



Marbled Murrelet Long-Term Conservation Strategy

A report to the Board of Natural Resources

presented by

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Purpose

To compare murrelet scenarios by their relative effects on harvest levels.

The following scenarios are for comparative purposes only. These numbers should only be viewed in the context of this exercise, as further choices around the Sustainable Harvest Calculation will influence final volume levels.

Trust Mandate

As manager of state trust lands, DNR has legal fiduciary responsibilities under the State Constitution to:

- Generate revenue and other benefits for each trust, in perpetuity
- Preserve the corpus of the trust
- Exercise reasonable care and skill
- Act prudently to reduce the risk of loss for the trusts
- Maintain undivided loyalty to beneficiaries
- Act impartially with respect to current and future beneficiaries



Evaluation Criteria

1 To the maximum extent practicable, minimize and mitigate the impacts of take.

2 Not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

3 Make a significant contribution to maintaining and protecting marbled murrelet populations in western Washington over the life of the HCP.



The **objective function** of the model is to maximize the financial return over the long-term, as represented by **net present value**



Components of NPV

Volume

Price

Cost

Discount Rate



Volume

Yields

Land Base

Harvest Types

Constraints



Price

From review of 2011 - 2015 DNR timber sales

For the scenario analyses, used one price \$356 per thousand board feet



Cost

From actual spending levels in
fiscal years 2012 - 2015.



Cost

examples

Direct

timber sale set-up,
compliance, and marketing

Silviculture

site prep, planting, veg
management, PCT, surveys

Indirect

planning, inventory, legal
support, research



Cost

Harvest type	Cost per acre			
	Direct	Indirect	Silviculture	Total
Variable retention harvest	\$795	\$1,519	\$743	\$3,057
Thinning	\$795	\$1,519	\$0	\$2,314
Thinning (Riparian)	\$1000	\$1,519	\$0	\$2,519



Discount Rate

A range from 1 to 5 percent was analyzed.

Two percent was chosen to provide for intergenerational equality and to avoid foreclosing future options.

Murrelet Conservation by Alternative

	A	B	C	D	E	F
Occupied sites	✓	✓	✓	✓	✓	✓
Occupied site buffers	✓		✓	✓	✓	✓
Habitat identified under interim strategy	✓					
Marbled murrelet management areas						✓
Emphasis areas			✓		✓	
Special habitat areas			✓	✓	✓	
High quality P-stage habitat (>=.47)			✓		✓	
Low quality NSO Habitat						✓

Acres of Long-term Forest Cover (LTFC)

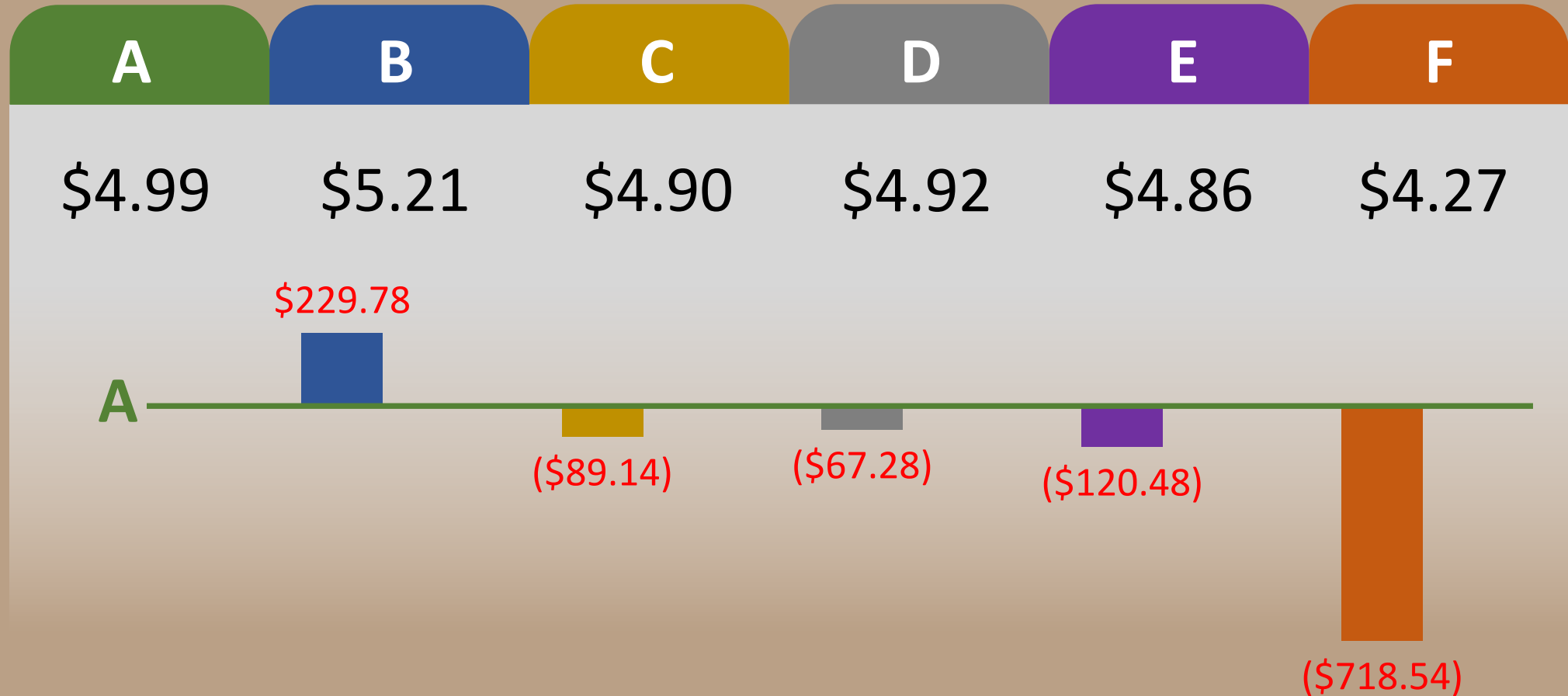
Existing conservation that provides benefits to marbled murrelets

Marbled murrelet- specific conservation

Total approximate acres

	A	B	C	D	E	F
Existing conservation that provides benefits to marbled murrelets	583,000	583,000	583,000	583,000	583,000	583,000
Marbled murrelet- specific conservation	37,000	10,000	53,000	51,000	57,000	151,000
Total approximate acres	620,000	593,000	636,000	634,000	640,000	734,000

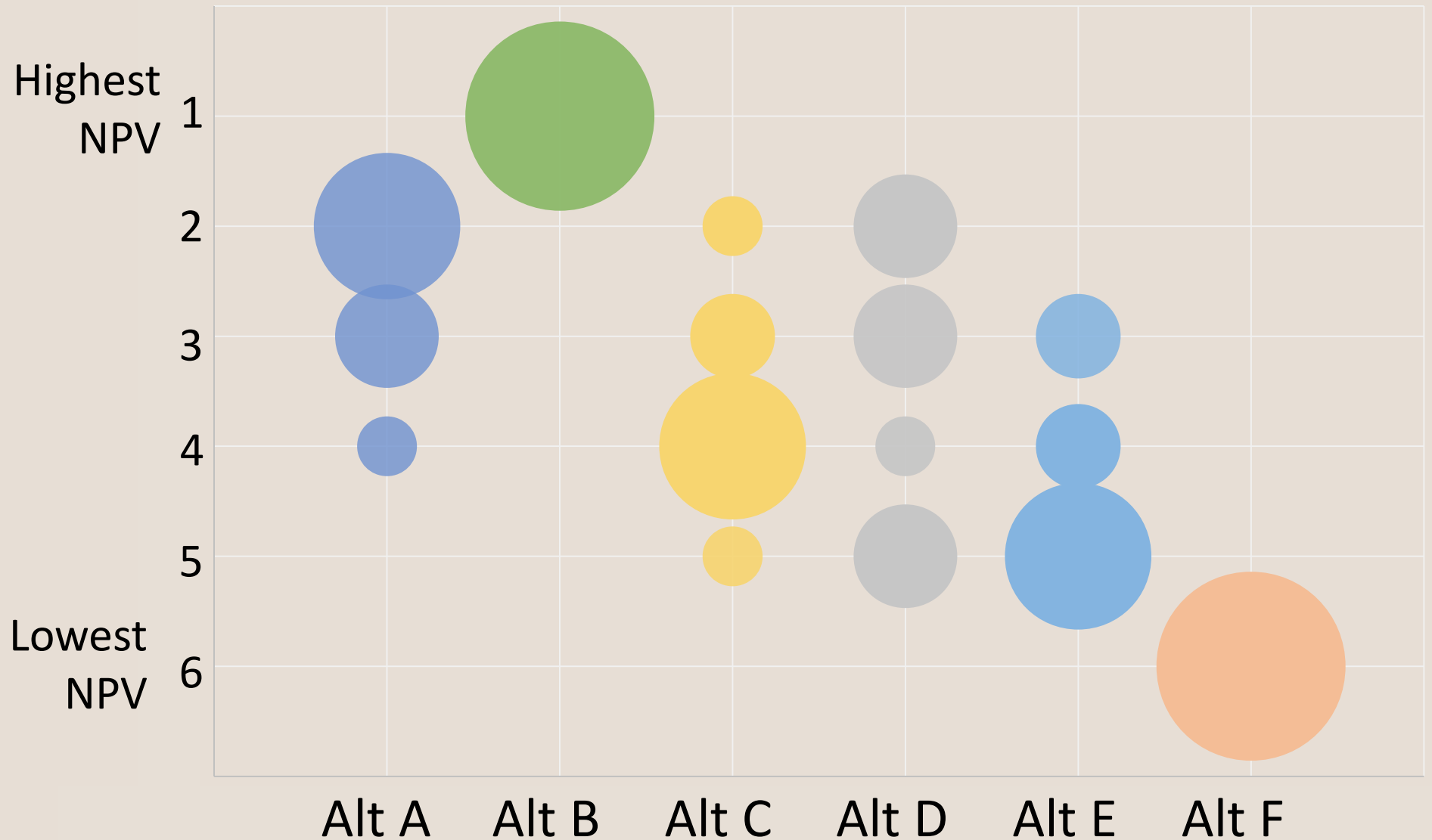
Cumulative Net Present Value (Billions)



Ranking Frequency

For each trust, alternatives were ranked from highest NPV to lowest NPV.

This graph illustrates where each alternative ranked, with the size of the circle corresponding to the number of times an alternative ranked in that place.



Scenario Net Present Value

(Millions of Dollars)

10 Decade Total

	A	B	C	D	E	F
TOTAL	4,985	5,215	4,896	4,918	4,865	4,266
Agricultural School	106	107	106	106	106	90
Capitol Grant	348	374	341	349	340	286
CEPRI	101	107	96	95	96	82
Common School	1,838	1,920	1,808	1,810	1,796	1,535
Normal School	123	132	114	115	113	104
Scientific School	206	211	206	205	206	173
State Forest Purchase	320	328	318	317	318	307
State Forest Transfer	1,716	1,794	1,703	1,727	1,697	1,534
University	173	188	150	139	139	103
Others*	55	55	54	55	54	53

*Others include CCFR, Water Pollination Board, Administrative Sites, and unknown trust status

Scenario Net Present Value (Millions of Dollars)

10 Decade Total

State Forest Transfer Lands

	Clallam	Clark	Cowlitz	Grays Harbor	Jefferson	King	Kitsap	Lewis	Mason	Pacific	Pierce	Skagit	Skamania	Snohomish	Thurston	Wahkiakum	Whatcom
A	352	91	38	3	58	54	17	157	85	45	26	264	113	224	62	37	71
B	393	91	38	3	60	54	17	158	85	53	26	267	113	225	63	51	72
C	353	91	38	3	60	53	17	156	85	43	26	261	113	218	64	33	68
D	370	91	38	3	60	54	17	158	85	41	26	264	113	220	64	32	69
E	347	91	38	3	60	53	17	156	85	43	25	261	113	218	64	33	67
F	348	89	37	2	60	45	17	132	85	37	13	210	112	183	62	26	53



Scenario Net Present Value (Millions of Dollars)

10 Decade Total

	Federal	Capitol	OESF	Clallam	Clark	Cowlitz	Grays-harbor	Jefferson	King	Kitsap	Lewis	Mason	Pacific	Pierce	Skagit	Skamania	Snohomish	Thurston	Wahkiakum	Whatcom
A	2,127	432	947	177	91	38	3	58	54	17	157	85	45	26	264	113	224	20	37	71
B	2,194	441	1,036	209	91	38	3	60	54	17	158	85	53	26	267	113	225	20	51	72
C	2,073	441	906	191	91	38	3	60	53	17	156	85	43	26	261	113	218	20	33	68
D	2,068	441	929	188	91	38	3	60	54	17	158	85	41	26	264	113	220	20	32	69
E	2,066	441	889	185	91	38	3	60	53	17	156	85	43	25	261	113	218	20	33	67
F	1,725	439	786	197	89	37	2	60	45	17	132	85	37	13	210	112	183	19	26	53



In Conclusion

This presentation was to compare murrelet scenarios by their relative effects on harvest levels.

The previous scenarios were for comparative purposes only. Those numbers should only be viewed in the context of this exercise, as further choices around the Sustainable Harvest Calculation will influence final volume levels.



