that after full implementation of this alternative for 100 years marten will persist across the forest in some distributional status considerably more dense than refugia.

Alternative #10 Alternative #10 scored slightly lower (30-89) than alternative 11, which is attributed to a 200,000 acre increase in the projected harvest of POG over 100 years and to not mapping the small V-POP reserves. Given the magnitude of the difference in acres of POG harvested between alternatives 10 and 11 and the enhanced system of V-POP reserves in alternative 11, the relatively similar ratings were somewhat surprising-particularly since panel discussion strongly indicated that marten were considered to be sensitive to the total amount of acres harvest within matrix lands. With only 11 likelihood points assigned to Outcome IV and none assigned to Outcome V, the results clearly indicate the high likelihood that after full implementation of this alternative for 100 years marten will persist across the forest in some distributional status considerably more dense than mere refugia.

Alternative #2 Alternative #2 scored 19-83. These lower scores are attributed to the relatively higher harvest rate of POG in matrix lands, narrower beach and riparian buffers, and no implementation of V-POP reserves. These scores were somewhat higher than those received in 1995 (8-64) perhaps because of the reduced harvest of POG in the alternative as evaluated in 1997 versus that in 1995 (table 1).

Alternative #9 Alternative 9' and 9 scored the lowest. These alternatives had the highest POG harvest rates and the fewest allowances for corridors, reserves, and differences in matrix management. Scores for alternatives 9 and 9' appear to be insensitive to acres of POG harvested, likely because of the high level of harvest (> 1,000,000 acres) in comparison to most other alternatives evaluated. Even so, this finding is somewhat inconsistent with panel discussions, where marten were believed to be sensitive to the amount of 2nd growth generated by harvest within matrix lands.

Table 1. Likelihood outcome scores for the American marten by evaluators on the marten assessment panel. Ratings for Before discussion among evaluators relative to features of the alternatives and After discussion are provided. Ratings from the 1995 panel also are shown for alternatives common to both panel rating periods. Alternatives 1 and 9' are identical in features and acres of productive old-growth (POG) harvested. Alternatives 2 and 5 are identical in features but with fewer acres of POG scheduled for harvest in the 1997 panels. A range for all alternatives is also provided for all alternatives for the likelihood of maintaining habitat to support viable and well distributed marten populations. The -414,000 value for POG harvest under Historic represents the acreage harvested since 1954.

																	1997 Panel					
Outcomes	Alternative 1		Alternative 2		Alternative 5		Alternative 9		Alternative 9'		Alternative 10		Alternative 11		Historical							
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After						
I	84	84	0	0	1	1	0	0	0	0	0	0	0	0	91	90						
II	9	9	19	19	66	65	13	13	11	11	30	30	38	36	9	9						
III	8	8	65	64	29	29	53	53	54	50	60	59	55	55	0	1						
IV	0	0	16	18	4	5	35	35	35	39	10	11	8	9	0	0						
V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
POG Harvested (Acres)	0		853,270		462,880		1,042,428		1,402,800		670,270		475,000		-414,000							
(Productive Old Growth)																						
																	1995 Panel					
POG Harvested (Acres)	0		1,106,670		572,300				1,402,800													
Outcomes	Alternative 1		Alternative 2		Alternative 5		Alternative 9															
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After						
I	54	54	3	3	36	18			3	3												
II	25	25	6	5	36	53			11	6												
III	21	21	55	56	21	24			44	46												
IV	0	0	21	21	6	6			21	24												
V	0	0	15	15	0	0			21	21												
Likelihood of maintaining habitat to support viable and well distributed marten populations (Range = Outcomes I + II to I + II + III)																						
PANEL YEAR	Alternative 1		Alternative 2		Alternative 5		Alternative 9		Alternative 9'		Alternative 10		Alternative 11		Historical							
1997	>93, 100		>19, <83		>66, <95		>13, <66		>11, <61		>30, <89		>36, <91		>99, 100							
1995	>79, 100		>8, <64		>71, <95				>9, <55													
* 1995 panel scores are combined for purposes of comparison with 1997 scores only. These combinations do not infer any conclusions on behalf of the 1995 panel																						
because they did not specifically discuss viable and well distributed populations relative to the specific outcomes.																						

Appendix 1. List of panel evaluators as well as the facilitator, resource specialists, scribe, and silent observer and affiliation. Also listed are materials provided to panel evaluators for use in panel deliberations.

Panel evaluators:

John Bissonette, National Biological Service
Buddy Johnson, Fish and Wildlife Service
Brad Schultz, National Park Service
Stephen Henry, Forest Service

Facilitator: Gene DeGayner TLMP IDT, Forest Service

Marten Resource Specialist: Rod Flynn, Alaska Department of Fish and Game

Scribe: Lynn Humphrey, Forest Service

Silent Observer: Dick Zaborske, Forest Service

Panel evaluators were presented the following information:

- Overview video of forest planning: Bruce Rene', TLMP.
- Overview presentation of alternatives; Chris Iverson: TLMP (including the handout copy of overheads used "Tongass Land Management Plan Framework for Alternative, Panel Assessments, Spring, 1997").
- Tongass maps illustrating 7 alternatives and land use designations (1, 2, 5, 9, 9', 10 and 11); 1954 productive old growth; 1995 productive old growth abundance and distribution and second growth; anticipated old growth condition in 2095 for all alternatives.
- Copies of the following materials were also provided:
 1. Scientific information and the Tongass Land Management Plan: Key Findings From the Scientific Literature, Species Assessments, Resource Analyses, Workshops, and Risk Assessment Panels. PNW GTR # 386.
 2. Summary of the Revised Supplement to the Draft Environmental Impact Statement.
 3. National Forest Management Act regulations concerning wildlife viability.
 4. Interagency Viable Population Committee (VPOP) report (Suring et al. 1993) Executive Summary.
 5. Summary of PNW Review of the VPOP Report by Kiester and Eckhardt (1994).
 6. Extinction Rates in Archipelagos: Implications for Populations in Fragmented Habitats (Burkey 1995).
 7. Tongass National Forest Land and Resource Management Plan -- goals and objectives, wildlife related standards and guidelines, information needs, and riparian information.
 - a. Final Environmental Impact Statement for the Tongass National Forest Land Management Plan Revision; wildlife related components of the effects analysis.
 9. Controlling Stability Characteristics of Steep Terrain with Discussion of Needed Standardization of Mass Movement Hazard Indexing: A Resource Assessment of Land Use Impacts on Channel Condition. Publication in Earth Surface Processes and Landforms by Woodsmith.
 10. Evaluation of the Use of Scientific Information in Developing the Final Alternative for the Tongass Land management Plan (Everest et al. 1997)
 11. Conceptual Approaches for Maintaining Well-Distributed, Viable Wildlife Populations: A Resource Assessment (Iverson and Rene 1997 in GTR # 392).
 12. Dynamics of understory biomass in Sitka spruce-western hemlock forests of southeast Alaska (Alaback 1962)
 13. Risk Assessment Panels as a component of the TLMP Revision Process: information on the process.
 14. Planned acres of productive old growth harvested by alternative by 2095.
 15. Five tables summary data by biogeographic province.

16. Map of Tongass streams by AHMU (Aquatic Habitat Management Unit) Class to show density of riparian areas.
17. Map of development vs. natural setting Land Use Designations for Alternative 11 with VPOP large and medium habitat conservation areas.
18. Original VPOP reserves map.
19. Graph of first round of panel scores plotted against acres harvested.
20. Shaded relief map of the Tongass to show natural level of fragmentation and topographic relief.

Appendix 2. Individual panel evaluators assignment of likelihood outcome scores and appraisal of contribution to alternative features to maintaining marten habitat.

Evaluator Form

Tongass Land Management Plan Revision -- Panel Assessments

March 25-26, 1997

Panel Name:

Marten

Evaluator:

1

Outcomes	Alternative 1		Alternative 2		Alternative 5		Alternative 9		Alternative 9'		Alternative 10		Alternative 11		Historical	
	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after
I	85	85	0	0	5	5	0	0	0	0	0	0	0	0	95	95
II	5	5	10	10	85	85	10	10	5	5	15	15	15	15	5	5
III	10	10	75	70	10	10	75	70	75	65	75	75	75	75	0	0
IV	0	0	15	20	0	0	15	20	20	30	10	10	10	10	0	0
V	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

Did not feel comfortable to rate

Totals of outcomes must equal 100

Notes on changed scores:

Reduced score on 9' so it isn't so much like 10 and 11 because it harvests more than twice the acres compared to 10 and 11.

Evaluator Form

Tongass Land Management Plan Revision -- Panel Assessments

March 25-26, 1997

Panel Name:

Marten

Evaluator:

2

Outcomes	Alternative 1		Alternative 2		Alternative 5		Alternative 9		Alternative 9'		Alternative 10		Alternative 11		Historical	
	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after
I	90	90	0	0	0	0	0	0	0	0	0	0	0	0	90	90
II	10	10	50	50	80	80	25	25	25	25	60	60	75	75	10	10
III	0	0	50	50	20	20	25	25	25	25	40	40	25	25	0	0
IV	0	0	0	0	0	0	50	50	50	50	0	0	0	0	0	0
V	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

Did not feel comfortable to rate

Totals of outcomes must equal 100

Notes on changed scores:

Unchanged - Discussion of viability vs. sustainability did not change my perceptions; nor did discussion of 'exogenous' factors. I feel that my ratings are 'habitat' based and needed no further revision.

Evaluator Form

Tongass Land Management Plan Revision -- Panel Assessments

March 25-26, 1997

Panel Name:

Marten

Evaluator:

3

Outcomes	Alternative 1		Alternative 2		Alternative 5		Alternative 9		Alternative 9'		Alternative 10		Alternative 11		Historical	
	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after
I	80	80	0	0	0	0	0	0	0	0	0	0	0	0	90	85
II	10	10	10	10	70	70	10	10	10	10	15	20	20	25	10	10
III	10	10	70	70	30	30	50	55	55	50	75	70	70	65	0	5
IV	0	0	20	20	0	0	40	35	35	40	10	10	10	10	0	0
V	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

Did not feel comfortable to rate

Totals of outcomes must equal 100

Notes on changed scores:

Evaluator Form

Tongass Land Management Plan Revision -- Panel Assessments

March 25-26, 1997

Panel Name:

Marten

Evaluator:

4

Outcomes	Alternative 1		Alternative 2		Alternative 5		Alternative 9		Alternative 9'		Alternative 10		Alternative 11		Historical	
	before	after	before	after	before	after	before	after	before	after	before	after	before	after	before	after
I	80	80	0	0	0	0	0	0	0	0	0	0	0	0	90	90
II	10	10	5	5	30	25	5	5	5	5	30	25	40	30	10	10
III	10	10	65	65	55	55	60	60	60	60	50	50	50	55	0	0
IV	0	0	30	30	15	20	35	35	35	35	20	25	10	15	0	0
V	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

Did not feel comfortable to rate

Totals of outcomes must equal 100

Notes on changed scores:

Appraisal of the Contribution of Alternative Features to Maintaining Wildlife Habitat--AFTER

Panel Name: Marten

Evaluator: 1

FEATURE	CONCEPTUAL	AS APPLIED IN ALTERNATIVE							
		1	2	5	9	9'	10	11	
Old-growth Strategy									
Small Reserves	0	0	0	0	0	0	0	0	
Medium Reserves	+	0	0	+	0	0	+	+	
Large Reserves	+	-	-	+	-	-	++	++	
Semi-remote Recreation Areas	+	0	0	0	0	0	0	0	
Legislated Conservation Areas	+	0	0	0	0	0	0	0	
Small Island Protection	NA								
Deer Winter Range	DK								
Other Non-development Areas /	+	0	0	0	0	0	0	0	
Overall Strategy									

Ratings of the contribution of the feature to maintaining wildlife habitat

Mixed Management Strategy

Acres Harvested	-							
Rotation Length /2/	DK							
Primary Harvest Method /3/	UM>2A>ES	++	--	++	--	--	+	--
VCU Harvest Thresholds	++	-	-	+	-	-	-	--
Mix of Harvest Methods	++	--	--	++	--	--	+	--
% Old growth Retained /4/	+	+	0	+	0	0	0	+
Riparian Options /4,5/	1>2a>2>3	+	0	+	0	0	0	+
Beach Buffer /1,6/	+	+	0	+	-	-	0	+
Estuary Buffer /1,6/	+	+	+	+	0	0	+	+
Brown Bear Feeding Areas	0	0	0	0	0	0	0	0
Road & Access Management	+	+	+	+	+	+	+	+
Overall Strategy								

- 0 : Feature is Neutral
 - DK : Don't Know
 - +
 - ++
 -
 -
 - >
 - <
 - =
 - NA
- : Important Positive Feature
 : Critical Feature
 : Detrimental
 : Very Detrimental
 : More Than
 : Less Than
 : Comparable
 : Not Applicable

Biological Evaluations /7/								
"Firmness" of S&Gs	+	0	0	0	0	0	0	0
Other								

/1/ Includes wild/scenic rivers, remote recreation areas, municipal watersheds, research natural areas, etc.

/2/ In the conceptual column, consider using "<, > or =" for different rotation lengths (e.g., 100 years, 200 years, 300 years).

/3/ In the conceptual column, consider using "<, > or =" for different methods (e.g., evenaged, unevenaged, two-aged).

/4/ Include consideration of their "contribution" towards connectivity.

/5/ In the conceptual column, consider using "<, > or =" for the different options (i.e., options 1, 2, 2A, 3, TTRA, BMPs).

/6/ In the conceptual column, consider using "<, > or =" for different buffer widths (i.e., none, 0-500', 500-1,000').

/7/ New ones to be triggered for small mammals considered to be sensitive.

Appraisal of the Contribution of Alternative Features to Maintaining Wildlife Habitat--AFTER

Panel Name: Marten

Evaluator: 2

FEATURE	CONCEPTUAL	AS APPLIED IN ALTERNATIVE							
		1	2	5	9	9'	10	11	
Old-growth Strategy									
Small Reserves	+	NA	NA	+	NA	NA	+	+	
Medium Reserves	++	+	NA	+	NA	NA	+	+	
Large Reserves	++	++	NA	+	NA	NA	++	++	
Semi-remote Recreation Areas	+	+	+	+	+	+	+	+	
Legislated Conservation Areas	+	+	+	+	+	+	+	+	
Small Island Protection	0	0	0	0	0	0	0	0	
Deer Winter Range	+	+	NA	+	NA	NA	NA	NA	
Other Non-development Areas	+	+	+	+	+	+	+	+	
Overall Strategy	NA								

Ratings of the contribution of the feature to maintaining wildlife habitat

Mixed Management Strategy

Acres Harvested	--	+	-	+	--	--	+	+
Rotation Length /2/	300>200>100	+	=	+	=	=	=	=
Primary Harvest Method /3/	U>2>ES	++	=	+	=	=	+	=
VCU Harvest Thresholds	+	NA	NA	+	NA	NA	NA	NA
Mix of Harvest Methods	+	NA	NA	+	NA	NA	+	NA
% Old growth Retained /4/	++	++	=	+	=	=	=	=
Riparian Options /4,5/	++	=	-	=	--	--	=	++
Beach Buffer /1,6/	++	+	-	+	--	--	-	++
Estuary Buffer /1,6/	++	=	=	=	--	--	=	=
Brown Bear Feeding Areas	0	=	=	=	NA	NA	=	=
Road & Access Management	--	NA	-	=	--	--	-	=
Overall Strategy	NA							

- 0 : Feature is Neutral
- DK : Don't Know
- +
- ++ : Critical Feature
- : Detrimental
- : Very Detrimental
- > : More Than
- < : Less Than
- = : Comparable
- NA : Not Applicable

Biological Evaluations /7/	DK							
"Firmness" of S&Gs	++ (must be enforceable)	+	+	+	NA	NA	+	+
Other								

/1/ Includes wild/scenic rivers, remote recreation areas, municipal watersheds, research natural areas, etc.

/2/ In the conceptual column, consider using "<, > or =" for different rotation lengths (e.g., 100 years, 200 years, 300 years).

/3/ In the conceptual column, consider using "<, > or =" for different methods (e.g., evenaged, unevenaged, two-aged).

/4/ Include consideration of their "contribution" towards connectivity.

/5/ In the conceptual column, consider using "<, > or =" for the different options (i.e., options 1, 2, 2A, 3, TTRA, BMPs).

/6/ In the conceptual column, consider using "<, > or =" for different buffer widths (i.e., none, 0-500', 500-1,000').

/7/ New ones to be triggered for small mammals considered to be sensitive.

Appraisal of the Contribution of Alternative Features to Maintaining Wildlife Habitat--AFTER

Panel Name: Marten

Evaluator: 3

FEATURE	CONCEPTUAL	AS APPLIED IN ALTERNATIVE						
		1	2	5	9	9'	10	11
Old-growth Strategy								
Small Reserves	+	NA	-	+	-	-	+	+
Medium Reserves	+	NA	-	+	-	-	+	+
Large Reserves	++	NA	--	+	--	--	++	++
Semi-remote Recreation Areas	+	+	+	+	0	0	+	+
Legislated Conservation Areas	+	+	+	+	+	+	+	+
Small Island Protection	NA							
Deer Winter Range	+	+	-	+	-	-	-	-
Other Non-development Areas	+	+	+	+	+	+	+	+
Overall Strategy	NA	+	-	+	-	-	+	+

Ratings of the contribution of the feature to maintaining wildlife habitat

Mixed Management Strategy

Acres Harvested	--	++	-	-	--	--	-	-
Rotation Length /2/	100-- 200++	+	--	++	-	-	-	-
Primary Harvest Method /3/	--ES, UM++, 2A+	++	--	++	--	--	+	--
VCU Harvest Thresholds	+	NA	NA	+	NA	NA	NA	NA
Mix of Harvest Methods	+	NA	NA	+	NA	NA	+	NA
% Old growth Retained /4/	++	++	++	++	++	++	++	++
Riparian Options /4,5/	+1>2a>2>3	+	+	+	-	-	+	+
Beach Buffer /1,6/	0-, 500+, 1000+	+	-	+	-	-	-	+
Estuary Buffer /1,6/	0-, 1000	+	+	+	-	-	+	+
Brown Bear Feeding Areas	0	0	0	0	NA	NA	0	0
Road & Access Management	DK							
Overall Strategy	NA	+	-	++	-	-	-	-

0 : Feature is Neutral
 DK : Don't Know
 + : Important Positive Feature
 ++ : Critical Feature
 - : Detrimental
 -- : Very Detrimental
 > : More Than
 < : Less Than
 = : Comparable
 NA : Not Applicable

Biological Evaluations /7/	NA							
"Firmness" of S&Gs	DK							
Other								

/1/ Includes wild/scenic rivers, remote recreation areas, municipal watersheds, research natural areas, etc.

/2/ In the conceptual column, consider using "<, > or =" for different rotation lengths (e.g., 100 years, 200 years, 300 years).

/3/ In the conceptual column, consider using "<, > or =" for different methods (e.g., evenaged, unevenaged, two-aged).

/4/ Include consideration of their "contribution" towards connectivity.

/5/ In the conceptual column, consider using "<, > or =" for the different options (i.e., options 1, 2, 2A, 3, TTRA, BMPs).

/6/ In the conceptual column, consider using "<, > or =" for different buffer widths (i.e., none, 0-500', 500-1,000').

/7/ New ones to be triggered for small mammals considered to be sensitive.

Appraisal of the Contribution of Alternative Features to Maintaining Wildlife Habitat--AFTER

Panel Name: Marten

Evaluator: 4

FEATURE	CONCEPTUAL	AS APPLIED IN ALTERNATIVE							
		1	2	5	9	9'	10	11	
Old-growth Strategy									
Small Reserves	+	0	0	+	0	0	+	+	
Medium Reserves	++	0	0	++	0	0	++	++	
Large Reserves	++	0	0	++	0	0	++	++	
Semi-remote Recreation Areas	+	0	++	+	++	++	+	+	
Legislated Conservation Areas	+	0	++	+	++	++	+	+	
Small Island Protection	+	0	++	+	++	++	+	+	
Deer Winter Range	+	0	+	+	+	+	+	+	
Other Non-development Areas /	+	0	+	+	+	+	+	+	
Overall Strategy	NA								

Ratings of the contribution of the feature to maintaining wildlife habitat

Mixed Management Strategy

Acres Harvested	less is better	0	--	-	--	--	-	-
Rotation Length /2/	longer is better	NA	>	=	>	>	>	>
Primary Harvest Method /3/	UM>2A>=ES	=	<	=	<	<	=	<
VCU Harvest Thresholds	+	0	0	=	0	0	0	0
Mix of Harvest Methods	Appropriate							
% Old growth Retained /4/	more is better	NA	++	++	++	++	++	++
Riparian Options /4,5/	1>2>3	=	>	=	>	>	=	=
Beach Buffer /1,6/	wider is better	=	=	=	s/g	s/g	s/g	=
Estuary Buffer /1,6/	wider is better	=	=	=	s/g	s/g	=	=
Brown Bear Feeding Areas	DK							
Road & Access Management	+	+	+	+	+	+	+	+
Overall Strategy	NA							

0 : Feature is Neutral
DK : Don't Know
+ : Important Positive Feature
++ : Critical Feature
- : Detrimental
-- : Very Detrimental
> : More Than
< : Less Than
= : Comparable
NA : Not Applicable

Biological Evaluations /7/	+							
"Firmness" of S&Gs	Firm not absolute	NA	firm	flex?	firm	firm	firm	flex?
Other	spacial expicitness...							

/1/ Includes wild/scenic rivers, remote recreation areas, municipal watersheds, research natural areas, etc.

/2/ In the conceptual column, consider using "<, > or =" for different rotation lengths (e.g., 100 years, 200 years, 300 years).

/3/ In the conceptual column, consider using "<, > or =" for different methods (e.g., evenaged, unevenaged, two-aged).

/4/ Include consideration of their "contribution" towards connectivity.

/5/ In the conceptual column, consider using "<, > or =" for the different options (i.e., options 1, 2, 2A, 3, TTRA, BMPs).

/6/ In the conceptual column, consider using "<, > or =" for different buffer widths (i.e., none, 0-500', 500-1,000').

/7/ New ones to be triggered for small mammals considered to be sensitive.

SUMMARY BEFORE

Panel Name: Marten

Tongass Land Management Plan Revision -- Panel Assessments

March 25-26, 1997

Alternative 1							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	85	90	80	80			84
II	5	10	10	10			9
III	10	0	10	10			8
IV	0	0	0	0			0
V	0	0	0	0			0

Alternative 2							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	0	0	0	0			0
II	10	50	10	5			19
III	75	50	70	65			65
IV	15	0	20	30			16
V	0	0	0	0			0

Alternative 5							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	5	0	0	0			1
II	85	80	70	30			66
III	10	20	30	55			29
IV	0	0	0	15			4
V	0	0	0	0			0

Alternative 9							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	0	0	0	0			0
II	10	25	10	5			13
III	75	25	50	60			53
IV	15	50	40	35			35
V	0	0	0	0			0

Alternative 9'							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	0	0	0	0			0
II	5	25	10	5			11
III	75	25	55	60			54
IV	20	50	35	35			35
V	0	0	0	0			0

Alternative 10							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	0	0	0	0			0
II	15	60	15	30			30
III	75	40	75	50			60
IV	10	0	10	20			10
V	0	0	0	0			0

Alternative 11							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	0	0	0	0			0
II	15	75	20	40			38
III	75	25	70	50			55
IV	10	0	10	10			8
V	0	0	0	0			0

Historical							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	95	90	90	90			91
II	5	10	10	10			9
III	0	0	0	0			0
IV	0	0	0	0			0
V	0	0	0	0			0

SUMMARY AFTER

Panel Name: Marten

Tongass Land Management Plan Revision -- Panel Assessments

March 25-26, 1997

Alternative 1							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	85	90	80	80			84
II	5	10	10	10			9
III	10	0	10	10			8
IV	0	0	0	0			0
V	0	0	0	0			0

Alternative 2							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	0	0	0	0			0
II	10	50	10	5			19
III	70	50	70	65			64
IV	20	0	20	30			18
V	0	0	0	0			0

Alternative 5							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	5	0	0	0			1
II	85	80	70	25			65
III	10	20	30	55			29
IV	0	0	0	20			5
V	0	0	0	0			0

Alternative 9							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	0	0	0	0			0
II	10	25	10	5			13
III	70	25	55	60			53
IV	20	50	35	35			35
V	0	0	0	0			0

Alternative 9'							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	0	0	0	0			0
II	5	25	10	5			11
III	65	25	50	60			50
IV	30	50	40	35			39
V	0	0	0	0			0

Alternative 10							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	0	0	0	0			0
II	15	60	20	25			30
III	75	40	70	50			59
IV	10	0	10	25			11
V	0	0	0	0			0

Alternative 11							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	0	0	0	0			0
II	15	75	25	30			36
III	75	25	65	55			55
IV	10	0	10	15			9
V	0	0	0	0			0

Historical							
Evaluator	1	2	3	4	5	6	Mean
Outcomes							
I	95	90	85	90			90
II	5	10	10	10			9
III	0	0	5	0			1
IV	0	0	0	0			0
V	0	0	0	0			0