

O&C Lands Report

Prepared for Oregon Governor John Kitzhaber

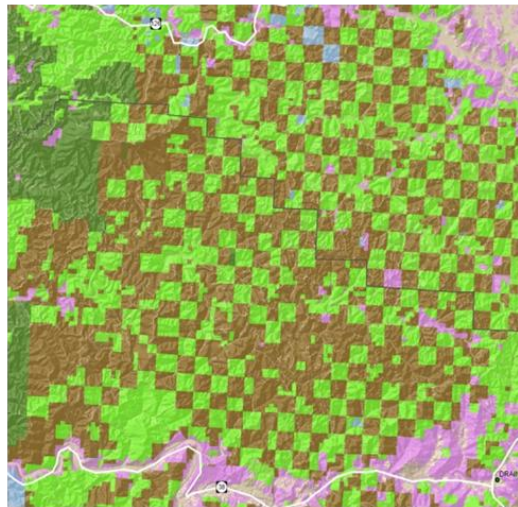


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Authored by:

E. Thomas Tuchmann
Forestry & Conservation Finance Advisor, Office of Governor John Kitzhaber

Chad T. Davis
Senior Policy Analyst, Oregon Department of Forestry

February 6, 2013

Acknowledgements

The authors would like to acknowledge and say thanks to the following people who provided invaluable historical information, technical knowledge, resources, logistical assistance and review of the Governor's O&C Panel and this report.

A special thank you to John Ehrman, Senior and Managing Partner with the Meridian Institute, for his steady guidance of the Governor's O&C Panel and perspective on the many difficult O&C Lands issues.

Modeling Team Members: Chris Cadwell (Bureau of Land Management), Dr. Miles Hemstrom (Institute for Natural Resources), Dr. Emilie Henderson (Institute for Natural Resources), Dr. John Sessions, Mark Rasmussen (Mason, Bruce, & Girard)

Presenters: Dr. Bob Anthony (Oregon State University), Paul Barnum (Oregon Forest Resources Institute), Dr. Kelly Burnett (US Forest Service), Larry Erwin, Dr. Jerry Franklin (Oregon State University), Jim Johnson (Oregon Solutions), Dr. Norm Johnson (Oregon State University), Michael Jordan, (Oregon Chief Operating Official), Steve Cramer (Cramer Fish Science), Dr. Kim Nelson (Oregon State University), Dr. Gordan Reeves (US Forest Service), Mary Scurlock (Mary Scurlock & Associates)

Governor's Office: Stormy Bowles, Brett Brownscombe, Shelby Campos, Lisa Howard, Jan Murdock, Steve Powers, Tim Raphael, Liani Reeves, Curtis Robinhold, Greg Wolf, Rachel Wray

Bureau of Land Management: Lindsey Babcock, Mark Brown, Michael Campbell, Chris Cadwell, Lee Folliard, Dave Roche

US Forest Service: Ray Davis, Marty Raphael

US Fish and Wildlife Service: Paul Henson, Betsy Glenn

US National Marine Fisheries Service: Kim Kratz, Michael Tehan

State Offices and Agencies:

- *Oregon Department of Forestry:* Kevin Birch, Brandon Kaetzel, Andrew Herstrom, Gary Lettman
- *Oregon Department of Revenue:* Kyle Easton and John Phillips
- *Oregon State Treasury:* Laura Lockwood-McCall
- *National Policy Consensus Center:* Peter Harkema (Oregon Consensus), Megan Messmer (National Policy Consensus Center)

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Introduction

Governor John Kitzhaber convened a panel of conservationists, O&C County Commissioners and timber industry representatives from October 26, 2012 through January 15, 2013 to advise him on issues related to management of the federally owned Oregon and California Lands (O&C Lands), which exist only in Oregon.

This report provides a summary of the work completed by the Governor’s staff and a modeling team that was retained and managed by the Governor’s staff. While panel participants informed the report’s contents, this report does not necessarily represent the perspective, views or position of Panel members.

Background

Brief History of the O&C Lands

The O&C forest lands are the result of a historic land reversion that created a unique direct fiscal relationship between the Federal and County governments. The forests are a compilation of land ownerships resulting from various Congressional actions. The ‘O&C Lands’ are primarily administered by the Bureau of Land Management (BLM) and are currently included under the management direction provided in the Northwest Forest Plan (NW Forest Plan). The O&C Lands comprise 11% of the total acres managed under the NW Forest Plan (Oregon, Washington and California) and 27% of the NW Forest Plan acres in Oregon (Table B-1). Over the last 20 years, several legal cases of significance have shaped the context for future management direction of these lands.

Table B-1. Acres under management of the NW Forest Plan

	Acres
NW Forest Plan (OR, WA, CA)	24.5 million
US Forest Service (Oregon) ¹	7.1 million
O&C Lands (all in Oregon) ²	2.6 million
<i>BLM – O&C</i>	2.1 million
<i>BLM – Coos Bay Wagon Roads</i>	74,600
<i>BLM – Special Act Lands</i>	29,700
<i>USFS – Controverted Lands</i>	462,700

¹ Forest Service data from Table 3&4-2 in Final Supplemental EIS of the NW Forest Plan.

² BLM data from Public Land Statistics published for 2011.

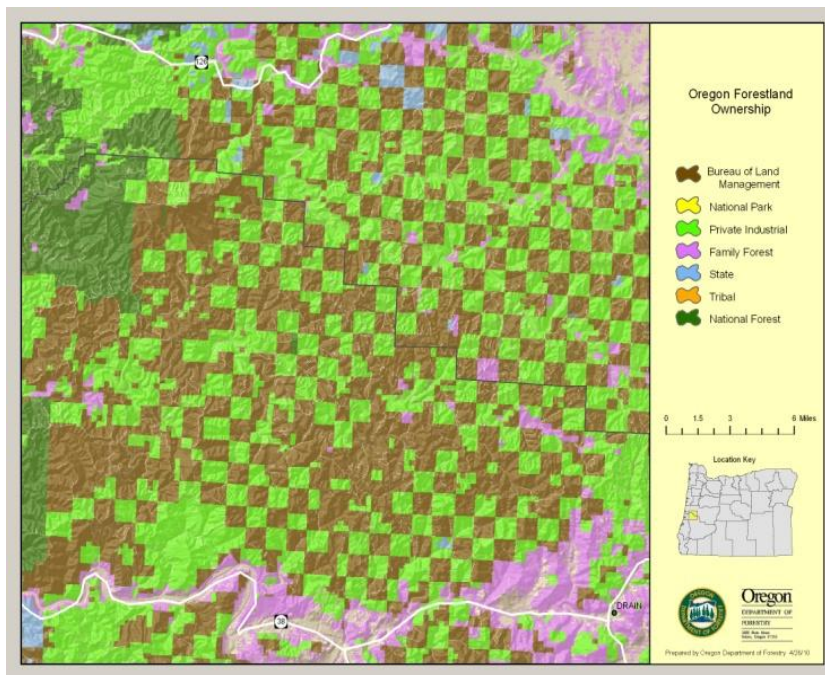
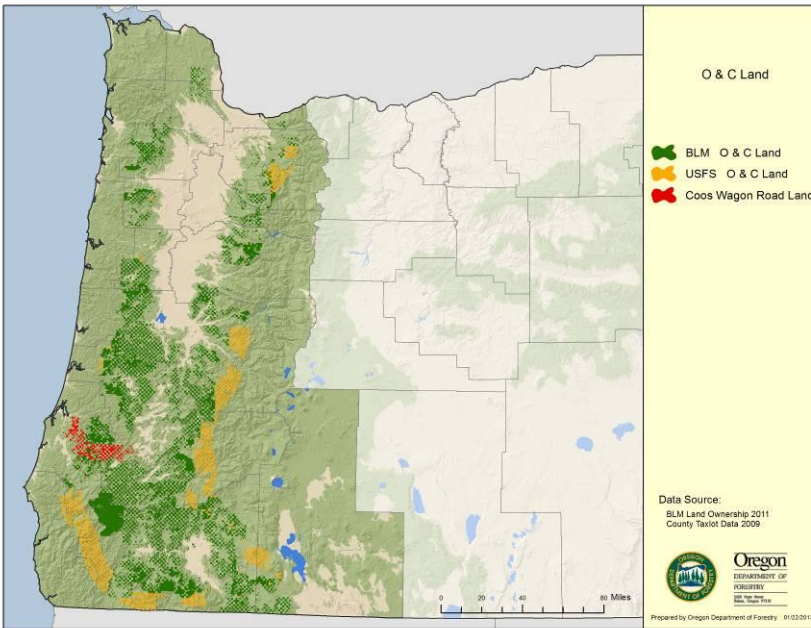
Land Revested by the Federal government

The Oregon and California Railroad Act of 1866 authorized the state of Oregon to act on behalf of the Federal government to issue land grants as compensation to private companies for the construction of a rail line from the California border to Portland¹. Several companies began construction but eventually the Oregon and California Railroad Company (OCRC) acquired much of the forestland known today as the O&C Lands. A resulting ‘checkerboard’ landscape (see Figure B-2) resulted from the allocation of land by alternating sections (section = 1 sq. mi. = 640 acres) along the railway.

An 1869 amendment required the railroad companies to sell land to ‘actual settlers’ for \$2.50/ac in no more than 160-acre allotments. Over a period of years, OCRC developed a scheme to circumvent that

¹ Between 1850-1870, Congress authorized 24 separate acts granting companies 130 million acres of public domain.

Figure B-2: O&C Lands in Western Oregon and example Landscape 'Checkerboard' Pattern



requirement and sell larger chunks of land for much higher values. After a series of inquiries, Congress passed the Chamberlain-Ferris Act in 1916 which revested the unsold lands back to the Federal government and put them under the jurisdiction of the General Land Office (which later became the BLM under the Department of Interior). The revested lands were no longer subject to property taxes, once they passed out of railroad ownership and back into Federal ownership. The Chamberlain-Ferris Act contained provisions for compensating local governments for this loss. The revested lands were meant to be re-sold into private ownership, and local governments expected to recover their tax base.

However, land sales were very slow to occur for various reasons, and county revenue expectations were not met. Congress provided short-term relief with legislation in 1926, but this also failed to produce the intended results for local governments.

In 1869, Congress had also authorized a similar land grant to build a military wagon road through the Coast Range. In 1919, Congress revested the Coos Bay Wagon Roads (CBWR) for similar reasons as the O&C Lands. All O&C and CBWR lands exist in Oregon.

In 1937, the eighteen O&C Counties led an effort to address their perennial revenue crisis. The O&C Act of 1937 resulted and includes several key components, including a mandate to provide a sustained level of timber harvest, protecting watersheds, community stability, and compensation to Counties for forgone property tax revenue. More specifically, the O&C Act dictated:

“..the timberlands shall be managed...for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities...”

The O&C Act required the level of sustainable yield to be determined but set an initial level of 500 million board feet (MMBF). The O&C Act also included a provision that required the Secretary to consider impacts specifically related to community stability:

“Due consideration shall be given to established lumbering operations in subdividing such lands when necessary to protect the economic stability of dependent communities.”

To compensate local government for the forgone revenue generated from private ownership of the O&C Lands, the legislation included a payment to the Counties based on gross revenue from timber harvests. Initially the Counties’ share of timber receipts was 75%. Since the 1950s, the Counties have elected each year to ‘plowback’ 25% of revenues into the management of the O&C Lands. The ‘commodity payments’ share to O&C Counties henceforth was 50% of gross timber revenue. In contrast, county governments receive 25% of timber receipts from the US Forest Service. The O&C shared receipts are unrestricted and can be used by Counties for any purpose. Shared receipts from National Forests can be used only for schools and roads

A portion of the O&C Lands are administered by the Forest Service (Table B-1), referred to as the Controverted Lands. After the O&C land grants were issued, the National Forest System (NFS) was overlaid on top of the O&C Lands. After years of argument over management authority between Agencies, the Cordon-Ellsworth Act (1954) provided that the O&C Lands within the boundaries of the NFS would be managed as O&C Lands by the Forest Service with receipts from any timber harvested also paying 50% to O&C Counties.

O&C Lands managed similarly as Forest Service under the NW Forest Plan

The planning effort and subsequent implementation of the NW Forest Plan resulted in similar management objectives for the O&C Lands administered by the BLM and Forest Service. Although the Agencies operate under separate mandates², in general, both are required to manage for multiple use. However, the Federal Land Policy and Management Act (FLPMA) contains a passage that states that the O&C Act will prevail when direction contradicts [Sec. 701(b)]. This provision of FLPMA has resulted

² The Forest Service manages under the National Forest Management Act (NFMA) and BLM under the Federal Land Policy and Management Act (FLPMA).

in some intense differences of opinion about whether O&C Lands should be managed under a multiple use mandate.

From a conservation standpoint, the Forest Service and BLM lands provide equally important habitat for fish, wildlife and plants, including species listed under the Endangered Species Act (ESA) and water quantity and quality. However, the underlying authorities for each Agency, while similar, have important differences. At the time of the drafting of the NW Forest Plan, the Forest Service Planning Rule as interpreted by the Courts required the agency to provide for the 'viability' of late successional and old growth dependent species while the BLM did not have this particular requirement. However, the BLM was required to maintain habitat for threatened and endangered species per the ESA. For reasons that will be discussed below in the NW Forest Plan section, the Clinton Administration applied the same Standards and Guidelines on both Forest Service and BLM lands. Therefore, the NW Forest Plan Standards and Guidelines were applied in the same manner irrespective of Agency jurisdiction. In addition, both the O&C Lands and Forest Service lands undergo the same Federal regulatory standards and compliance, including consultation on management actions under the ESA with both the National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS).

Settlement to draft a new land management plan for O&C Lands

In 2003, the BLM reached the 'Universal Settlement' in a case brought by the American Forest Resources Council (AFRC) and others in 2000 asserting, among other reasons, that the NW Forest Plan violated the sustained yield tenets of the O&C Act. The Secretaries, AFRC and the O&C Counties agreed that the BLM would draft a new Resource Management Plan. This plan became commonly known as WOPR (Western Oregon Plan Revision) and was approved during the last week of the Bush Administration. In July 2009, the Obama Administration withdrew WOPR. Representatives of the timber industry argued that the process of withdrawal violated FLPMA³ and the DC District Court agreed. With WOPR reinstated, conservation interests countered that WOPR violated the ESA⁴. In spring 2012, the U.S. District Court, District of Oregon⁵ vacated the 2008 Records of Decision/Resource Management Plans for western Oregon BLM districts and reinstated BLM's 1995 RODs/RMPs. Two notable cases remain outstanding and essentially allege that the O&C Act prevails over FLPMA and the related responsibilities of the Federal Agency to consult under the ESA; and that the BLM has a nondiscretionary duty to sell the annual sustained yield capacity for the O&C lands⁶.

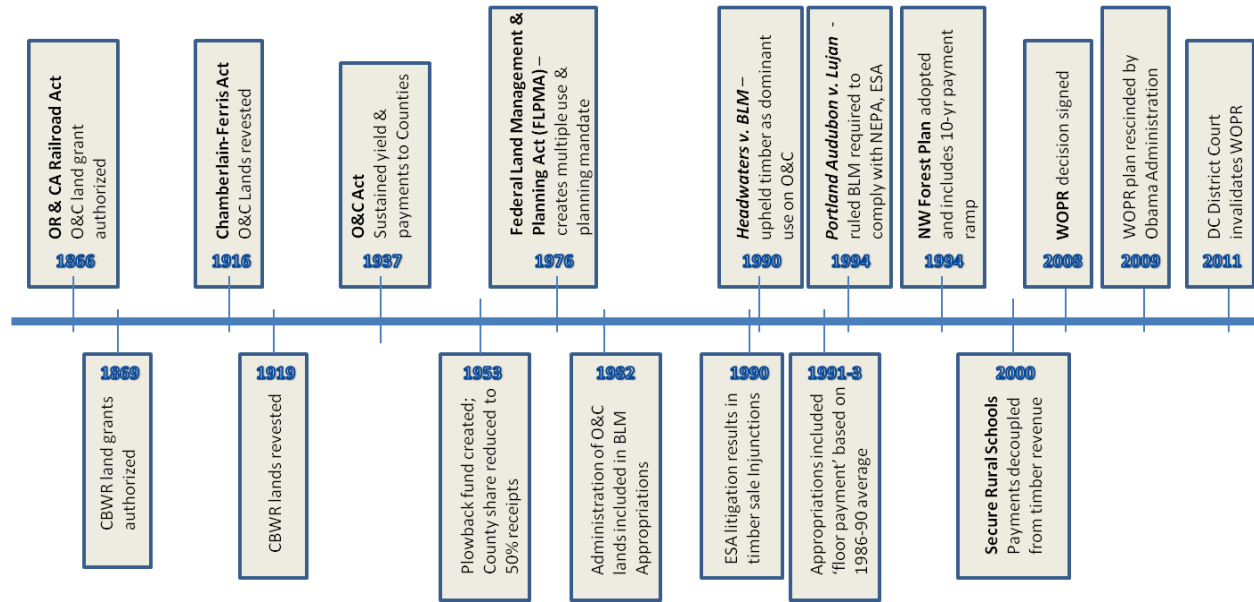
³ *Swanson vs. Salazar*

⁴ *Pacific Rivers Council vs. Salazar*

⁵ *Pacific Rivers Council et al v. Shepard*

⁶ *American Forest Resources Council vs. Salazar*

Figure B-3. O&C Lands Timeline.



Northwest Forest Plan

The NW Forest Plan is the result of a series of lawsuits that culminated in injunction against the harvest of timber in Northern Spotted Owl (NSO) habitat. In this context then-presidential candidate Bill Clinton announced during a campaign swing in Oregon that, if elected, his Administration would convene a “timber summit” to break the impasse. In 1993, President Clinton convened the Forest Conference in Portland and directed his Cabinet to report to him with a plan to resolve the issue. The task was divided into three working groups: forest management, economic assessment and interagency cooperation. Jack Ward Thomas led a team of forest ecologists and other scientists to produce the Forest Ecosystem Management Assessment Team (FEMAT) report that included a robust risk analysis for a variety of alternative management scenarios.

With Congress unable to reach agreement on congressional enactment of FEMAT, the Clinton Administration initiated an administrative Environmental Impact Statement process that resulted in a management approach that was based on Option 9 of the FEMAT report. Within two months of the Final Environmental Impact Statement and Record of Decision in April 1994, the injunctions against timber harvests were lifted across the region.

Brief Overview of Litigation and Congressional Action that Initiated the NW Forest Plan

Beginning in 1985, litigation ensued to interpret Federal public land management laws passed in the 1970s. These lawsuits sought injunctions against the harvest of timber in NSO habitat because of new scientific information indicating the decline of its population. This information ultimately led the USFWS to list the NSO as ‘threatened’ under the ESA in 1990. The following year, U.S. District Court for the District of Western Washington entered an injunction barring timber harvest in NSO habitat across

19 National Forests⁷. The Court required the Forest Service to develop a plan to “ensure the northern spotted owl’s viability” in accordance with the so-called viability rule in the 1982 Planning Rule⁸.

In 1992, the U.S. District Court for the District of Oregon required the BLM to evaluate the potential significance of the new NSO information to its timber management plans on the O&C Lands and entered an injunction barring timber harvest until the agency completed its evaluation. The Court ruled that the O&C Act *did not* preclude it from ordering this additional analysis or the temporary cessation of timber harvest⁹. However, the decision did not address whether the BLM can impose no-harvest reserves on O&C timberland under the O&C Act.

The Ninth Circuit affirmed both injunctions upon appeals. Together, this series of Court rulings suspended the timber sale programs of the Forest Service and BLM in western Oregon, Washington and California in the early 1990s.

Between 1985 and 1990, Congress legislated around various project-level injunctions through so-called “sufficiency language”. Sufficiency language was attached to annual Appropriations bills to declare certain federal actions (i.e., timber sales) sufficient to meet existing environmental laws. The first use allowed timber sales on the Mapleton District (Siuslaw National Forest) to be resold despite an injunction. Sufficiency language was then included in annual Appropriations bills through FY1990, effectively negating injunctions on larger and larger areas of Federal forests. In passing the FY1990 bill, Senators agreed that such practice would be discontinued and that they would commit to seeking a long-term solution through the authorizing committees. Although 26 bills and 6 hearings were held related to resolving the old-growth issue, Congress failed to pass a long-term solution. It is in this context that then-candidate Bill Clinton committed to resolving the regional timber crisis.

Commitments under the NW Forest Plan

President Clinton outlined five goals that were to serve as the NW Forest Plan foundation:

1. **Adhere to Our Nation’s Laws** – The NW Forest Plan was designed to integrate the nation’s environmental laws, which were independently drafted, making them difficult to interpret for one context.
2. **Protect and Enhance the Environment** – The NW Forest Plan recognized that forests are complex networks of ecological systems and was the first large-scale attempt to define and implement ecosystem-based management, including a revolutionary Aquatic Conservation Strategy.
3. **Provide a Sustainable Timber Supply** – The NW Forest Plan was crafted to provide a legally defensible approach to managing the region’s forests that enabled a sustained timber supply, albeit a much lower volume, to support the region’s economy.
4. **Support the Region’s People and Communities During a Period of Economic Transition** – The NW Forest Plan included a \$1.2 billion Economic Adjustment Initiative that provided

⁷ Seattle Audubon Society v. Evans, 771 F. Supp. 1081, 1096 (W.D. Wash. 1991) aff’d Seattle Audubon Society v. Evans, 952 F. 2d 297 (9th Cir. 1991).

⁸ The 1982 Planning Rule was developed to implement the National Forest Management Act (NFMA). Although several revisions of the Planning Rule have been attempted, only the recent 2012 version has been implemented. Forest plans going forward will be developed under the 2012 Planning Rule which has a different approach related to ensuring for species other than the ‘viability rule.’

⁹ Portland Audubon Soc’y v. Lujan, 795 F.Supp. 1489 (D.Or.1992), aff’d sub nom. Portland Audubon Soc’y v. Babbitt, 998 F.2d 705 (9th Cir.1993).

resources to aid people, businesses and communities to transition to a more diversified economy, including job training.

5. **Ensure that Federal Agencies Work Together** – The NW Forest Plan directed Federal agencies to work cooperatively rather than as separate agencies.

Land Allocations under the NW Forest Plan

To achieve these objectives, the NW Forest Plan delineated seven different land allocations. Table B-4 shows the acres for each allocation for BLM lands, Forest Service lands in Oregon, all Oregon lands, and the NW Forest Plan area.

- **Congessionally Reserved** – Land that has been reserved by an act of Congress. Examples include National Parks, Wilderness Areas and Wild and Scenic Rivers.
- **Late-Successional Reserves** – Land that is designed to serve as habitat for late-successional and old-growth related species including the threatened northern spotted owl and marbled murrelet. These forests are to be managed to protect and enhance old-growth conditions.
- **Administratively Withdrawn** – Land that was identified in forest plans prior to the NW Forest Plan including recreational and visual areas, and other areas not scheduled for timber harvest.
- **Adaptive Management Areas** – Land identified with input from local communities intended to develop and test new management approaches to integrate and achieve ecological, economical, and social objectives.
- **Riparian Reserves** – Land intended to maintain and restore riparian structures and functions, benefit fish and riparian-dependent species, and provide connectivity for late-successional habitat. The area for Riparian Reserves was calculated after all other land allocations and thus represents land removed primarily from the Matrix.
- **Matrix** – Land designated primarily for timber harvest, including regeneration harvest, and silvicultural activities. For the BLM lands in Oregon, Matrix accounted for 25% of the forests.

Table B-4. Land Allocations under the NW Forest Plan.

Land Allocation	BLM ¹		Forest Service		Oregon ² (NW Forest Plan)		NW Forest Plan Area	
	Acres ³	Percent	Acres ³	Percent	Acres ³	Percent	Acres ³	Percent
Congessionally Reserved	0.1	3%	1.1	16%	1.4	15%	7.3	30%
Late-Successional Reserves	0.9	36%	2.6	37%	3.5	36%	7.4	30%
Managed Late-Successional	0.0		0.0	0%	0.0	0%	0.1	0%
Administratively Withdrawn	0.3	14%	0.3	4%	0.6	6%	1.5	6%
Adaptive Management Areas	0.2	8%	0.4	6%	0.6	6%	1.5	6%
Riparian Reserves	0.3	14%	1.1	15%	1.4	15%	2.6	11%
Matrix	0.6	25%	1.6	23%	2.2	23%	3.9	16%
Total Forest	2.4		7.1		9.6		24.3	

¹ Percentages for the BLM obtained from 2008 EIS (WOPR) and used to calculate acres.

² Acres for each allocation from 1994 Final SEIS (NW Forest Plan), Table 3&4-2.

³ Millions of acres.

Interaction of the NW Forest Plan and the O&C Mandate

Prior to the NW Forest Plan, the Ninth Circuit Court upheld the BLMs interpretation of timber production as the dominant use on O&C Lands¹⁰. The Court followed up, however, with a ruling that bound BLM to comply with environmental laws including the National Environmental Policy Act (NEPA) and the ESA¹¹.

Both environmental and industry groups immediately challenged the NW Forest Plan in court, with all of the cases being consolidated before the US District Court for the District of Western Washington. Among other claims, the industry groups argued that the NW Forest Plan violated the O&C Act by imposing conservation restrictions, including the use of “reserves” in which programmed timber harvest was not allowed. In response, the Secretaries noted that other statutes also apply to O&C Lands, including the ESA, which stops short of mandating the elements of the NW Forest Plan, yet is intended to provide “a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.” The Secretaries also relied on the fact that an ecosystem management approach in the NW Forest Plan would be more likely to help avoid future listings of old-growth forest-associated species under the ESA, which could undermine the sustained, permanent timber production the O&C Act prescribes. The District Court upheld this interpretation of the O&C Act in the context of the variety of other statutes also applicable to federal forestlands. For those issues that were taken up on appeal, the Ninth Circuit affirmed the District Court’s ruling in 1996.

Litigation in Early Implementation of the NW Forest Plan

Notwithstanding early successes for the Federal Government in defending the NW Forest Plan, subsequent legal challenges related to the Aquatic Conservation Strategy (ACS) and Survey & Manage components have effectively narrowed its implementation. Four related Court opinions¹² restricted the interpretation of the ACS to result in limiting any action (i.e., timber harvest) that would degrade conditions at the local site scale, versus effects determined at the watershed scale.

In 2001, the Agencies amended the NW Forest Plan to modify Survey & Manage to remove common species, streamline implementation and provide an Annual Species Review. In 2004, the Agencies issued a Record of Decision (ROD) attempting to remove Survey & Manage from the NW Forest Plan entirely but it was overturned in 2006. As part of this decision, parties agreed to the ‘Pechman exemptions’ whereby four categories of actions, including thinning of forest stands less than 80 years old, would be permitted. In 2006, the Ninth Circuit ruled that the Annual Species Review process constituted a plan amendment and therefore was required to comply with the National Environmental Policy Act (NEPA). After the Agencies prepared an Environmental Impact Statement (EIS) in 2007, they issued a ROD to again remove Survey & Manage from the NW Forest Plan. In response to several suits, the US District Court for the District of Western Washington issued a partial judgment overturning the 2007 ROD based on NEPA violations.

Conservation objectives and Agency coordination trending positive under the NW Forest Plan

A 2011 Forest Service monitoring report¹³ on the first 15 years of implementation of the NW Forest Plan provides trends on late successional old-growth (old-growth) forest structure, watershed conditions, northern spotted owl and marbled murrelet populations, and socio-economic well-being. In general,

¹⁰ *Headwaters, Inc. vs. Bureau of Land Management* 1990

¹¹ *Portland Audubon Society vs. Lujan* 1993

¹² *Pacific Coast Federation of Fisheries Association vs. National Marine Fisheries Service I-IV*

¹³ Davis et. al. 2011. Fifteen Year Report of the Northwest Forest Plan. Accessed 1/28/2013.

<http://www.reo.gov/monitoring/reports/15yr-report/index.shtml>

the conservation objectives show a positive trend although the 2002 Biscuit Fire had a significant impact.

Old-growth – Across the NW Forest Plan area, *old-growth*¹⁴ experienced a slight net loss but that loss is well below the projected 2.5% decadal loss rate expressed in the risk analysis within FEMAT. The results underscore the role of Federal forests in maintaining old-growth on the landscape; the Federal share of old-growth increased from 65% to 67%. On Federal lands, loss of old-growth has been minimal (<0.5%) with the vast majority of that loss (85%) attributable to wildfire.

Water Quality – Watershed conditions were assessed with two data sets: in channel measurements and a watershed evaluation based on mapped data. In-channel conditions primarily fell into the moderate (35%) and high ranges (41%) with relatively few in the very low, low or very high categories. *Watershed evaluation showed that 69% of watersheds*¹⁵ *have experienced a positive change under the NW Forest Plan.* The largest positive changes were a function of improvements in the road network and vegetation growth. The greatest negative change was associated with wildfire impacts. Not surprisingly, watershed conditions in the Reserves are better than those in the Matrix, as was the case at the onset of the NW Forest Plan.

Endangered Species – *Populations of and habitat for Northern Spotted Owl (NSO) and Marbled murrelets (MAMU) are still in decline across the NW Forest Plan area*¹³. Across the range, an increase in competition from the barred owl is having a significant impact on NSO. Yet, Federal lands are providing critical strongholds, particularly in SW Oregon where NSO populations were shown to be stationary (Figure B-5a). In general, NSO habitat has declined less than anticipated on Federal lands, although the decline has been more noticeable in the Reserves rather than the Matrix land allocations, primarily due to the impact of the Biscuit Fire. By geographic province though, NSO populations are in decline in the Coast Range.

Marbled murrelet populations have experienced a 3.9% annual rate of decline across the NW Forest Plan area; this rate is at the low end of the range that models have predicted for populations south of Canada. Habitat loss is much less for Federal land as compared to non-federal (Figure B-5b). Two-thirds of habitat loss of Federal lands was due to the Biscuit Fire. Recruitment of suitable habitat is slow, often requiring 100+ years to develop from young forests. Projections of trends under the NW Forest Plan however show substantial representation across the NW Forest Plan area of 150+ year-old stands by 2050.

Agency Coordination – In general, agency coordination has significantly improved under the NW Forest Plan. Over the 15 years, many interagency teams have functioned well to develop guidance for the land management Agencies, such as the development of administrative procedures in relation to

¹⁴ Old-growth was defined as forests stands with average diameter at breast height (dbh) > 20" and canopy cover > 10%.

¹⁵ Watersheds were analyzed at 6th field hydrologic units (HUC), approximately equivalent to 20,000 acres.

Figure B-5a. Northern Spotted Owl (NSO) Population across the NW Forest Plan Area. From 'Monitoring the Northwest Forest Plan: Fifteen Year Summary of Key Findings'; Figure 2-4.

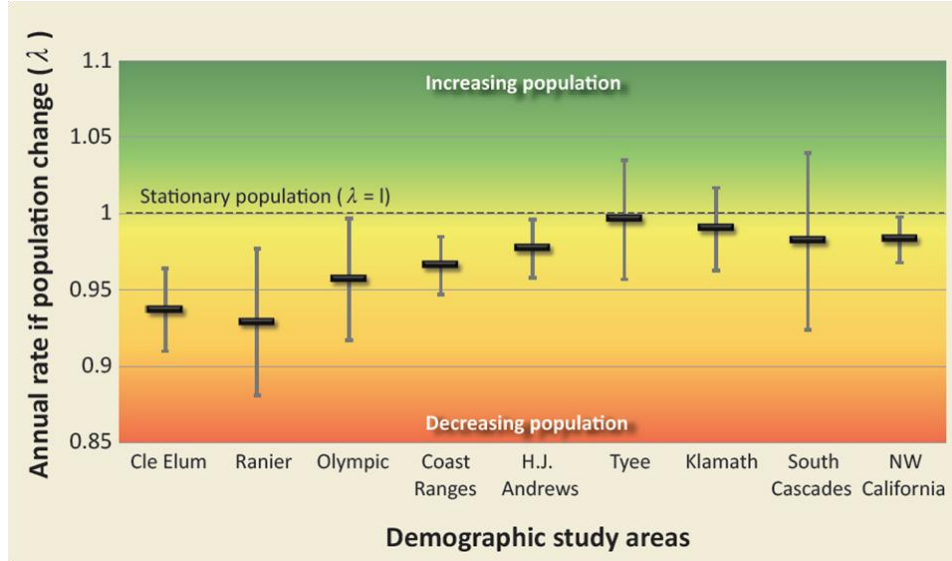
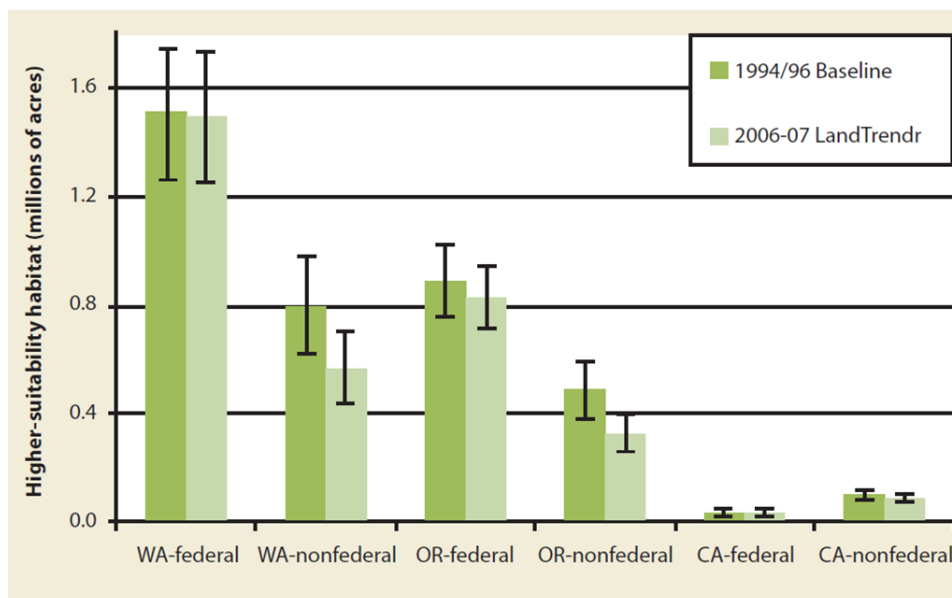


Figure B-5b. Marbled Murrelet (MAMU) Nesting Habitat Trend Data across the NW Forest Plan Area. From 'Monitoring the Northwest Forest Plan: Fifteen Year Summary of Key Findings'; Figure 3-8.



defending timber sales under the ACS. While challenges remain given the regulatory responsibilities of some Agencies, the interagency communication is greatly improved. *It is important to note that while coordination has improved, the Courts have not always allowed agencies to implement innovation.*

Timber Supply – The NW Forest Plan projected an annual Probable Sale Quantity of 1.1 billion board feet (BBF), of which 675 million board feet (MMBF) would be harvested from Oregon forests. After initial implementation of the NW Forest Plan, both the Forest Service and the BLM revised PSQ to

roughly 800 MMBF across the NW Forest Plan area. The BLM was projected to contribute 203 MMBF of this amount.

Since 1995, the BLM has offered 84% of the volume for sale as projected under the NW Forest Plan (3.1 BBF offered against a projected 3.7 BBF). However, the makeup of this total sales volume is different than the NW Forest Plan promised, both in terms of the Matrix volume, the percentage of thinning sales (versus regeneration harvests), and the geographic distribution of the harvests. Actual timber harvests for both the Forest Service and BLM have totaled 4.1 BBF in western Oregon. This represents an average of 241 MMBF per year. This equates to a 95% reduction from 1980s levels. See the Timber Supply section (page 24) for much more detail on timber volume.

Adaptive Management Areas – In general, the Adaptive Management Areas (AMA) have not been applied as intended under the NW Forest Plan. This is due to the lack of flexibility in management of these allocations due to conservation concerns. The intent of these AMAs was to encourage the development and testing of technical approaches that could inform management in other land allocations.

Late Successional Reserves and the Aquatic Conservation Strategy

The NW Forest Plan created and applied two unique conservation strategies: 1) the role and allocation of late-successional old-growth forest reserves, and 2) the development of an Aquatic Conservation Strategy (ACS). While these concepts had been previously discussed, formal strategies had not been developed and implemented by Federal agencies.

Late-successional old-growth forests (old-growth) are defined by a combination of structural attributes, including live old-growth trees, standing dead trees (snags), fallen trees, logs in streams¹⁶; multiple canopy layers, including small understory trees, canopy gaps, and patchy understory¹⁷. Because development of these forests is an ecological process, they are difficult to define by age. However, in many Douglas-fir stands in western Oregon, the mature phase of stand development begins around 80 years¹⁸ and old-growth has been defined as occurring around 120 years.

In Oregon, 3.5 million acres were set aside as Late Successional Old Growth Reserves (LSRs) under the NW Forest Plan. LSRs account for 36% of the total forests in Oregon managed under the NW Forest Plan (Table B-4). In addition, the implementation of the ACS placed an additional 1.5 million acres in Riparian Reserves, or 15% of Oregon forests managed under the NW Forest Plan. The percentage of forests in either reserve system is similar among both O&C and the Forest Service ownerships. As discussed in the NW Forest Plan section above, the old growth reserves and Aquatic Conservation Strategy have achieved important conservation advances.

Basis for Old Growth Conservation

Throughout the 1970s and 1980s, the USFWS and many academics identified old growth as key habitat for the NSO and MAMU. As detailed above, the Courts enjoined the BLM and Forest Service from implementing their timber sale programs until such time that they could, de facto, assure that management provisions protected old growth habitat.

¹⁶ Franklin et al. 1981; Spies and Franklin 1988; Spies and Franklin 1991.

¹⁷ Spies et al. 1990.

¹⁸ Spies and Franklin 1994.

Notwithstanding the legal and scientific basis for conserving old growth, it is also very important to recognize that old growth preservation holds strong intrinsic value for many Oregonians and others throughout the nation. To many, old growth harvest is akin to mining; and they place a higher value on conserving old-growth trees than on seeing them logged. The visuals associated with old growth harvest had as much to do with creating the political support for the NW Forest Plan as did the science.

The establishment of LSRs in the NW Forest Plan was intended to provide for more than maintenance and development of suitable habitat for the NSO. The LSR network was more than a strategy focused on the survival of a single species and adopted an ecosystem approach to populate older forest ecological diversity across the landscape, including suitable habitat for the NSO. More recently, the USFWS has finalized its Critical Habitat Designation that is designed more specifically for the need to maintain and develop suitable habitat for NSO. The final designation was released in November 2012 and identifies 1.3 million acres of BLM forests as Critical Habitat.

Old growth management under the NW Forest Plan

The NW Forest Plan includes Standards and Guidelines for land allocations and specific resource issues. Below are the Standards and Guidelines as prescribed relating to old growth forest conservation and timber harvests:

Late Successional and Riparian Reserves – Late Successional Reserves (LSRs) are a land allocation that was established to serve as habitat for late-successional and old-growth related species including the northern spotted owl. These forests are to be managed to protect and enhance old-growth conditions.

- *Late-Successional Reserve (LSR)*: Requires the Agency to prepare a management assessment for each LSR before management activities are designed and implemented.
- *Late-Successional Reserve (LSR)*: No timber harvest allowed in stands greater than 80 years old west of the Cascades. Thinning may occur in stands up to 80 years old.
- *Riparian Reserves*: Timber harvest limited and not included in the calculations of timber base. Exemptions allow thinning “to attain Aquatic Conservation Strategy objectives.”

Matrix – Matrix is a land allocation that was established primarily for timber harvest and silvicultural activities.

- Old growth may be harvested in any manner, including regeneration harvests.
- Provide specified amounts of coarse woody debris.
- Emphasize green-tree and snag retention. In general, retains 15% green trees but includes some variation between BLM and Forest Service and depending on geography.
- Modify site treatment practices, particularly the use of fire and pesticides, and modify harvest methods to minimize soil and litter disturbance.
- Provide for retention of old-growth fragments in watersheds where little remains.
- Manage to Late Successional Reserve guidelines (above) for 100 acres around known owl activity centers.

Survey and Manage

Providing adequate assurance to meet the Viability Rule was a particularly difficult task for the authors of the NW Forest Plan. The Viability Rule standards required reducing risk to species, not only for the NSO and MAMU, but for 470 other rare and little-known old growth associated species. The Survey & Manage protocol included in the NW Forest Plan requires agencies to conduct surveys and then manage for certain species prior to any ground-disturbing activities (i.e., timber harvests). This protocol has been the focus of many legal challenges of timber sales in the Matrix land allocations and resulting

legal decisions have reduced the ability of the agencies to conduct regeneration harvests. It should be noted that many of the species modeled have since been determined not to be in danger of extinction. The BLM has tried to remove or reduce Survey & Manage several times but has not been successful largely due to process elements of the NEPA analysis (see Litigation Overview on page 8 for more detail).

Aquatic Conservation Strategy

The NW Forest Plan included the first holistic approach to manage water quality and quantity by implementing a watershed analysis and restoration strategy. Best management practices, including riparian buffers to minimize harvesting effects on stream temperature and sedimentation, had been used to a lesser degree¹⁹ but not implemented in conjunction with the other components of the Aquatic Conservation Strategy (ACS).

The ACS is comprised of four components designed to operate together to maintain and restore the productivity of resiliency of riparian and aquatic ecosystems:

1. *Riparian Reserves* – Portions of a watershed directly adjacent to streams and rivers; and the portions of a watershed required for maintaining hydrologic, geomorphic and ecologic processes. Riparian Reserves were defined by buffer widths based on stream type (Table B-6).
2. *Key Watersheds* – A system of large refugia-comprising watersheds that is considered crucial to at-risk fish species and stocks and provides high quality water. Key watersheds were classified as 'Tier 1' or 'Tier 2'; or as 'Nonkey'. Table B-7 shows acres in each class.
3. *Watershed Analysis* – A protocol to evaluate geomorphic and ecologic processes operating in a watershed that provides the basis for monitoring and restoration. Watershed analysis is required to any modification of the initial riparian buffers and before any resource management work in key watersheds.
4. *Watershed Restoration* – A comprehensive, long-term approach combining the use of natural disturbance processes and planned interventions (road decommissioning, etc) to restore watershed health and aquatic ecosystems.

Late Successional Reserves (LSRs) are integrated into and considered a critical component of the ACS. The older forest characteristics of the LSRs offer core areas of high quality stream habitat. Riparian Reserves also function to do more than improve water quality, enhancing habitat conservation for species that depend on the transition zone between upslope and riparian areas and providing travel corridors for terrestrial animals and plants.

Between the FEMAT analysis and adoption of the NW Forest Plan guidelines, widths of the Riparian Reserves were increased on intermittent streams in 'Tier 2' and 'Nonkey' watersheds. This was in response to predicted values for salmonid population viability in FEMAT being below the Agencies' desired goals of 80% and to provide additional habitat for other species associated with older forest including Survey & Manage species. The increase had a significant impact on the land suitable for timber harvests. A quick calculation based on the FEMAT buffers showed that Riparian Reserves accounted for 35% of Matrix acres across the NW Forest Plan area²⁰. After the revision of these initial guidelines, under the NW Forest Plan, Riparian Reserves account for roughly 40% of Matrix acres. After excluding all Reserve land allocations as proposed in the NW Forest Plan, 23% of lands were available

¹⁹ Current Oregon Forest Practices Act laws date to 1991 but have included riparian buffers since mid-1980s.

²⁰ See Option 9 in Table 16 in Johnson et al 1993. Sustainable Harvest Levels and Short-Term Timber Sales for Options Considered in the Report of the Forest Ecosystem Management Assessment Team: Methods, Results, and Interpretations.

for regeneration harvests. In practice, since 2004 until the recent Secretarial pilots, the BLM has not offered a regeneration harvest due to legal interpretations, subsequent management approach related to Survey and Manage, and application of the precautionary principle.

Note that while the buffer widths proposed for Riparian Reserves were intended to be interim, they have generally not been revised as proposed under the NW Forest Plan. New science and tools indicate that riparian buffers could be reduced in Matrix allocations and still accomplish the conservation goals of the ACS²¹. However, that thinking is generally accompanied by the belief that the ACS on Federal lands is not sufficient by itself to recover listed species.

Table B-6. Comparison of Riparian Buffer Widths by Watershed Class and Stream Type.

	FEMAT	NW Forest Plan	OFPA ¹
Tier 1			
Fish-bearing	2 tree heights or 300'	2 tree heights or 300'	50'/70'/100'
Permanent, Non-fish	1 tree height or 150'	1 tree height or 150'	10'/50'/70'
Intermittent	1 tree height or 100'	1 tree height or 100'	none ¹
Tier 2			
Fish-bearing	2 tree heights or 300'	2 tree heights or 300'	50'/70'/100'
Permanent, Non-fish	1 tree height or 150'	1 tree height or 150'	10'/50'/70'
Intermittent	1/2 tree height or 50'	1 tree height or 100'	none ¹
Nonkey			
Fish-bearing	2 tree heights or 300'	2 tree heights or 300'	50'/70'/100'
Permanent, Non-fish	1 tree height or 150'	1 tree height or 150'	10'/50'/70'
Intermittent	1/2 tree height or 50'	1 tree height or 100'	none ¹

¹ Under the Oregon Forest Practices Act, equipment and use of herbicides is restricted in intermittent streams. The OFPA has a different stream type classification making an exact comparison difficult. The OFPA values reflect the distinction made between Small / Medium / Large streams based on stream flow.

Table B-7. Acres by Watershed Class and Land Allocation in the NW Forest Plan.

	Oregon	NW Forest Plan
Tier 1		
Riparian Reserves	260,000	631,000
Matrix	378,600	917,600
Tier 2		
Riparian Reserves	89,500	113,700
Matrix	155,700	182,400
Nonkey		
Riparian Reserves	1,013,000	1,882,800
Matrix	1,679,600	2,875,300

²¹ Reeves, G., B. Pickard, and N. Johnson. 2013. Alternative Riparian Buffer Strategies for Matrix Lands of BLM Western Oregon Forests That Maintain Aquatic Ecosystem Values. IN REVIEW. Accessed online via: <http://fes.forestry.oregonstate.edu/sites/fes.forestry.oregonstate.edu/files/PDFs/Riparian%20paper%20Jan%2023.pdf>

O&C Payments to County Governments

Historically, Federal funds – either sourced from O&C timber harvests or direct Federal appropriation – have provided a significant source of revenue for the O&C Counties. In exploring solutions, a variety of mechanisms have been proposed to develop more stable funding streams for local governments, including increasing timber harvests on O&C Lands, privatizing the O&C Lands and increasing local property taxes. This section provides a primer on O&C Payments and provides facts and revenue estimates on aspects of proposed solutions.

County Payments Primer

Rather than paying property taxes for forests managed by the Forest Service or BLM, the Federal government has compensated local governments in a variety of ways. Some key distinctions exist between O&C commodity payments and those associated with National Forests. Forest Service timber sales yield 25% of gross revenues in commodity payments to County governments but the funds are limited to spending on roads and schools. Per the O&C Act, timber harvests from O&C Lands yield 75% of gross revenues to local governments, which are available for use in the counties' general funds. Since the 1950s, the Counties have elected each year to 'plowback' 25% of revenues into the management of the O&C Lands. The use of O&C payments to finance county general funds is a significant factor for the O&C Counties.

Concerns regarding the volatility of revenues tied to commodity extraction (i.e., timber) and market swings through the 1960s and 1970s led Congress to pass the Payments in Lieu of Taxes (PILT) law. Since 1995²², the O&C counties have also received PILT payments for land administered by the BLM. These payments are administered through the Department of Interior. PILT payments are the result of a complicated formula (including population and Federally-owned acres) that is adjusted up or down depending on other Federal payments based on timber revenue. In Oregon, most counties currently receive the minimum PILT payment due to significant payments from 'opting in' to Secure Rural Schools (SRS) payments. If a County were to 'opt out' of SRS, they would revert to receiving commodity payments based on timber harvests and a slightly increased PILT payment. For the O&C Counties, the current combination of SRS + minimum PILT dwarfs the amount received through a combination of commodity payments + full PILT. *To illustrate this point further, the total O&C Payment in 2007 summed to \$115 million across the 18 O&C Counties. If payment had been based on timber harvests per the O&C Act, the total payment in 2007 would have been \$15.4 million²³.*

With reductions in federal harvests, the NW Forest Plan included a 10-year safety net program starting in 1994 based on the average payment between 1986-1989 and incorporated an annual reduction in payment down to 50% of the initial amount. The calculated payments kept payments at or near historic averages notwithstanding that the timber volume of the then-new NW Forest Plan was reduced by 75 percent. The safety net was accompanied by the projection that, over time, timber harvests would be sufficient to generate adequate funding for O&C Counties from shared timber receipts. When this did not occur, the safety net program was replaced by SRS in 2000. In effect, both programs decoupled payments from timber harvests although SRS payments were calculated based on the timber harvest levels of 1986-1989. Because of this tie to historical timber harvests levels, the amount of payment in the early 2000s was increased compared to those of the 1990s (Table B-8).

²² The PILT law was initially passed in 1976 but did not include BLM lands since the O&C Act compensated counties for these lands through commodity payments. When those payments declined in the early 1990s, PILT was amended to include the O&C Lands.

²³ Note that PILT would have increased in response to a lower commodity payment.

The Office of the Oregon Secretary of State recently conducted a Financial Condition Review of Oregon’s 36 counties²⁴. It analyzed 10 indicators to provide a general assessment of the financial status of each county. The report recommends that eight Counties be further monitored due to significant financial challenges that primarily relate to the loss of Federal (timber) payments. All eight identified receive O&C Payments, representing 8 of the top 11 Counties that receive the majority of the O&C funds (see Table B-11). Although not identified in the report as such, several of the O&C Counties are facing insolvency with the combination of the loss of Federal timber payments, reduced economic activity and the lingering recession.

Historical value of commodity payments to O&C Counties

At the state level, the total sum of Forest Service payments shared among 31 counties is larger than O&C Payments (Table B-8). This is correlated to more acres under Forest Service management statewide. Since the implementation of the NW Forest Plan, Forest Service payments have accounted for 56% of Federal payments to Oregon counties.

Table B-8. Average Annual Federal Payments (including timber receipts, transition and SRS payments) to all Oregon Counties Combined, in 2011 \$millions.

Timespan	O&C	Forest Service	PILT	Total Payments
1960-1993	\$150	\$232 ¹		
1994-2000	\$98	\$127	\$6	\$231
2001-2008	\$128	\$182	\$8	\$318
2009	\$98	\$138	\$16	\$252
2010	\$79	\$122	\$13	\$214
2011	\$40	\$71	\$13	\$114

¹ Total for Forest Service only averages from 1980-1993.

O&C Payments are split among 18 counties, primarily in western Oregon (Table B-11). When adjusted for 2011 dollars, historical O&C Payments (including SRS) average \$134 million from 1960-2011. With each successive extension of SRS (FY 2009 forward) the total payment (in 2011\$) has declined from \$136 million in 2001 to \$40 million in 2011. Without the SRS extension, the O&C Counties would have received a total of \$9 million in 2011 (based on 50% of timber receipts).

Payments initially tied to timber harvests, then funded through direct Appropriations

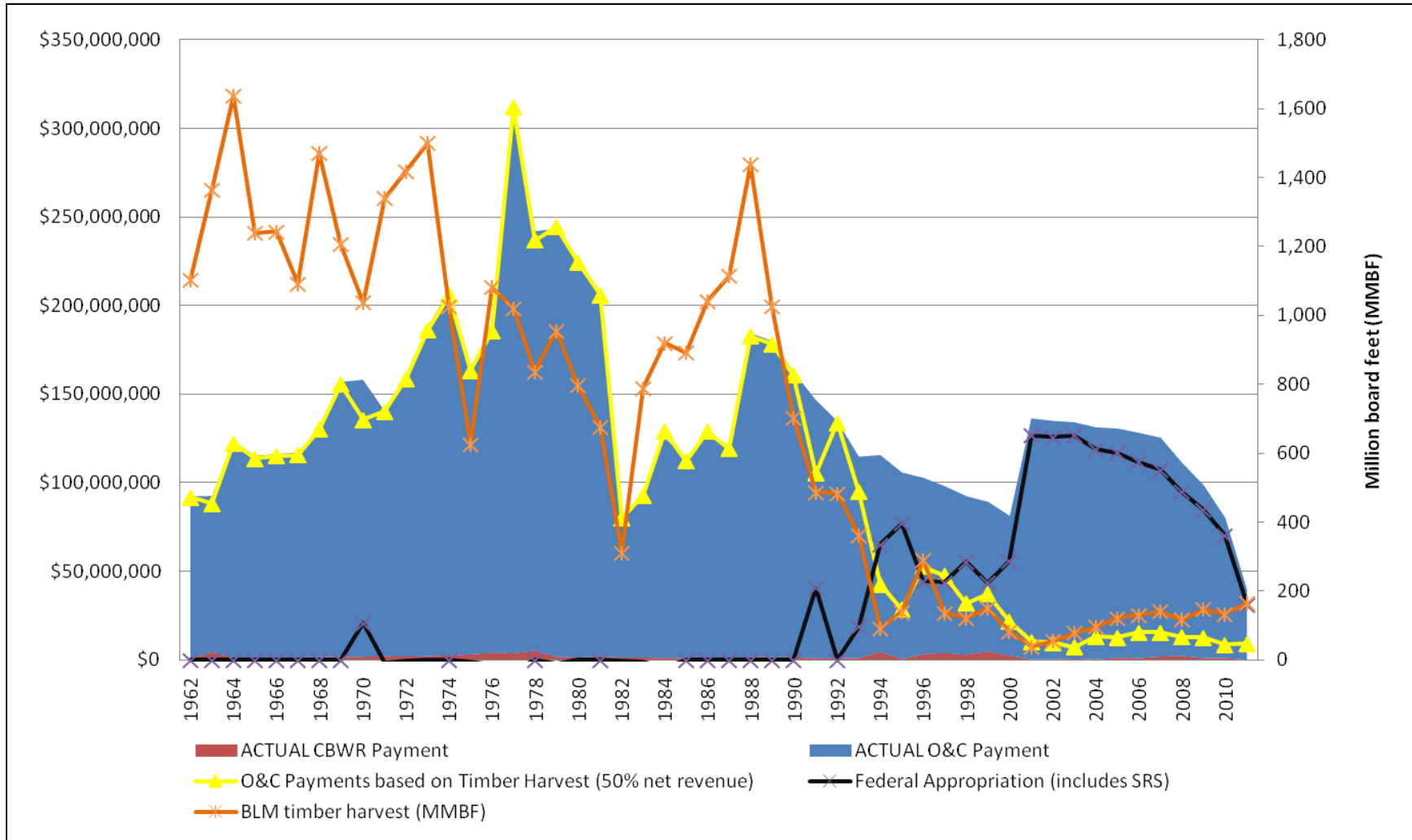
Figure B-9 shows the relationship between timber harvest, county payments and the impact of Federal harvest reductions and subsequent “transition” payments. Notwithstanding passage of the O&C Act, payments to counties from timber harvests were negligible until after WWII. Federal timber harvest picked up in the late 1940s in response to a post-war building boom. At least nationally, based on a recent Headwaters Economics report²⁵, county payments continued to increase.

From 1962-1977, annual BLM timber harvest averaged 1.2 billion board feet (BBF) per year despite a significant reduction in 1975. In the late 1970s, harvest levels started a more prolonged recession-driven decline that resulted in only 312 million board feet (MMBF) harvested in 1982. The market rebounded in

²⁴ Accessed 1/28/2013. http://www.sos.state.or.us/audits/pages/state_audits/full/2012/2012-17.pdf

²⁵ Accessible via: <http://headwaterseconomics.org/land/reforming-federal-land-payments-to-counties/>

Figure B-9. Historical County Payments and Timber Harvest Levels for O&C Lands.



the mid-1980s and the region saw a significant increase in harvest levels. Since the listing of the NSO and the subsequent implementation of the NW Forest Plan, timber harvests from O&C Lands has only averaged 170 MMBF since 1991.

Figure B-9 shows the oscillating nature of annual County payments when historically tied to timber receipts (pre-1994). Payments could be high in any one year based on an increased harvest level (1960s) and drastically reduced the following year depending on market conditions (1975, 1982). While averaging payments to O&C Counties over decades indicates a somewhat sustained level, market conditions had impacts from year to year on actual payments. In addition, payments were impacted by the fact that timber purchasers have up to three years to harvest timber once sold by the BLM. This allows purchasers to time harvest to take advantage of favorable market conditions.

As discussed in the Timber Supply section, during the latest recession, volume under contract (sold but not harvested) has continued to increase annually, even after accounting for appeals and litigation (see Table B-16 below). If payments were a function of revenue in this market, O&C Payments would have decreased in response.

Until the 1990s, county payments were funded entirely through timber receipts (Figure B-9). Since 1994, county payments have not been paid from timber harvests but from direct Federal appropriations (see black line in Figure B-9). Since FY 2009, Congress has approved a one-year extension of SRS at an increasingly reduced funding level. If Congress allows SRS to expire, county payments will revert to being funded solely by timber revenue. Due to significantly reduced timber harvests on BLM lands, the O&C Counties would see a drastic reduction in Federal timber payments.

How much tax revenue would be collected if privately owned?

Oregon's property tax system, and in particular tax rates in the O&C Counties, has developed in the context of federal timber revenue-sharing programs. If O&C Lands were privately owned, county governments would receive property taxes from them. Assuming an average site class and associated tax rate of \$2.58 per acre for all of the O&C Lands (2.6 million acres), annual property taxes are estimated to total \$6.7 million (Table B-10). If the estimate were doubled, analogous to assuming higher site classes, the estimate would equate to \$13.4 million²⁶. The Oregon Legislature has identified forestland as a class of property that qualifies for a Specially Assessed Value. Private forestland is not unique in this regard, as 122 other exempt or special assessment programs are in law. Like all properties in the state of Oregon, effective tax rates on individual timberland properties vary greatly due to the interaction of statutory requirements in calculating these rates.

In addition to property taxes, timberland owners pay the Oregon Forest Products Harvest Tax on timber removed at an assessment of \$3.68/mbf. This rate remains constant during market fluctuations. None of this tax revenue contributes to local government budgets.

If we assume that private ownership would result in an increase in timber harvest on the O&C Lands, it would contribute direct tax revenue of both income tax and harvest tax, in addition to generating property tax revenue. Across the O&C Counties, a quick IMPLAN analysis²⁷ estimates that 10.6 jobs would be created per MMBF of timber harvest.

²⁶ If the O&C Counties would have received 50% of timber receipts from timber harvests on the O&C Lands in 2011 (rather than the SRS payment), it would have totaled \$9 million.

²⁷ Relies on 2009 industry data and thus can be viewed as a conservative estimate.

Table B-10. Estimated State and Local Tax Revenue from Privatizing O&C Lands.

Source	Per MMBF	Annual Tax Revenue @ 1.2 BBF harvest
Property taxes		\$6,708,000
Jobs	10.6	
Income tax (jobs)	\$49,770	\$59,724,000
Harvest tax	\$3,684	\$4,420,800
Total estimate		\$70,852,800

Privatization of O&C Lands and an increased harvest to 1.2 BBF per year²⁸ is estimated to provide close to \$70 million in tax revenue. However, most of these taxes would not go to County governments. This also uses a linear expansion factor of jobs and income taxes per MMBF harvested which is not probable given mill dynamics. There is also a good chance that a private timberland buyer would be from out-of-state. Profits, therefore, may or may not be available to drive local or State economies. It is also likely that employee wages dollars will cross county lines and may not necessarily remain in the O&C counties.

Current property tax rates

Property taxes are the primary source of income for most Oregon Counties. In 2007, excluding transfer payments from the Federal and State government, property taxes provided 41% of County revenues. On average, operating taxes under the permanent rate limitation in O&C Counties are \$0.90 per thousand dollars assessed value (\$1000 AV) lower than the state-wide average of \$2.81 (Table B-11).

Oregon’s Measure 5 and Measure 50 interact to maintain these relatively low permanent rates. Passed in 1990, Measure 5 (M5) established limits to property taxes, including a cap at \$10.00 per \$1,000 real market value (RMV) for ‘general government’ purposes. Statewide, 61.2% of this M5 tax capacity for general government purposes is assessed (Table B-12). Collectively, the O&C Counties utilize 62.3% of their M5 capacity. Three O&C counties use less than one-third of existing M5 capacity and 8 of the 18 counties utilize less than 50%.

Passed in 1997, Measure 50 (M50) effectively makes ‘permanent rates’ of those that were in place in the mid-1990s. Inherent in the assumptions of M50 were the status quo of the existing (as of 1997) sources and degree of various revenue pools to fund local governments. This included the statutory responsibility under the O&C Act of the Federal government to share timber revenue with the O&C Counties.

It should also be noted that County governments are not the only entities collecting tax revenue at the local level. Some Oregon counties have as many as 50 taxing districts (cities, school districts, etc.), each with its own assessed rate. Important to this is the fact that M5 limits and M50 permanency apply to the total revenue collected across all taxing districts.

Tax effort in the O&C Counties varies significantly and is important when considering increased tax revenue. For example, the additional per capita tax burden to generate \$25 million is \$1,119.32 in Curry County versus \$46.61 in Washington County (simply a function of population). The interaction of M5

²⁸ According to the forest industry, this is the biologically sustainable timber production from the O&C lands.

and M50 makes gross level calculations of proposed increased tax rates difficult due to different reference values for taxes assessed. For accuracy, these calculations are most accurate when completed at the individual property level and are best compiled by County Assessors.

Under the Oregon Constitution (specifically Measures 5 and 50), individual counties do not have the authority to increase their *permanent rates* and must rely primarily on voter-approval for new revenue. Local options are limited statutorily to temporary authority. Between 1997-2007 only 38% of proposed local option taxes were approved. Counties do have the authority to establish a Special Taxing District which can yield permanent tax authority, but this action requires voter approval as well.

Importance of O&C payments to local government

In Douglas and Josephine Counties, the O&C Payment accounted for 15% and 13% of the total FY 2007 annual budget (Table B-11). But aggregate budget figures tend to mask the real impacts of the O&C payments. As mentioned above, O&C payments are available for discretionary use in counties' general funds. Using this metric, O&C payments make up 81% of Douglas County's and 75% of Josephine County's general funds respectively.

It is the discretionary general fund that counties use to fund services such as public safety, libraries and animal control in addition to making contributions to public health, assessment & taxation and many other shared services. When cuts must be made, they must come from this discretionary revenue. In four counties, O&C payments make up more than 50% of discretionary general fund revenue; and more than 20% in nine counties. These facts together demonstrate the historic reliance on timber payments to help fund local government services. It should be noted, however, that O&C timber payments are not the only option for County governments to balance their general-fund accounts. The 2009 report of the Governor's Task Force on Federal Forest Payments and County Services presents a list of options for increasing efficiencies and revenues.

Table B-11. Property Tax, Percent O&C Payment and Budget Impact by County, *listed by amount of 2007 O&C Payment.*

O&C County	Permanent Tax Rate per \$1000 AV	O&C Acres	% of Total O&C Payment	Aug 2012 Unemployment	2007 O&C Payment (millions)	% O&C Payment of 2007 Budget	% O&C Payment of 2007 General Fund Discretionary Revenue
Douglas	\$1.1124	706,321	25.0%	12.4%	\$29.0	15%	81%
Jackson	\$2.0099	437,997	15.7%	10.8%	\$18.1	6%	39%
Lane	\$1.2793	374,215	15.3%	8.8%	\$17.7	3%	33%
Josephine	\$0.5867	366,600	12.1%	12.1%	\$14.0	13%	75%
Coos	\$1.0799	122,001	5.9%	10.8%	\$6.8	6%	56%
Clackamas	\$2.9766	91,805	5.5%	7.9%	\$6.4	1%	7%
Curry	\$0.5996	93,506	3.7%	11.9%	\$4.2	7%	69%
Benton	\$2.2052	52,496	2.8%	6.5%	\$3.3	4%	17%
Linn	\$1.2736	86,166	2.6%	11.3%	\$3.1	2%	11%
Klamath	\$1.7326	67,305	2.3%	11.7%	\$2.7	1%	22%
Polk	\$1.716	42,205	2.2%	8.7%	\$2.5	3%	23%
Columbia	\$1.3956	11,079	2.1%	9.5%	\$2.4	5%	28%
Marion	\$3.0252	20,712	1.5%	9.6%	\$1.7	1%	3%
Multnomah	\$4.3434	4,247	1.1%	7.8%	\$1.3	0%	1%
Yamhill	\$2.5775	41,645	0.7%	8.5%	\$0.8	1%	5%
Washington	\$2.2484	11,695	0.6%	7.0%	\$0.7	0%	1%
Tillamook	\$1.4986	27,570	0.6%	8.6%	\$0.6	1%	5%
Lincoln	\$2.8202	9,220	0.4%	8.5%	\$0.4	1%	3%
O&C Avg	\$1.9156	142,599	5.6%	8.7%	\$6.4	4%	27%
State-wide Avg	\$2.8142			8.9%			

Table B-12: Measures of Actual and Potential General Government Operating Property Taxes by County (2011-12). Underlying data sourced from the Oregon Department of Revenue and taken from Table 6A from the 2009 Federal Forest Payments Task Force Final Report.

County	FY 2012			Share of Capacity Used			Per capita utilization and capacity				
	Capacity Maximum under M5 (\$/1000 AV)	FY 2012 General Government Imposed*	Unused General Government Operating Taxes	By County	By Other Gov	Total	Actual County Operating Taxes	Actual Other Gov Operating Taxes*	Total Actual Gov Operating Taxes*	Maximum General Gov Operating Taxes under M5	Unused General Gov Operating Taxes under M5
Benton	93,599,686	55,566,813	38,032,873	21.0%	38.4%	59.4%	228	418	646	1,088	442
Clackamas	457,492,138	310,264,849	147,227,289	23.1%	44.7%	67.8%	280	540	820	1,209	389
Columbia	48,428,631	25,199,148	23,229,483	11.6%	40.4%	52.0%	113	394	508	976	468
Coos	63,140,894	30,468,981	32,671,913	7.5%	40.8%	48.3%	75	409	484	1,003	519
Curry	32,011,492	8,938,367	23,073,125	4.7%	23.2%	27.9%	68	333	400	1,433	1,033
Douglas	100,315,129	43,834,010	56,481,119	8.3%	35.4%	43.7%	77	329	407	931	524
Jackson	213,166,017	114,084,849	99,081,167	15.3%	38.3%	53.5%	159	400	559	1,045	486
Josephine	75,726,671	20,404,071	55,322,600	4.8%	22.2%	26.9%	44	203	246	914	668
Klamath	69,322,455	32,138,063	37,184,392	13.0%	33.3%	46.4%	135	347	483	1,041	558
Lane	376,250,816	185,976,484	190,274,332	9.0%	40.5%	49.4%	96	431	527	1,065	539
Lincoln	90,017,836	45,371,908	44,645,927	20.2%	30.2%	50.4%	395	588	983	1,950	967
Linn	100,764,815	69,462,962	31,301,853	26.8%	42.1%	68.9%	230	362	592	859	267
Marion	254,529,936	169,816,777	84,713,159	22.6%	44.1%	66.7%	181	353	534	800	266
Multnomah	953,901,514	762,602,945	191,298,569	29.0%	50.9%	79.9%	373	655	1,028	1,286	258
Polk	59,315,740	31,409,309	27,906,431	13.5%	39.5%	53.0%	105	308	413	781	367
Tillamook	56,426,951	17,501,654	38,925,297	15.5%	15.5%	31.0%	346	347	693	2,234	1,541
Washington	627,680,355	378,175,702	249,504,653	21.7%	38.5%	60.2%	254	451	705	1,170	465
Yamhill	91,893,270	43,581,578	48,311,692	19.1%	28.3%	47.4%	176	260	436	920	484
O&C Counties	3,763,984,345	2,344,798,469	1,419,185,875	20.6%	41.7%	62.3%	230	465	695	1,115	421
O&C excluding Multnomah & Washington	2,182,402,475	1,204,019,823	978,382,652	16.6%	38.6%	55.2%	173	402	574	1,041	467
Non O&C Counties	773,791,426	418,592,406	355,199,020	16.4%	37.7%	54.1%	262	605	867	1,602	736
Statewide	4,344,076,568	2,660,217,559	1,683,859,009	20.1%	41.1%	61.2%	227	463	690	1,126	437

* Urban renewal revenue (approximately \$210 million) is included here in actual taxes imposed.

Timber Supply

For a 30-year period prior to 1990, timber harvests on the O&C Lands averaged 1.2 billion board feet (BBF). However, beginning with the NW Forest Plan, the appreciation of the ecological, social and economic values of the O&C Lands has evolved significantly. In addition to providing timber volume, these lands provide critical ecosystem services like clean water, refugia for endangered or threatened species, and recreation. In a sense, these additional values have redefined the concept of sustained yield on federal land to be more inclusive of other values produced from these forests.

Average annual timber supply under the NW Forest Plan was projected at 1.3 BBF²⁹, including 211 million board feet (MMBF) from O&C Lands. The anticipated timber volume has generally not been realized primarily due to challenges related to the implementation of the NW Forest Plan. Over the full life of the NW Forest Plan, the BLM has sold 172 MMBF/year. However, in recent years (2006-2012), the BLM has sold, on average, 200 MMBF/year. Since 1995, actual timber harvest on O&C Lands has averaged 144 MMBF/year, ranging from 46 mmbf in 2001 to 203 MMBF in 1996. Timber harvests and BLM Annual Sale Quantities (ASQ's) have, recently been achieved in the Northern Districts, but have fallen short in the Medford and Roseburg Districts.

Since implementation of the NW Forest Plan, harvest levels on Federal land across western Oregon have decreased by 90% compared to the average harvest during the 1980s (Figure B-14). In 1980, the BLM and Forest Service accounted for 46% of timber harvested across Western Oregon, compared to 1995-2010, when the Federal agencies accounted for only 7%.

The inability to achieve NW Forest Plan timber targets is related to the inability to conduct even-aged (i.e., regeneration) harvests. This is evident on the O&C Lands, where more than three-quarters of timber volume sold since 1995 has been from thinning projects (Figure B-17).

Harvest Descriptions and Economics

The O&C Lands include both 'moist forest' and 'dry forest' types. Moist forests exhibit significantly higher growth rates and are estimated to account for roughly 65%³⁰ of total acres. These acres produce roughly 80% of the timber volume and host the majority old-growth habitat.

Douglas-fir is the dominant tree species in O&C forests. Ecologically, Douglas-fir is a 'shade intolerant' species that tends to regenerate after a disturbance event. Natural disturbance events such as root rot, wind shear, and stand-replacement fires tend to be very infrequent allowing mature stands to develop over centuries. Even-aged silviculture is typically employed to mimic these disturbance and regeneration events, albeit on a compressed timeline from natural disturbance patterns. From a timber economics perspective, regeneration harvests are most economically efficient.

Even-aged Practices

Below is a summary regarding different management practices for even-aged harvests in Oregon:

- Private Lands (administered under the Oregon Forest Practices Act): For harvests over 25 acres where planting (vs. natural regeneration) is required, openings are limited to 120 acres. Two wildlife trees per acre (includes green trees or snags), and two down logs per acre must be

²⁹ Timber volume numbers included here, except where noted, are for 'short logs' as is the standard for BLM reporting. To convert to long logs, multiply by 0.825.

³⁰ *Restoration of Federal Forests in the Pacific Northwest: Strategies and Management Implications*. Johnson, N. and J. Franklin. August 2009.

retained. Under the Oregon Plan it is common practice to retain wildlife trees as part of riparian buffers. Application of herbicides is a common to encourage faster growth in planted seedlings.

- **State Forests:** A range of opening sizes is provided for diversity and influenced by terrain, stand objectives, and the surrounding landscape. State forests are subject to the 120-acre maximum. Although variations exist, in general the strategy is to retain all old growth trees, all snags, and an average of 5 green trees per acre on the majority of State forests.
- **NW Forest Plan, Matrix:** Regeneration harvests are prescribed; harvest of old growth, late successional and second growth is allowed. Retention of at least 15% of green trees is required. Openings are limited to 60 acres per the 1982 Planning Rule under which the NW Forest Plan was developed. In general, the Standards and Guidelines provide that the majority of retention should occur in patches larger than 2.5 acres. Snag retention is required to maintain 40% of potential population for cavity-nesting birds. The BLM RMPs outline tree retention standards of 6-8 trees per acres on most Matrix lands, and 12-24 trees per acre in the Connectivity allocation and the southern dry forests.
- **Ecological Forestry Principles³¹:** In moist forest types, regeneration harvesting is prescribed for stands with retention of 20% to 40% of pre-harvest forest cover, including any patches of old-growth and individual old trees. Openings vary across a harvest unit from a few acres to tens of acres. Significant structural elements (e.g., live trees, snags, and logs) are intentionally maintained in aggregated patches and/or dispersed to maintain ecological function into the next generation. During the regeneration phase, stands are intended to provide early seral habitat for a variety of species that are currently underrepresented on the landscape, and less intensive site preparation techniques are encouraged including natural regeneration and irregular, low-density planting of seedlings. In dry forest types, variable retention thinning and selective harvests are prescribed primarily to: a) retain and nurture old trees and structural elements and b) reduce the density of trees to create more fire resiliency. In general for dry forests, silviculture is applied more on a tree-by-tree basis rather than in patches.

Dry forests experience more frequent fire (5-100 year intervals) and exhibit more open canopies. Tree density is much lower, resulting in significantly reduced timber volume per acre. Uneven-aged silviculture is typical and includes a combination of variable density thinning techniques. For this reason, forest collaboratives have been much more successful because regeneration harvest can be taken off the table.

Thinning and Regeneration Harvests

Thinning includes both precommercial and commercial activities. Precommercial thinnings do not include a marketable product and are used as a stand improvement activity. Although commercial thinnings do produce volume for a range of markets, harvesting costs can exceed revenue generated.

Table B-13 provides an example of the economics of thinning compared to regeneration harvests. Two factors drive this: 1) harvest volume per acre and 2) logging productivity (volume harvested per day). Regeneration harvests yield more volume per acre. Dependent upon several factors, thinning volume per acre can range between 20%-60% of regeneration volume. Costs in harvesting operations are primarily fixed (equipment, labor, etc), and thus harvest costs are driven by production (volume/day).

³¹ Franklin, J. and N. Johnson. 2012. A Restoration Framework for Federal Forests I the Pacific Northwest. Journal of Forestry, 110(8):429-439.

Table B-13. Generic Economics for Thinning and Regeneration Harvests. Values and costs included here are estimates and provided only to demonstrate relative economic impact.

	Thin	Regeneration
Harvest Volume (MMBF/ac)**	15	40
Mill Value (\$/MMBF)	\$550	\$550
Harvest Cost ¹ (\$/MMBF)**	\$350	\$250
Stumpage Value (\$/MMBF)	\$200	\$300
Value per Acre	\$3,000	\$12,000
Acres to generate \$100 million @ 50% timber receipts	66,667	16,667

¹Kellogg et. al 1996 shows 7-31% increase in logging costs for group-selection harvests over clearcuts.

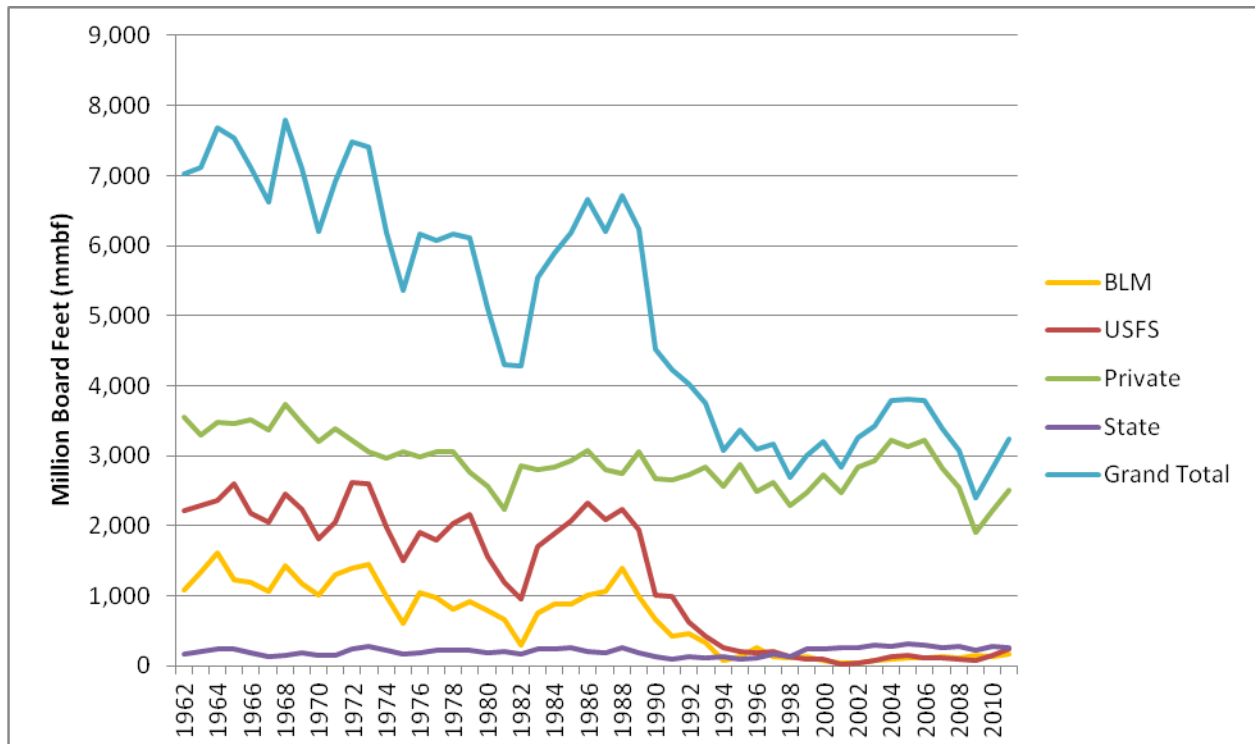
** Data meant to be 'in the ballpark' and verified by personal communication with BLM and OSU faculty.

Based on the assumptions used in Table B-13, regeneration harvests show a 280% increase in value per acre. To generate a particular revenue number (i.e., payments to Counties), significantly more acres are needed under a 'thin-only' approach than when regeneration harvests are used in combination.

Timber Harvests under the NW Forest Plan

Current timber volumes from Federal lands in Oregon are a fraction of historical harvests (Figure B-14). From 1962-1990, harvests on the O&C Lands averaged 1.2 BBF. Since 1991, harvests on the O&C ownership has only averaged 190 MMBF or 16% of the previous 30-year average.

Figure B-14. Western Oregon Timber Harvests by Landowner, 1962-2011.



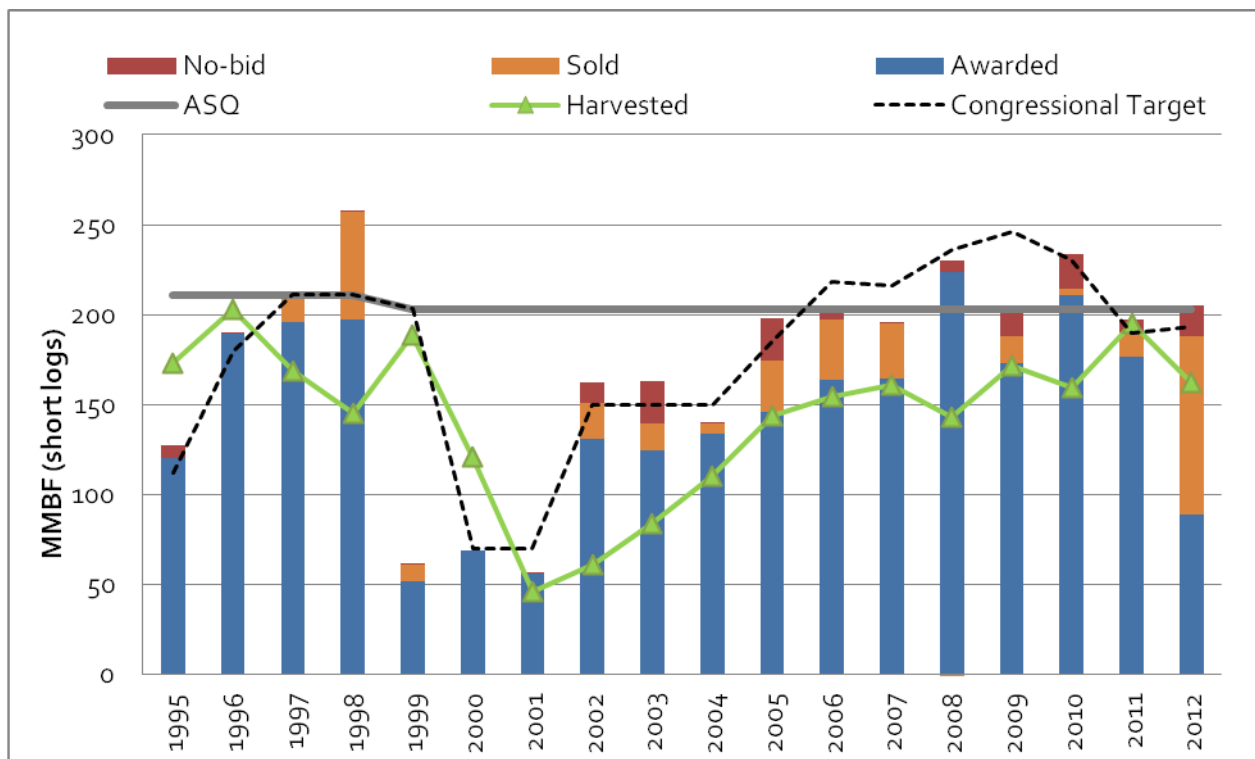
The NW Forest Plan projected an Annual Sale Quantity (ASQ) of 744 MMBF for Oregon’s Federal forests (including the Forest Service and the BLM)³². Since 1995, the Forest Service and BLM have combined to harvest an average of 280 MMBF per year, or 40% of the revised target. Please note, ASQ was intended to be fulfilled from the Matrix land allocations.

In 1999 Plan Revisions, the BLM revised³³ its initial ASQ to 203 MMBF due to better underlying data and different projection methods. In subsequent years, the BLM issued guidance that volume from all land allocations (beyond Matrix alone) would be counted towards fulfilling ASQ. Congress holds the BLM accountable based on volume sold annually, realizing that the Agency does not have control over when actual timber harvests occur due to most contracts having a three-year lifespan and oscillating market conditions.

Figure B-15 shows annual timber volume performance on the O&C lands. Since 1995 the BLM has:

- Offered 84% of ASQ Volume
- Offered 96% of the Congressionally-funded ‘target’
- Sold 96% of the volume Offered
- Sold 80% relative to ASQ and 92% relative to the Congressionally-funded target

Figure B-15. Annual BLM Timber Volume performance under the NW Forest Plan versus ASQ and Congressionally-funded Target. Current ASQ = 203 MMBF.



³² From Table 3&4-43 on page 3&4-265 in the Final Supplemental Environmental Impact Statement.

³³ Based on RMP evaluations, the BLM determined the Matrix land base in the Eugene and Coos Bay Districts was reduced by LSRs designated for marbled murrelet sites, and a refined assessment of the 15% S&G to retain older forest in watersheds where little remained. The ASQ was re-declared in those two Districts.

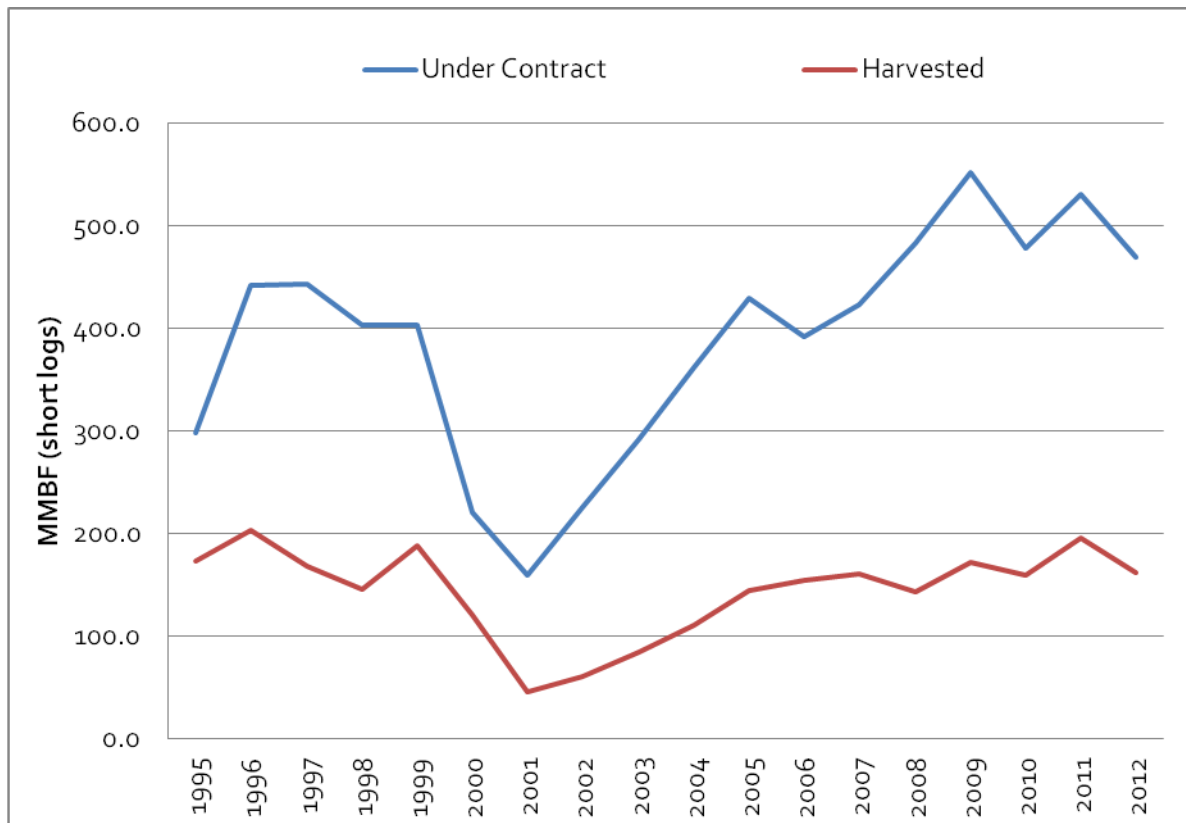
Note that data reported in Figure B-15 for 2012 is incomplete. Timber sales that were offered in FY2012 but not closed until after the end of the fiscal year are not yet accounted for in the graph.

Actual harvests typically respond to market conditions. Since 1995, harvests have equaled 70% of cumulative ASQ and 87% of volume sold. During the last decade, and particularly during the latest recession, timber volume under contract (i.e., sold but not harvested) has steadily increased (Figure B-16). At the close of FY2012, timber volume under contract was almost double the volume harvested during the year.

Likewise, it is worth noting the substantial decrease in private timber harvests in 2009 that occurred notwithstanding the decrease in Federal timber supply (Figure B-14). The annual decrease of 23% was the largest since 1960 and was driven by the economic downturn. The subsequent uptick was primarily in response to a strong export market. Both are discussed in greater detail below.

Since 2000, timber volumes offered, sold and harvested by the BLM have steadily increased. This trend is similar for the Forest Service across the NW Forest Plan area. The increase in successful offers and harvest levels results from an increased effort to thin stands less than 80 years old under the Pechman exemptions (see NW Forest Plan section for more detail) and avoiding controversy over proposing regeneration harvests.

Figure B-16. BLM Volume Harvested and Under Contract since the NW Forest Plan. Note that volumes shown are cumulative.

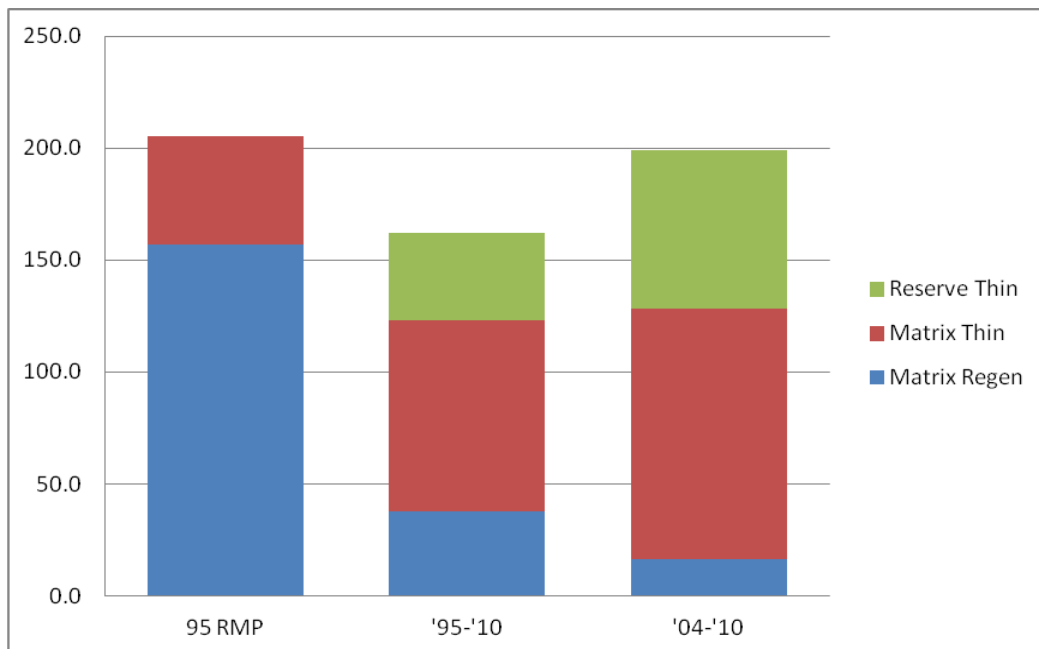


Thinning sales has essentially allowed the BLM to achieve timber supply performance targets in recent years when looking at the whole of Western Oregon. Unfortunately, the Roseburg and Medford Districts have continually missed targets. Approximately 80% of acres harvested on the O&C Lands since 1995 have been reported by the Agencies as “partial cut”. Thinning can be a valuable ecological and economic forest management tool and provides fiber for manufacturing. As discussed above, however, the economics of thinning operations make it difficult to achieve county payment and timber supply objectives.

Under the NW Forest Plan, thinning was projected to make up 23% of projected timber volume. However, litigation drove the BLM to meet its targets through thinning and the Agency has not planned or offered a regeneration harvest since the early 2000’s³⁴. From 1995-2010, thinning volume has accounted for 77% of timber volume sold, and 92% since 2004 (Figure B-17). Although no robust analysis has been conducted, several calculations suggest that the BLM cannot sustain its current harvest level with only thinning for more than 10 to 25 years.

In the development of the Western Oregon Plan Revision (WOPR), the BLM included a ‘No Action Alternative’ reflecting the Agency’s interpretation of ‘full implementation’ of the NW Forest Plan. That analysis predicted an increased an ASQ of 268 MMBF and an additional 87 MMBF of thinning volume (totaling 355 MMBF) due to better inventory data, forest growth and refinement of riparian buffers since the initial implementation. It should be noted that the proposed, and subsequently withdrawn, WOPR decision projected an annual timber supply of 588 MMBF using a different set of constraints than the NW Forest Plan.

Figure B-17. Comparison between NW Forest Plan Projections (95 RMP) and Actual Timber Volume Sold by Land Allocations For Two Time Periods.



³⁴ Most of the acres shown as ‘Regeneration’ in Figure 3 are classified as such although the driver for the action was not typical forest regeneration and included salvage from wind damage (2009) and acres harvested for road construction.

Unintended Consequences

Several components of the NW Forest Plan have had significant bearing on actual implementation of the timber sale program. Between the FEMAT report and the Record of Decision, conservation standards were strengthened. More specifically, riparian buffers in the Aquatic Conservation Strategy (ACS) were modified to increase buffer widths on most intermittent streams (i.e., seasonal flowing) and the Survey & Manage protocol was incorporated.

In addition to these components, Matrix land allocations (intended primarily for timber harvest and representing 16% of the total acres) were placed on top of critical habitat areas designated previously by the US Fish and Wildlife Service (USFWS) for the conservation of the NSO and other species. Throughout the early years of implementation of the NW Forest Plan, this overlap of land allocation created conflict during formal consultation and thus impacted timber objectives as prescribed for Matrix lands. Most recently, the USFWS has released its Final Critical Habitat Designation³⁵ for the NSO that accounts for approximately 1.3 million acres of BLM forests.

As summarized above, the old growth reserves and Aquatic Conservation Strategy have achieved important conservation advances. However, the combined impact of old growth reserves, increased riparian buffers, Survey & Manage, management of 'owl circles' as required in consultation, and successful environmental litigation has resulted in a perpetual erosion of the Matrix and opportunity to implement regeneration harvests. The various buffers often overlap to create 'doughnut holes' whereby operability of a timber harvest is significantly reduced and made uneconomic or impossible to access. In addition to these impacts and the potential additions in the 2012 Critical Habitat plan, the BLM, as a practical matter, can access approximately 10% of its land base for regeneration timber harvest.

Demand and Industry Capacity

The current demand for logs from Oregon's forests is primarily driven by the domestic housing market (single and multi-family units) and exports to Asia. Exports rose significantly in 2011 and have been consistently declining in 2012. It is important to note that only private timber is accessible to export markets. Export of public timber is prohibited.

In the past there were two kinds of mills dependent on Federal timber supply. The first was heavily dependent because these businesses did not own timberland. The second consisted of integrated timber companies that owned both forests and mills. In the first case, federally dependent mills were often located close to Federal land and relied on those lands for a majority of their supply. The integrated companies used their own timber first and relied on public lands in good markets to fill production capacity gaps. In the 1990s, many of Oregon's family-owned sawmills began purchasing timberland. In more recent years, the wood products infrastructure has been decoupled by a new class of investment firms that have purchased forests in order to diversify their portfolios. With the increase in value in the export market, these new owners sold to the highest priced market to maximize revenue. Between reductions in Federal timber supply and the export market, domestic mills are even more reliant on public timber as sources of economically viable supply.

³⁵ <http://www.gpo.gov/fdsys/pkg/FR-2012-12-04/pdf/2012-28714.pdf>

Further, there has been a recovery in the United State housing market³⁶ and this is forecast to continue. (Figure B-18). Currently, national housing starts are approaching two-thirds of pre-recession levels. Roughly, 1 MMBF is the equivalent volume needed to build 50 homes. If harvests on the O&C Lands were to increase to 500 MMBF/year, it would source the construction of 25,000 homes or 3.4% of the current number of national housing starts. If the domestic housing market stays flat, an expected response to increased public timber availability would likely be a reduction in timber prices.

The ability of Oregon's mills to respond to a significant increase in domestic market demand is tied to public land timber supply. According to a 2012 Forest Service report³⁷, Oregon sawmills operated at 68% of potential capacity and plywood/veneer mills at 65%. Both market conditions and log supply impact these relatively low numbers. The Oregon Department of Forestry reports that biological growth potential on private lands across Oregon is approximately 3.8 BBF. Notwithstanding the most recent decline, private forests have been harvested at or near this level for the past 50 years (Figure B-14). Therefore, timber from public land is likely necessary to allow Oregon's mills to respond to a prolonged surge in demand.

Key Timber Supply Issues

There are five key issues related to the BLM's timber sale program. These include:

1. *Regeneration harvests.* The NW Forest Plan provided for regeneration harvests, but their use has been limited through legal challenges. Meeting BLM timber targets that exceed 300 MMBF is likely not possible unless some form of regeneration harvest – i.e., NW Forest Plan or Ecological Forestry – is utilized. These silvicultural practices remain highly controversial on public land as some conclude that, even though this approach is less harmful to the environment than clearcutting, the overall costs still outweigh the benefits. Although thinning projects have allowed agencies to largely meet volume targets in recent years, there isn't a robust analysis to predict the long-term viability of a thin-only approach, and the prevailing thought is that thinning alone cannot provide significant timber volume over the long-term or adequate county payments.
2. *Target harvest volume.* This aspect intersects with the discussion above, centering on the degree to which even-aged harvests can be used in the Matrix going forward. In that light, a few reference points for timber harvest levels are:
 - a. The O&C Act set the initial sustained yield capacity of the land at 500 MMBF/year³⁸.
 - b. Harvests between 1960-1989 averaged 1.2 BBF/year on O&C Lands. There was only one year where harvest did not exceed the 500 MMBF referenced in the O&C Act.
 - c. The current Available Sale Quantity for the O&C Lands is 203 MMBF/year and is primarily achieved by thinning in the northern BLM districts.
 - d. WOPR (2008) would have increased annual harvest to 588 MMBF/year. Ultimately this decision was rescinded by the BLM and therefore (c) is the current target.
3. *Geographic distribution* – Regarding distribution of timber supply, there is concern that any O&C solution assures that supply is made available within an economically viable supply circle for various regions of the state.

³⁶ The seasonally adjusted annual rate is currently 746,000 compared to 614,000 one year ago (Random Lengths 68:13).

³⁷ Gale et. al. September 2012. USDA Forest Service.

³⁸ Note that there is no reference in the O&C Act whether this is 'long log' or 'short log' volume.

4. *Harvest Age Classes (<80 or <120)* – Parties assume that any O&C solution will require protection of old growth. Indeed, the DeFazio/Walden/Schrader bill protects more old growth on paper than the NW Forest Plan. The DeFazio/Walden/Schrader bill relies heavily on the 80-120 age class to contribute to its timber targets and to meet the needs of the existing infrastructure. Some stakeholders oppose harvest of trees over 80 years. Johnson and Franklin analyzed volume differences for increasing thinning age from 80 (current direction) to 120 years and allowing regeneration harvests in the Matrix at 80, 120, and 160 year rotations. They found modest volume increases in the short-term (next 20 years) from the increased age cut-offs, but more significant timber volume increases in the long term.
5. *Log exports.* Currently, export of Federal timber is prohibited. If any portion of the O&C Lands were placed in a Trust or privatized without any 'condition of sale' the log supply would become immediately available to export markets. Estimates range between 15-30% as to what may likely be purchased in export markets if no export restriction was included as a condition of sale.

Figure B-18. Historical and Forecasted US Housing Starts, years 1990-2022. Source: IHS Global Insight



Governor Kitzhaber's O&C Panel

While the ecological components of the NW Forest Plan have been successful, implementation has not achieved projected timber harvest outputs. Additionally, the County safety net programs that have provided funds for basic public services since 1995 have been severely reduced and seem unlikely to continue given the current state of the Federal budget. Together these issues have begun to create severe economic duress in many of Oregon's rural communities, especially those that are timber dependent and/or in which forest ownership consists predominantly of O&C lands.

Within this context Governor Kitzhaber believes that it is time to rethink implementation of the NW Forest Plan and developed seven principles that should guide an O&C solution. These include:

1. **Stable County Funding** – Recognize the O&C Act's unique community stability mandate. Provide adequate and stable county revenues sufficient to meet needs for basic public services.
2. **Stable Timber Supply** – Provide adequate and stable timber supply that will provide for employment opportunities, forest products and renewable energy.
3. **Protect Unique Places** – Permanently protect ecologically unique places.
4. **Durable & Adaptive Conservation Standards** – Maintain NW Forest Plan forest management standards, such as Late Successional/Old Growth Reserves and the Aquatic Conservation Strategy, in an adaptive manner to comply with environmental laws.
5. **Conservation Opportunities** – Promote conservation advances on private "checkerboard" lands through voluntary, non-regulatory incentives – financial, technical, regulatory relief, etc.
6. **Federal Budget Neutral** – Recognize that an O&C solution will need to be budget neutral or positive at the Federal level.
7. **Achieve Certainty** – Develop a policy framework that will provide for certainty in achieving all of these principles.

In the fall of 2012, Governor Kitzhaber convened a panel to address challenges related to O&C issues and to advise him on solutions. The Panel had three objectives:

1. Assist Governor Kitzhaber in developing an Oregon solution to the O&C lands issue that:
 - a. Meets the policy principles that have been established by the Governor; and,
 - b. Builds on the objectives contained in the DeFazio/Walden/Schrader legislation.
2. Provide a forum for various groups and individuals with various perspectives within those groups to articulate their interests and concerns and work to reach consensus on issues related to management of the O&C lands.
3. Develop and discuss creative potential strategies that are likely to require legislative clarification and/or changes to existing law.

Fourteen individuals were asked to serve on the O&C Panel at the request of Governor Kitzhaber. They represented three distinct caucuses, including County government, the timber industry, and the conservation community. Each caucus was staffed by two participants. The Panel consisted of:

County Government

Jamie Damon – former Commissioner, Clackamas County
Simon Hare – Commissioner, Josephine County
Tony Hyde – Commissioner, Columbia County
Doug Robertson – Commissioner, Douglas County
Staff – Kevin Davis, Ted Lorensen

Timber

Allyn Ford – Roseburg Forest Products (Roseburg)
Ray Jones – Stimson Lumber Company (Portland)
Jennifer Phillippi – Rough and Ready Lumber (Cave Junction)
Dale Riddle – Seneca Sawmill Company (Eugene)
Staff – Cameron Krauss , Ross Mickey

Conservation

Sybil Ackerman – Sybil Ackerman Strategies
Greg Block – Wild Salmon Center
Bob Davison – Defenders of Wildlife
David Dreher – Pew Charitable Trusts
John Kober – Pacific Rivers Council
Jack Williams – Trout Unlimited
Staff – Nicole Cordan, Ernie Niemi

Tom Tuchmann, Conservation Finance Advisor to Governor Kitzhaber, presided during Panel meetings. The State retained John Ehrmann, The Meridian Institute, for third-party facilitation of the Panel's discussions. Chad Davis (Oregon Department of Forestry) and Peter Harkema (Oregon Solutions) provided staff support.

The Panel convened for 12 meetings for a total of 16 days between October 2012 and January 2013. Below is a list of meeting topics.

October 26 and 27

- Overview and background on key issues
- Identify remaining questions, data needs, and suggested pathways to address concerns
- Identify and discuss attributes of possible recommendations

November 1

- Update and discussion on potential modeling approach
- Overview and group discussion on Walden/DeFazio/Schrader bill
- Presentation and discussion of county economic status and needs

November 8

- Overview and discussion on key ecological issues
- Review and discuss available modeling approaches
- Begin to develop initial model parameters and assumptions

November 19

- Update on interested parties' current thinking on status of negotiations
- Discuss possible modeling scenarios

November 27

- Discuss initial analysis and modeling options
- Briefings on the range of ecological values of O&C Landscape

November 30

- Finalize modeling scenarios

December 6 and 7

- Overview of ecological forestry and associated aquatic strategies
- Review of modeling progress and options
- Group discussion on various certainty options
- Discussion on potential options for conservation opportunities on private lands and economic development
- Discussion on various revenue and cost savings options to meet identified County need

December 17 and 18

- Overview of the state of the forest sector across the O&C Landscape
- Update on modeling efforts

January 3 and 4

- Review modeling results on timber supply, related County revenues, and ecological effects of 10 distinct potential management scenarios for the O&C Lands
- Discuss solution elements in the context of the Governor's O&C Principles

January 9 and 10

- Presentation on ecological effects modeling
- Discuss solution elements and format in the context of the Governor's O&C Principles

January 15

- Discuss and agree on press release and staff report concept and elements

January 29

- Presentation of NSO and MAMU effects modeling

Modeling O&C Land Management Options

To better analyze various land management options the State retained and funded the work of an integrated modeling team that included: Mason, Bruce and Girard, Dr. John Sessions, Institute for Natural Resources; and input from the BLM and Forest Service. The team conducted two general types of modeling: 1) timber supply and revenue projections, and 2) ecological effects modeling. See below for Modeling Assumptions and Modeling Limitations.

Modeling Process

Timber supply and timber revenues were projected using a timber harvest scheduling model developed by Dr. John Sessions at OSU. The data for the model was originally obtained from the BLM during the 2008 Western Oregon Plan Revision effort. The model was used to help the O&C Counties project harvest and revenue from the Trust proposal offered by Representatives DeFazio, Schrader and Walden. The model was modified for the Governor's Panel to incorporate the long term outputs associated with an "ecological forestry" approach that the Panel requested for some scenarios. Mason, Bruce and Girard prepared the spatial data needed to support the modeling effort. We note that the BLM is currently building new planning models to support its current planning effort. These new models

are based on new inventory and growth data and may show results different from our effort here. The projections in this report here are shown with more precision than perhaps is warranted. However, we believe that this model is sufficient for understand the differences between the management approaches analyzed herein.

Ecological effects modeling primarily focused on the projection of future habitat conditions for NSO and MAMU and the “harvest impact” relative to USFWS Designated Critical Habitat and current suitable habitat. No high level, quick-to-use tool was identified to complete effects modeling relating to riparian habitat and conditions and other ecological values. However, this type of data was considered and used in designing the modeling runs. For example, see Riparian Buffer Strategies in the Modeling Assumptions section. A summary of conservation values provided by the O&C Lands is included below in the Analysis of Results section.

Due to time constraints, habitat projections were modeled for a subset of management scenarios, including Runs A, C, D, and F (described below). The base data habitat comparisons were the NSO Critical Habitat Designation and the suitable habitat maps for the NSO and MAMU generated by the federal agencies for the 15 year monitoring reports on the NW Forest Plan^{39 40}. Using change detection techniques, the ILAP model (Integrated Landscape Assessment Project) projected forest growth in combination with data scheduled produced from the harvest schedule modeling to project suitable habitat conditions at two points in the future: 20 years and 50 years. Comparisons for model runs included acres and percent change of suitable habitat from Year 0 to Year 20 and Year 50. Results should be interpreted at a gross scale and are most meaningful to show differences in relative magnitude and to see general trends between the runs.

In addition, GIS was used to assess acres of harvest over the first 50 years of management within the NSO Critical Habitat Designation and current suitable habitat (referenced as Year 0 Suitable Habitat). Due to the complex nature of working with spatial data on a compressed timeframe, these comparisons were calculated for gross harvest acres that include riparian buffers as applied in each run and therefore likely overestimate harvest impacts. A more detailed analysis would be necessary to determine if the development of suitable habitat in riparian areas would offset any of the declines due to harvests.

For all habitat modeling, results for each run were compared to:

- 1) acres specific to the O&C Landscape (defined below) modeled for timber and revenue outputs
- 2) all Federal lands in western Oregon (including BLM and Forest Service)

For purposes of this work, fire impacts were not included on the O&C lands, assuming that fire suppression would continue as currently performed⁴¹. The tables in the narrative show the results specific to the O&C Landscape since the effect on other Federal land (primarily Forest Service) is the same across all runs since the model assumed no difference in management on Forest Service lands across the runs. Tables A-1 and A-2 in the Appendix show results for all Federal lands. The contribution of habitat on State and private lands was not included in this analysis due to the effort being conducted

³⁹ Davis et. al. 2011. Status and Trends of Northern Spotted Owl Populations and Habitats. Accessed 2/2/2013. http://www.fs.fed.us/pnw/pubs/pnw_gtr850.pdf

⁴⁰ Raphael et. al. 2011. Status and Trend of Nesting habitat for the Marbled Murrelet. Accessed 2/2/2013. http://www.fs.fed.us/pnw/pubs/pnw_gtr848.pdf

⁴¹ The BLM contracts with the Oregon Department of Forestry to provide fire protection. An ‘aggressive attack’ approach is employed within the checkerboard landscape in order to limit wildfire impacts to private lands.

to evaluate the impact on change from the status quo in management direction specific to Federal lands.

Modeling Assumptions

The following general assumptions were used for all modeling runs.

Landbase: The landbase included all lands managed by the BLM in Western Oregon, including: a) the O&C, b) CBWR, c) Public Domain lands; and the Forest Service-managed O&C Lands, commonly referred to as the Controverted Lands. The landbase for this analysis totaled 2,765,178 acres (see Table A-16 in Appendix). This report refers to this as the 'O&C Landscape'. Acreages reported here should not be taken as precise but considered generally accurate.

An important point is that for NSO and MAMU habitat effects modeling, the purpose was to evaluate impacts relative to change in management direction related to Federal lands in western Oregon. NSO Critical Habitat Designation does include some State of Oregon lands⁴², but no private lands in Oregon. Suitable habitat (distinction between Critical Habitat and suitable habitat provided below) for these species invariably exists on public and private ownerships. However, suitable habitat analysis also only included Federal (BLM or Forest Service) land. Habitat effects results are given relative to the O&C Landscape below in the report, with complete data included in the Appendix for all Federal lands.

Dry Forest and Moist Forest Distinction: For applying Ecological Forestry, a distinction was made for silvicultural approaches in Dry Forests and Moist Forests. Plant Association Groups were used to define Dry sites from Moist sites and appropriate harvest prescriptions were applied to each according to Franklin and Johnson 2012³⁹. Timber volume results for each of the runs are totaled for Dry and Moist forests.

Timeframe: Timber supply and projected County revenues were modeled for a 200 year time period. Ecological effects related to NSO and MAMU habitat were projected as snapshots in time, both at 20 years and 50 years into the future.

Precision: Modeling was conducted at a high level and did not attempt to establish detailed harvest scheduling runs typical for private forest owners or as robust as Agency planning processes. Minor differences in timber supply, revenue, and even habitat projections should be interpreted as relative differences in orders of magnitude.

Riparian Buffer Strategies: Acres of riparian areas were calculated using a percentage of total harvestable acres as approximations representing three different strategies:

- 1) Oregon Forest Practices Act: Assumed 5% of harvestable acres.
- 2) BLM 2008 Resource Management Plan: Used existing data generated in the planning effort. It should be noted that this was thought to yield the same relative percent of harvestable acres (20%) as the WA Department of Natural Resources Habitat Conservation Plan.
- 3) Aquatic Conservation Strategy of the NW Forest Plan: Used existing data. Approximately thought to represent 37% of harvestable acres across the landscape.

Timber supply outputs do not include any timber volume from the riparian areas. In their 2008 plan revision, the BLM projected a potential timber volume from thinning riparian areas in the Matrix at approximately 15 MMBF per year for the first 30 years. While any additional timber volume is important to the forest sector, further refinement of this estimate would have insignificant results. For purposes of

⁴² Note that the Elliot State Forest (93,000 acres) and the Tillamook State Forest (346,000 acres) are managed for multiple values that include older forest habitat development.

this report, it is plausible to add 10-15 MMBF per year for the first 25 years to each timber volume estimate.

High and Low Priority Watersheds: Runs D-G use a tiered riparian strategy based on high and lower priority watersheds (defined as HUC6) as defined by the Panel. High priority watersheds comprised approximately 90% of BLM watersheds and included:

- NW Forest Plan Key Watersheds
- Existing and Proposed Wild and Scenic Designations
- High Intrinsic Potential for either Steelhead, Chinook, or Coho
- Strong Populations of either Steelhead, Chinook, or Coho
- Salmon Critical Habitat

Short Log Scale: Modeling results yield timber volumes in 'short logs' which is the standard unit of measure for the BLM. The timber industry typically employs the 'long log' measure. To convert short logs to long log units, multiply by 0.82. For reference, 500 MMBF (short log) is equivalent to 410 MMBF (long log).

Suitable Habitat and Critical Habitat. For purposes of evaluating impacts of harvest treatments to NSO habitat, analysis was conducted relative to both suitable habitat and Designated Critical Habitat.

Suitable habitat is a measure combining an array of forest metrics including canopy closure, tree diameter, and structural diversity at the stand level. The suitable habitat map was derived from work reported by Davis et al. (2011)⁴³ in support of the Effectiveness Monitoring program under the Northwest Forest Plan. A rough approximation for suitable habitat is any native forests older than 120 years although stands between 80-120 years currently serve as habitat, particularly in the Coast Range where distribution of older forest is limited.

Designation of NSO Critical Habitat was completed in December 2012 by the USFWS⁴⁴. Designated NSO Critical Habitat uses the analytical methods developed in the 2011 Revised Recovery Plan for the NSO.⁴⁵ In contrast to the stand-level suitable habitat, NSO Critical Habitat Units and Subunits are large landscape polygons that look at a broader niche than suitable habitat to fulfill the whole range of NSO life history needs by including abiotic factors such as landform as well as basic vegetation types and the amount and fragmentation of nesting, roosting and foraging habitat. Areas were designated as NSO Critical Habitat connectivity in mind and to increase the amount of total habitat over time, and were based on population modeling (HexSim) to evaluate their contribution to the performance and continued persistence of NSO populations into the future. As a result, lands designated within boundaries of the Final Designation include stands less than 80 years old. Further, there are some stands in the O&C Landscape greater than 120 years that were not included in the Final Designation.

Modeling Limitations

The modeling effort was conducted as an "initial feasibility analysis". The purpose of this modeling was to illustrate relative relationships of different management approaches. Given the time frames for this modeling it could only provide general order of magnitude comparisons. This work was not done to the

⁴³ Accessed 1/29/2013. http://www.fs.fed.us/pnw/pubs/pnw_gtr850.pdf

⁴⁴ Accessed 1/29/2013. <http://www.gpo.gov/fdsys/pkg/FR-2012-12-04/pdf/2012-28714.pdf>

⁴⁵ Accessed 1/31/2013.

<http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Recovery/Library/Documents/RevisedNSORecPlan2011.pdf>

standards for a forest management plan for either a private or public landowner. The analysis required for a Federal agency to complete a Resource Management Plan often takes years and millions of dollars. The results reported below were generated in 30 days time and were intended to help inform the Panel's discussions about high-level tradeoffs associated with various large landscape strategies.

Model runs were completed once and not refined following initial results. Very few constraints were included in the runs but could be included to reduce the impacts discussed below. For example, regional distribution of timber supply was not an initial parameter of the model. Likewise, no direction was given to minimize harvest activity in current suitable habitat for NSO and MAMU. If wanted as a constraint, these design parameters, along with others, could be included in subsequent analyses to more precisely compare differences between management scenarios.

Existing silvicultural prescriptions in the harvest scheduling model were used to generate estimates of timber supply for these runs. The modeling team tailored parameters within existing prescriptions to approximate Ecological Forestry Principles. Likewise, time and resources did not allow for development of more complex modeling of silvicultural prescriptions within Critical Habitat. For this effort, we assumed only thinning in Critical Habitat. However, the USFWS states in its Final Rule that some variable retention harvest within critical habitat in lower quality stands may be appropriate to meet certain management objectives given that it is consistent with the recommendations in the NSO Recovery Plan and the final Critical Habitat rule. Thus, harvest volume projections from Critical Habitat may be underestimated in runs D, E, F, and G and should be considered conservative projections.

As mentioned above, ecological effects modeling was limited to NSO and MAMU habitat conditions. Relative to aquatics, modeling took a generalized approach of using riparian buffer widths as a surrogate for aquatic species impacts which is not an adequate measure of impact to in-stream habitat effects. In addition, due to a lack of adequate tools and resources, no thorough evaluation was generated for aquatic impacts to domestic water quality or to listed and/or covered species under Survey & Manage. A traditional Agency planning process would consider these impacts and undergo formal consultation with the USFWS and/or National Oceanic and Atmospheric Administration (NOAA).

Description of Modeling Runs

The Panel agreed to model seven distinct management scenarios in order to gain an understanding of the range of outputs and impacts across the O&C Lands. A brief description of each is below.

Run A: Status Quo, Thinning

Run A projects the recent implementation of the NW Forest Plan into the future. Currently, the BLM is almost exclusively using thinnings to meet their Congressional timber volume target.

- Includes the Critical Habitat land allocation designated by the USFWS
- Applies the land allocation of the NW Forest Plan and the riparian buffers included in the Aquatic Conservation Strategy

Run B and C: Management Trusts

Runs B and C are different representations of the O&C Trust as drafted by Representatives DeFazio, Walden, and Schrader. As modeled here, the land would remain part of the Federal estate but be managed by a Trust, subject to the Oregon Forest Practices Act, to generate revenues for the O&C Counties.

Run B:

- Includes the proposed new Wilderness and Wild and Scenic designations per the DeFazio, Walden, Schrader draft
- Does not assume implementation of NSO Critical Habitat Designation
- Removes stands currently 125 years or older from the harvestable land base and assumes no future timber supply from these stands
- Requires that 50% of harvestable acres in the Management Trust be managed on a 100+ year rotation
- Assigns to the Management Trust all stands currently less than 125 years old
- Designates 5% of the harvestable land base to Riparian Reserves (intended to approximate the application of the Oregon Forest Practices Act)
- Applies industrial forestry regeneration harvests to the harvestable land base
- Assumes a 15% falldown due primarily to the spatial arrangement of the Trust lands making management difficult or impossible for some small parcels

Run C, similar as above except:

- Designates approximately 20% of the harvestable land base to Riparian Reserves (applied Riparian strategy #2 as described above)

Run D and E: Ecological Forestry Outside Critical Habitat

Runs D and E model only thinning within the USFWS Critical Habitat Designation and apply Ecological Forestry principles⁴⁶ outside Critical Habitat. Both Run D and E used a tiered riparian strategy based on priority watersheds.

Run D:

- Includes new Wilderness and Wild and Scenic Designations in addition to those proposed in DeFazio, Walden, Schrader draft
- Removes stands currently older than 125 years old from the harvest base and assumes no timber harvest of these stands into the future
- Models only thinning in stands under 125 years old within and outside NSO Critical Habitat. (As noted above in *Modeling Limitations*, the USFWS Final Designation envisions some variable retention harvest to meet certain management objectives).
- Prescribes Ecological Forestry principles as detailed above (distinct for Moist Forests and Dry Forests) in stands outside of the NSO Critical Habitat
- Applies the Aquatic Conservation Strategy riparian buffers in priority watersheds (approximately 90% of BLM watersheds) and BLM 2008 buffers (riparian strategy #2 as described above) in lower priority watersheds

Run E, similar as above except:

- Prescribes NW Forest Plan Matrix silviculture (15% green tree retention) in stands outside of NSO Critical Habitat and currently less than 125 years old
- Prescribes Ecological Forestry principles (distinct for Moist Forests and Dry Forests) in stands outside of NSO Critical Habitat between 125-160 years old

Run F: Land Sale and Ecological Forestry

Run F is an integrated approach that includes a small sale of the O&C lands and implementation of Ecological Forestry Principles in acres outside the USFWS Critical Habitat Designation. A GIS exercise

⁴⁶ Franklin, J. and N. Johnson. 2012. A Restoration Framework for Federal Forests in the Pacific Northwest. *Journal of Forestry*. Volume 110, Number 8, pp. 429-439.

was used to ascertain the possibility of a land sale option that balanced ecological impacts and regional distribution. This process and filters used is described below.

- Proposes the sale (without encumbrance) of approximately 200,000 acres of O&C Lands with low conservation value and excludes all acres of Critical Habitat designation
- Assumes that purchaser will harvest all existing mature timber in the first 25 years
- Uses the same assumptions as Run D on the remaining Federal lands

Run G: Community Forest and Ecological Forestry

Run G is similar to Run F but assumes that sale lands would be sold to a community forest buyer and that there would be ecological and market encumbrances.

- Proposes the sale with encumbrances of approximately 429,000 acres of O&C Lands with relatively low conservation value and excludes all acres of Critical Habitat designation. Encumbrances include:
 - 50% reduction in timber volume (relative to sustained yield) to account for a robust riparian strategy (likely 20% or greater) and harvesting practices regarding older trees
 - Managed under an even-flow yield constraint
 - Export restriction (exports not allowed)
 - Purchaser would be a community forest owner, include a diverse board and be conservation-driven
- Uses the same assumptions as Run D on the remaining Federal lands

Initial Exploration of Sale Feasibility

No effort was made to identify specific parcels for a potential land sale option; rather a high-level 'feasibility' exercise was undertaken to assess whether further exploration was warranted. Two categories of filters were applied using GIS across the entire O&C Landscape: 1) Critical Habitat and LSRs, and 2) an array of conservation and aquatic values.

First, lands that were designated as Critical Habitat or an existing LSR were removed from the potential landbase. Second, relative aquatic values were assigned to areas. Additional consideration was given to geographic distribution of timber supply.

Six conservation layers were combined to assign an ecological score, and included:

- Salmon Strongholds (mapped at HUC6 watersheds)
- High Intrinsic Potential for Steelhead, Chinook or Coho (mapped at HUC6 watersheds)
- Salmon Critical Habitat
- NSO Critical Habitat
- Late-Successional Reserves
- BLM Special Places (including Wilderness, ACECs, recreation sites, etc.)

A higher score indicated overlapping ecological values. A final GIS query selected against any acres with a relative high score (3 or more of the above) to confirm the potential for land sale options at two levels: a) 200,000 acres managed under the OFPA and b) 400,000 acres managed with riparian and older forest encumbrances.

Results

Table R-1 below displays the output results from the timber and revenue modeling, including two conservation metrics related to no harvest reserves and older forests. In addition to the total, results for Runs F and G are displayed separately for the public land and private land components.

Table R-1. Timber and Revenue Modeling Results. Also see Table A-16 in Appendix for more detail.

Run	Descriptor	MODELING OUTPUTS			County Revenue (\$ Million)
		No Harvest Reserves ^a (acres)	Acres Available for Some Type Harvest	Timber Supply in Short Logs (MMBF/yr)	
A	Status Quo, Thin Only	1,444,932	772,634	185 ^b	\$13
B	Management Trust, OFPA	1,022,031	1,655,990	700	\$165
C	Management Trust, 20% Riparian	1,022,031	1,385,472	565	\$127
D	Critical Habitat & Ecological	1,109,297	1,040,564	205	\$27
E	Critical Habitat, NWFP, Ecological	959,923	1,114,661	261	\$34
F	Land Sale & Ecological	1,079,603	1,118,565	439 then 261 ^c	\$67
	<i>Land Sale component</i>	0	192,196	278 then 100	\$46
	<i>Public land component</i>	1,079,603	986,369	161	\$21
G	Community Forest & Ecological	1,033,682	1,224,211	240	\$36
	<i>Community Forest component</i>	0	407,383	125	\$22
	<i>Public land component</i>	1,033,682	816,828	115	\$14

^a Modeling did not assume any thinning volume in the No Harvest Reserves, including Riparian Reserve, as described above on Page 41.

^b Thinning volume is projected to last 25 years. Timber volume beyond that timeframe is projected to be minimal.

^c Timber harvests on the land sale component are projected to be 278 MMBF for a 25 year period to service debt, then drop to a long-term sustained yield of 100 MMBF.

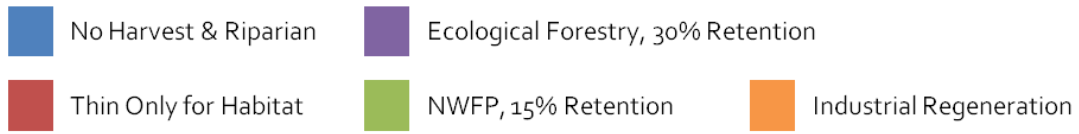
Timber supply volumes are reported in short logs⁴⁷ per the BLM standard for reporting on the O&C Lands. Timber volume ranges from 185 to 700 MMBF per year. County revenues are calculated at 50% of timber receipts for the public land timber volume and calculated at 5% annual return from the sale price of the private component. County revenues range from \$13 to \$165 million per year.

Note that the acres reported for 'No Harvest Reserves' and 'Stands >120 at Yr 50' are not exclusive. In general, the majority of older forest stands were not scheduled for any timber management in any run. The numbers in Table R-1 above do not include riparian acres since the metric is intended to compare 'no touch' acres among the runs. Although thinning activity is currently occurring in riparian areas, as stated elsewhere, the timber volume estimates do not include volume from thinning in riparian acres.

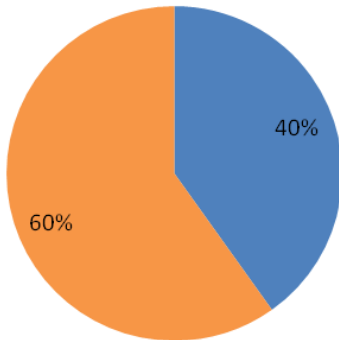
Figure R-2 below shows the percent of total acres under different management regimes (including acres modeled with no harvest such as Wilderness, Wild and Scenic, other Administratively Withdrawn allocations, older forests, and riparian acres) by Run. Runs F and G include the acres from both sale and public land components. Note that Riparian acres were calculated similarly as under the NW Forest Plan; that is, as a percentage of harvestable acres. This does not allow a fair comparison of riparian

⁴⁷ The forest industry standard log measure is 'long log'. To convert, multiply short log volume by 0.82.

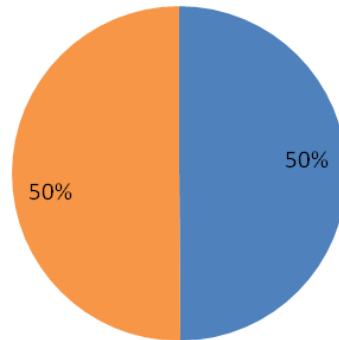
Figure R-2. Percent of Acres Under Different Harvest Regimes. Sustained Timber Base includes forests shown as Industrial Regeneration, NWFP, or Ecological Forestry. See Table A-16 in Appendix.



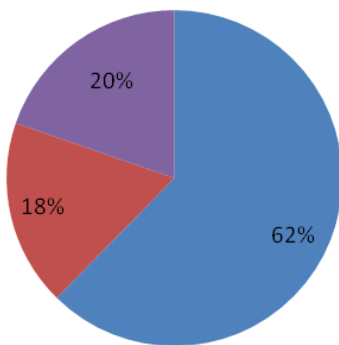
B: Trust, 5% Riparian



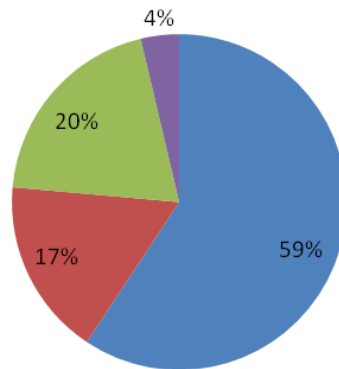
C: Trust, 20% Riparian



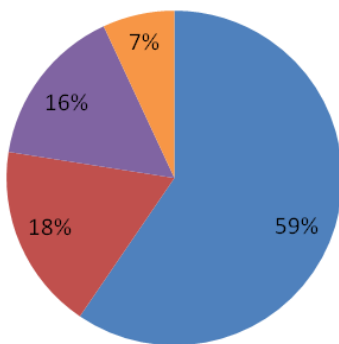
D: CH, Ecological



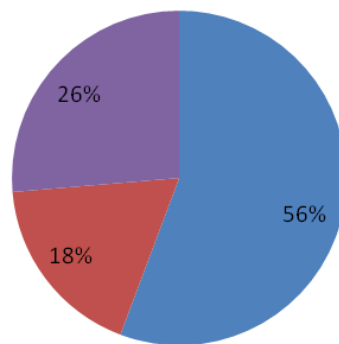
E: CH, NWFP & Ecological



F: Land Sale, Ecological



G: Community Forest, Ecological



acres alone since a larger harvestable land base would have an increased number of riparian acres by definition. Note that Figure R-2 does not account for the differences between Runs B/C and Runs A/D/E/F for the application of Critical Habitat Designation. However, since no regeneration harvests were scheduled within NSO Critical Habitat for Runs A/D/E/F, NSO Critical Habitat acres would be accounted for in Thin Only and No Harvest.

Run A Results

Run A attempts to model the status quo: thinning in stands less than 80 years old to improve habitat conditions. Run A projects an annual timber harvest of 185 MMBF for a duration of 25 years. A minimal amount of second-round thinning is likely in some stands less than 80 years old. Beyond 25 years, timber volume would effectively drop to zero. Run A has the most amount of No Harvest acres since it relies on the NW Forest Plan land allocations and does not project harvest in any stand currently older than 80 years.

Including all Federal land (BLM and Forest Service), acres of NSO suitable habitat stayed flat over all Federal lands from current to Year 50 (see Table A-1 in Appendix). This is largely due to the impact of wildfire probability on Forest Service lands. As mentioned above, fire effects were not included for the O&C lands due to the difference in fire suppression tactics employed in the checkerboard⁴⁸ ownership. On the O&C Landscape, NSO suitable habitat increased by 28% (Figure R-3).

Acres of MAMU Nesting Habitat increased by 10% for all Federal lands in Run A (see Table A-2 in Appendix). Increase in habitat for the O&C Landscape alone was slightly less at 7% (Figure R-4).

See Figures A-9 in the Appendix for more detailed projections of Run A.

In summary, Run A:

- Puts 0% of the O&C Landscape in the Sustained Timber Base⁴⁹ (Table A-16 in the Appendix)
- Maximizes older forests and both NSO and MAMU suitable habitat
- Produces a non-sustainable volume of timber and the lowest total of County revenues

Run B Results

Run B attempts to model the O&C Trust as drafted by Representatives DeFazio, Walden and Schrader using a few modifications (mainly a 5% riparian strategy, inclusion of more acres – Coos Bay Wagon Roads and Public Domain, and uses current log pricing). Run B places the most acreage in active timber management (1.65 million acres) and management is subject to the Oregon Forest Practices Act. The lands placed under Trust management account for more than half of the BLM-managed NSO Critical Habitat acres and approximately 18% of total Critical Habitat acres including all Federal and State lands in Oregon. It should be noted that NSO Critical Habitat Designation was completed after the development of the draft O&C Trust.

Run B produces a significant increase over the NW Forest Plan in long-term sustained yield of 700 MMBF per year and returns \$165 million to the O&C Counties annually.

⁴⁸ The BLM contracts with the Oregon Department of Forestry to provide fire protection. An 'aggressive attack' approach is employed within the checkerboard landscape in order to limit wildfire impacts to private lands.

⁴⁹ Sustained Timber Base is defined in this report as acres purposed primarily for timber management. It does not include any riparian acres.

As mentioned above, due to time constraints, ecological effects modeling was not conducted for Run B. However, effects on NSO and MAMU habitat, both designated Critical Habitat and projected suitable habitat, would be expected to be similar to Run C given the similarity in the base structure of the two scenarios.

See Figure A-10 in the Appendix for more detailed projections of Run B.

In summary, Run B:

- Puts 60% of the O&C Landscape in the Sustained Timber Base (Table A-16 in the Appendix)
- Places the most acres into timber management with a significant intersection with designated NSO Critical Habitat acres yet provides an increase in NSO suitable habitat acres
- Produces the most timber volume (700 MMBF) and County revenues (\$165 million)
- Maintains over 1 million acres of older forests on the landscape and places these stands into permanent protection from timber harvest

Run C Results

Run C applies a different riparian strategy to the O&C Trust proposal. It uses the stand-level data generated during the development of the BLM's 2008 Resource Management Plan. For purposes of this high level modeling, it also serves as a proxy for the Habitat Conservation Plan developed by the Washington Department of Natural Resources. The additional riparian acres reduce timber supply by 20% and projected County revenues by 24%. The long-term sustained yield is projected to be 565 MMBF per year.

The No Harvest acres are the same for Runs B and C since the same harvestable land base is used. However, as shown above in Figure R-2, the modified riparian strategy results in 10% more of the total landbase, and totals 50% of all acres, dedicated to conservation ends.

Over the first 50 years, Run C prescribes industrial regeneration harvests to 27% of the BLM-managed NSO Critical Habitat acres (Figure R-5 and Table A-3 in Appendix). Widening the lens to all State and Federal lands, industrial regeneration harvests under Run C are prescribed for 8% of total NSO Critical Habitat acres in the state, including all Federal and State land.

Relative to NSO suitable habitat, projections show a 14% increase for the O&C Landscape (see Table A-1 and Figure A-17 in Appendix), largely due to not harvesting any stands currently older than 125 years. Relative to Run A, NSO suitable habitat is projected to be 11% lower in Run C at 50 years (Figure R-3).

The interaction of the impact to NSO Critical Habitat yet an increase in NSO suitable habitat requires some further explanation. Although regeneration harvests are scheduled within designated NSO Critical Habitat and given the comparatively smaller harvest impact to suitable habitat (see Figure A-3 in the Appendix), these results indicate that the regeneration harvests are mostly prescribed within

Figure R-3. Acres of Suitable Habitat for the Northern Spotted Owl Projected in O&C Landscape.

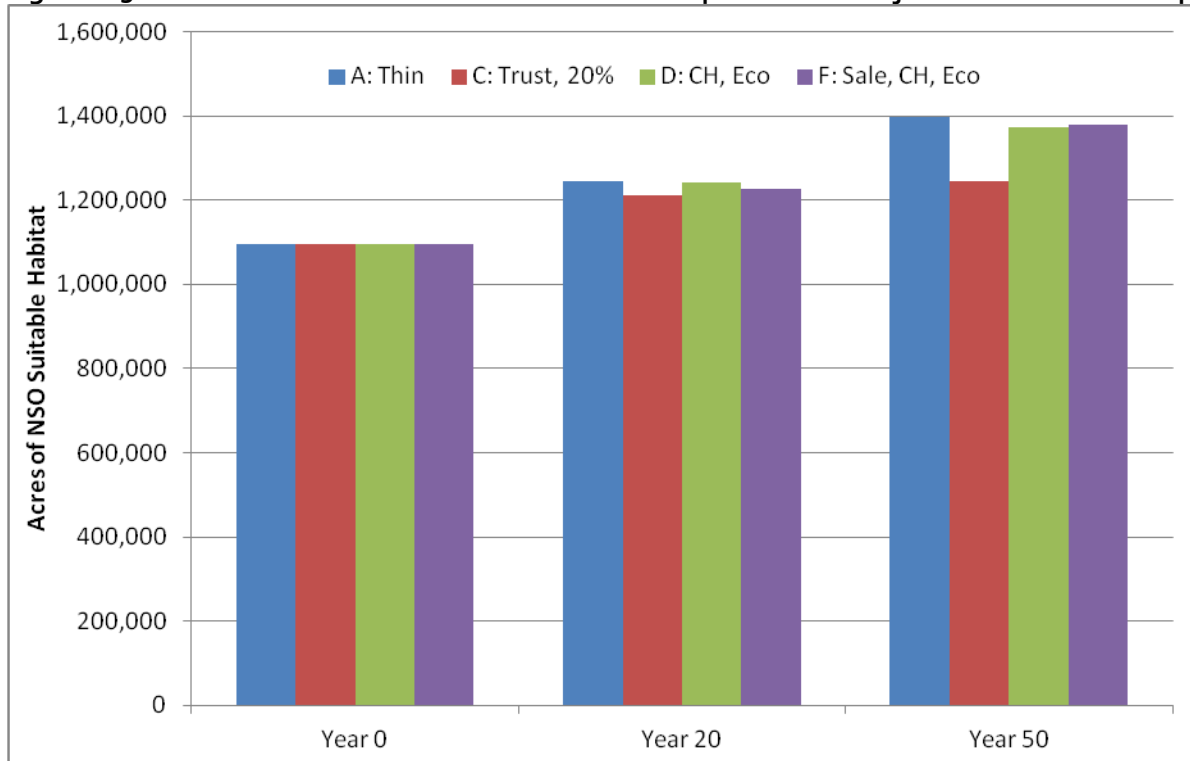


Figure R-4. Acres of Suitable Nesting Habitat for the Marbled Murrelet Projected in O&C Landscape.

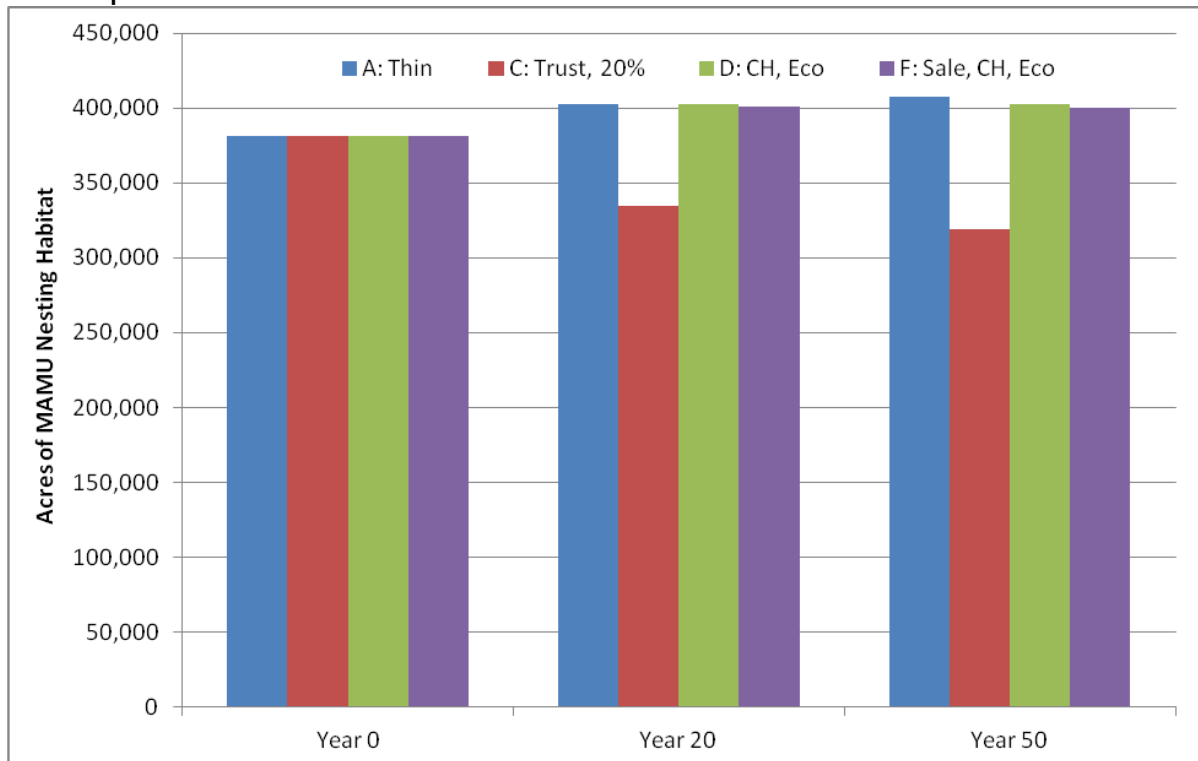
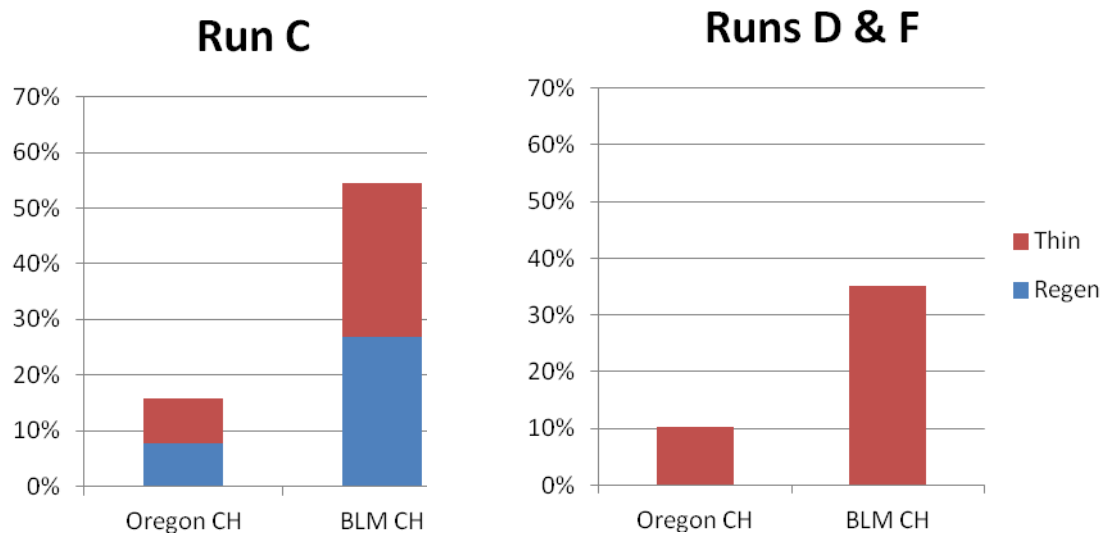


Figure R-5. Percent of NSO Designated Critical Habitat Acres Harvested During First 50 Years. See more detail by Critical Habitat Unit in Table A-3 and Table A-4 in the Appendix.



younger stands. In fact, 63% of regeneration harvests in NSO Critical Habitat were scheduled in stands less than 80 years of age. The area designated for NSO Critical Habitat consist of large landscape polygons that considers a broad niche to fulfill the whole range of NSO life history and is specifically designed with connectivity in mind to increase the amount of total habitat over time. Consequently, NSO Critical Habitat does include approximately 400,000 acres of stands less than 80 years old⁵⁰. Of these, roughly 220,000 acres would be subject to regeneration harvests in the first 50 years under Run C.

Run C is the only run modeled in which MAMU habitat is reduced compared to Year 0 (Figure R-4 and Figure A-18 in the Appendix). For the O&C Landscape specifically, MAMU suitable habitat declined 16% (see Table A-2 in Appendix); and declined by 3% over all Federal lands. In total, harvest activity (both regeneration and thinning) was prescribed for 24% of Year 0 MAMU suitable habitat acres in the O&C Landscape over the first 50 years (Figure R-7; also see Table A-6 and Figures A-1 through A-7 in Appendix). This equates to 13% of all MAMU suitable habitat including all Federal lands.

See Figure A-11 in the Appendix for more detailed projections of Run C.

In summary, Run C:

- Puts 50% of the O&C Landscape in the Sustained Timber Base (Table A-16 in the Appendix)
- Allocates half of the landbase to a conservation purpose
- Produces a long-term sustained yield of 565 MMBF
- Provides \$127 million annually to O&C Counties
- Employs regeneration harvests in approximately 350,000 acres of designated NSO Critical Habitat over the first 50 years
- Increases NSO suitable habitat over time, but less than Runs A, D, and F
- Results in a 17% decrease of current impact on MAMU suitable habitat on the O&C Landscape

⁵⁰ Johnson, N. and J. Franklin. January 2013. Recommendations for Future Implementation of Ecological Forestry Projects on BLM Western Oregon Forests. Final Report. IN REVIEW.

Run D Results

Runs D models only thinning within NSO Critical Habitat designation and applies Ecological Forestry principles outside Critical Habitat. Run D also designates 37% of the harvestable land base in priority watersheds (as defined above), and 20% of the harvestable land base in lower priority watersheds, to Riparian Reserves. In combination, the majority of the O&C landbase is allocated to conservation. Roughly 20% of the landbase would be managed as the Sustained Timber Base.

Run D yields 205 MMBF per year, a timber volume similar to the current sale quantity under the NW Forest Plan. However, significant regional differences exist in the distribution. In general, runs built around Ecological Forestry principles produce less timber volume on the Medford and Roseburg BLM Districts (see Table A-7 in Appendix). However, per the O&C distribution formula, County revenues are shared irrespective of timber harvest location. Run D projects \$27 million which is more than twice that calculated from current NW Forest Plan receipts due to the use of more economically favorable regeneration harvests.

Contrary to Run C, no regeneration harvests were scheduled in NSO Critical Habitat in Run D. Only thinning treatments were scheduled and occurred on 10% of designated NSO Critical Habitat acres in the Oregon (including Federal and State owners) during the first 50 years (Figure R-5; also see Table A-3 in Appendix).

NSO suitable habitat increased similarly for Run D as with the Status Quo. Implementation of Run D increased NSO suitable habitat by 25% on the O&C Landscape (Figure R-3 and Figure A-17 in the Appendix). Run D scheduled 'Ecological Forestry' regeneration harvests (30% retention) on 4% of Year 0 NSO suitable habitat acres (Figure R-6; also see Table A-5 and Figures A-1 through A-7 in Appendix). This equates to only 1% of total NSO suitable habitat across all Federal lands.

Under Run D, MAMU suitable habitat increased 9% and 5% across all Federal lands and the O&C Landscape, respectively (Figure R-4 and Figure A-18 in the Appendix). Again, this is similar to the Status Quo. Thinning and regeneration harvests were scheduled for a small proportion of MAMU Year 0 suitable habitat, 5% and 3% respectively for the O&C Landscape (Figure R-7; also see Table A-6 in Appendix).

Suitable See Figure A-12 in the Appendix for more detailed timber and revenue projections of Run D.

In summary, Run D:

- Puts 20% of the O&C Landscape in the Sustained Timber Base (Table A-16 in the Appendix)
- Allocates the majority (80%) of the landbase to conservation purposes
- Produces a long-term sustained yield similar to the NW Forest Plan
 - But results in significant variation in regional timber supply
 - Increases log size diversity from the current implementation of the NW Forest Plan by using Ecological Forestry regeneration harvest rather than thinning exclusively
- Generates only \$27 million annually of County revenue, double the value of current receipts
- Models only thinning in designated NSO Critical Habitat
- Generates similar amounts of NSO and MAMU suitable habitat as the Status Quo

Figure R-6. Percent of Year 0 NSO Suitable Habitat Acres on the O&C Landscape Harvested During First 50 Years. Year 0 acres equal 1,095,268 acres on O&C Landscape; actual acres shown in Table A-5 in the Appendix.

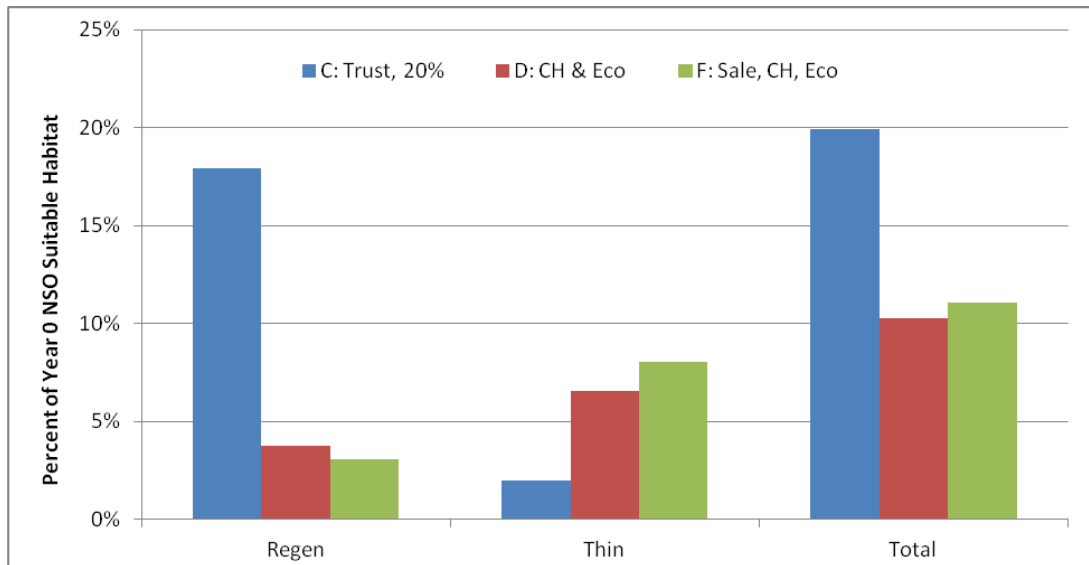
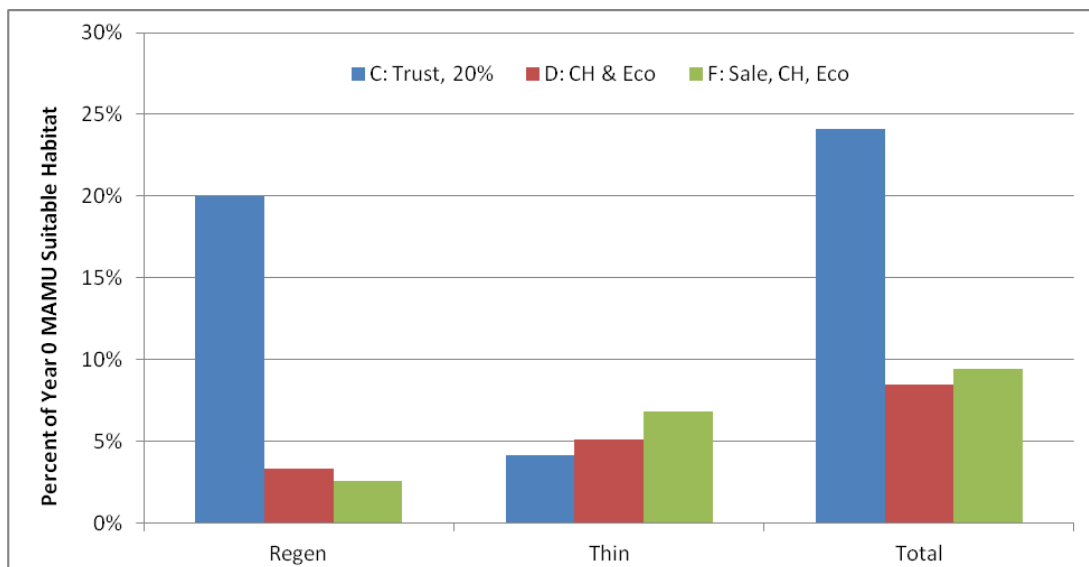


Figure R-7. Percent of Year 0 MAMU Suitable Habitat Acres on the O&C Landscape Harvested During First 50 Years. Year 0 acres equal 381,505 acres on O&C Landscape; actual acres show in Table A-6 in the Appendix.



Run E Results

Run E is similar to Run D except uses a combination of NW Forest Plan prescribed regeneration harvests (15% retention) and Ecological Forestry (30% retention) outside of Critical Habitat. Roughly 77% of the landscape is allocated for conservation purposes and 23% is maintained as the Sustained Timber Base.

Run E produces a sustained yield of 261 MMBF per year, 30% more than Run D due to application of NW Forest Plan silvicultural prescriptions (15% green tree retention) in stands less than 125 years old and application of Ecological Forestry on stands 125 to 160 years old. Accordingly, projected County revenues increase to \$34 million annually. The regional differences in timber supply noted in Runs D exist in Run E but are not as dramatic, particularly for timber harvests beyond 50 years.

NSO and MAMU habitat analysis were not conducted for Run E. However, by design and similar to Run D, no regeneration harvests were scheduled in designated NSO Critical Habitat.

See Figure A-13 in the Appendix for more detailed projections of Run E.

In summary, Run E:

- Puts 23% of the O&C Landscape in the Sustained Timber Base (Table A-16 in the Appendix)
- Allocates the majority (76%) of the landbase to a conservation purpose
- Produces a long-term sustained yield of 261 MMBF per year, an increase relative to the NW Forest Plan volume
- Generates only \$34 million annually of County revenue from timber receipts
- Models only thinning in designated NSO Critical Habitat

Run F Results

Run F is an integrated approach that results in different management strategies for portions of the O&C Lands. Run F models the results of a hypothetical sale of approximately 200,000 acres outside of NSO Critical Habitat to the private sector and assumes no management restrictions on those lands other than the OFPA. The remaining Federal land makes the same assumptions about harvest within Critical Habitat as Run D and is managed similarly as Run D. Over three-quarters (77%) of the O&C Landscape is allocated to conservation purposes. Including the private sale component, 23% of total acres would be managed as the Sustained Timber Base.

Run F projects a timber volume of 439 MMBF per year for the first 25-years of the planning period, on the assumption that purchasers of these properties would monetize the inventory. Harvests then decline from the private land component and Run F projects a long-term sustained yield (year 50 forward) of 261 MMBF. Due to the fact that a private landowner could access log export markets, it's reasonable to believe that some portion of this volume (estimates range from 15-30%) would not be purchased and used for supply by Oregon mills. Timber supply projections show a distinct difference between initial and long-term volumes, reflecting an assumed aggressive harvest of a private owner to maximize net present value on the land purchase.

Run F formulates County revenue from two sources: 1) an assumed 5% annual return from land sale proceeds managed by a financial Trust where sale proceeds would be deposited, and 2) shared timber receipts on remaining public harvests. The analysis suggests that the 200,000 acre sale would generate upwards of \$920 million. Using the assumed return, a fund of this value would yield generate \$46

million annually. Combined with the 50% receipts from the timber harvest on the 2.5 million acres left in federal ownership, Run F generates a total of \$67 million per year from the combined sources. Two-thirds of the total is not subject to either annual fluctuations in the timber market or Congressional budget limitations or capacity of the BLM to meet its timber target.

Contrary to Run C, no regeneration harvests were scheduled in NSO Critical Habitat in Run F. Only thinning treatments were scheduled and occurred on 10% of designated NSO Critical Habitat acres in the Oregon (including Federal and State owners) during the first 50 years (Figure R-5; also see Table A-3 in Appendix).

Implementation of Run F increased NSO suitable habitat by 26% on the O&C Landscape (Figure R-3 and Figure A-17 in the Appendix). Relative to NSO suitable habitat on the O&C Landscape, Run F scheduled regeneration harvests (either Industrial or Ecological Forestry depending on land component) to only 3% of Year 0 acres (Figure R-6; also see Table A-5 and Figures A-1 through A-7 in Appendix). This equates to only 1% of total suitable habitat across all public lands.

Projected MAMU suitable habitat was very similar for Run F as for Run D and the Status Quo, increasing 9% across all Federal lands and 3% across the O&C lands (Figure R-4 and Figure A-18 in the Appendix). During the first 50 years, harvests were scheduled for roughly 4,000 acres of MAMU suitable habitat more than Run D primarily due to harvest activity on the sale component. In total, 3% and 7% of Year 0 suitable habitat on the O&C Landscape was scheduled for regeneration and thinning, respectively (Figure R-7; also see Table A-6 in Appendix).

See Figures A-14a-c in the Appendix for more detailed projections of Run F.

In summary, Run F:

- Sells approximately 200,000 acres and creates a financial trust from the proceeds
- In total, puts 23% of the O&C Landscape in the Sustained Timber Base (Table A-16 in the Appendix)
- Allocates more than 75% of the landscape to conservation purposes
- Produces a 25 year surge of timber volume (439 MMBF/yr); a drop to current timber volume levels (195 MMBF/yr); and a long-term sustained yield of 261 MMBF/yr (an increase over the NW Forest Plan volume)
- Results in significant regional differences in timber supply
- Creates \$67 million in County revenue with the majority of that total not subject to fluctuations in the timber market or Agency budgets and capacity
- Models only thinning in designated NSO Critical Habitat
- Generates similar amounts of NSO and MAMU suitable habitat as the Status Quo

Run G Results

Run G uses a similar integrated approach but assumes some management restrictions on the sale component to a community buyer. Run G allocates 74% of the O&C Lands to a conservation purpose. Including the community forest component, 26% of total acres would be managed as the Sustained Timber Base.

Due to management restrictions, Run G results in a sustainable flow of timber from both the 400,000 acres sold to the community buyer, and from the 2.3 million acres remaining in the federal estate. Together, the harvest volume totals 240 MMBF per year. County revenue is funded from two sources as

in Run F, yet the sale proceeds are significantly less due to the encumbrances applied to the lands to be sold. In total, Run G generates \$36 million in annual County revenue.

NSO and MAMU habitat analysis were not conducted for Run G. However, as a function of design, no regeneration harvests were scheduled in designated NSO Critical Habitat.

See Figures A-15a-c in the Appendix for more detailed projections of Run G.

In summary, Run G:

- Sells approximately 400,000 acres with management encumbrances and creates a financial trust from the proceeds
- In total, puts 26% of the O&C Landscape in the Sustained Timber Base (Table A-16 in the Appendix)
- Allocates approximately three-quarters of the landscape to conservation purposes
- Produces a long-term sustained yield of 240 MMBF/yr, an increase relative to the NW Forest Plan volume
- Generates \$36 million for County revenue with the majority of that total not subject to fluctuations in the timber market
- Models only thinning in designated NSO Critical Habitat

Analysis of Results

Relative Comparison of Runs

See Figure R-8 below for comparison of timber supply across all runs over time. Figure R-9 shows projected County revenues across runs.

Figure R-10 shows results for selected metrics across the seven modeled runs. These metrics are based on an understanding of *individual* Panelists objectives. In order to understand the tradeoffs with each option, comparing a range of metrics in relative terms is helpful. Figure R-10 shows more variation in the acres managed/conserved (see Harvest Acres, Regeneration Acres, No Harvest & Riparian Acres, and Acres of 120+); timber supply; and County revenues. Suitable habitat projections for both NSO and MAMU were only completed for Runs A, C, D, and F and show less variation across all Federal lands among the runs. However, impact to NSO and MAMU habitat varies by biological unit as show in the Appendix (see Figures A-1, A-2, A-5, A-6, A-7, and A-8).

In addition, Figure R-5 above shows the percent of designated NSO Critical Habitat that is subject to regeneration and thinning harvests for Runs C, D and F. As shown in Figure A-3 in the Appendix, the modeled runs prescribed more harvest acres (regeneration or thinning) in NSO Critical Habitat acres than in suitable habitat acres. This results primarily from design of the runs; most limit harvest activity to stands less than 125 years of age and target thinning in stands less than 80 years.

Figure R-8. Timber Harvest Projections for All Runs Over Time.

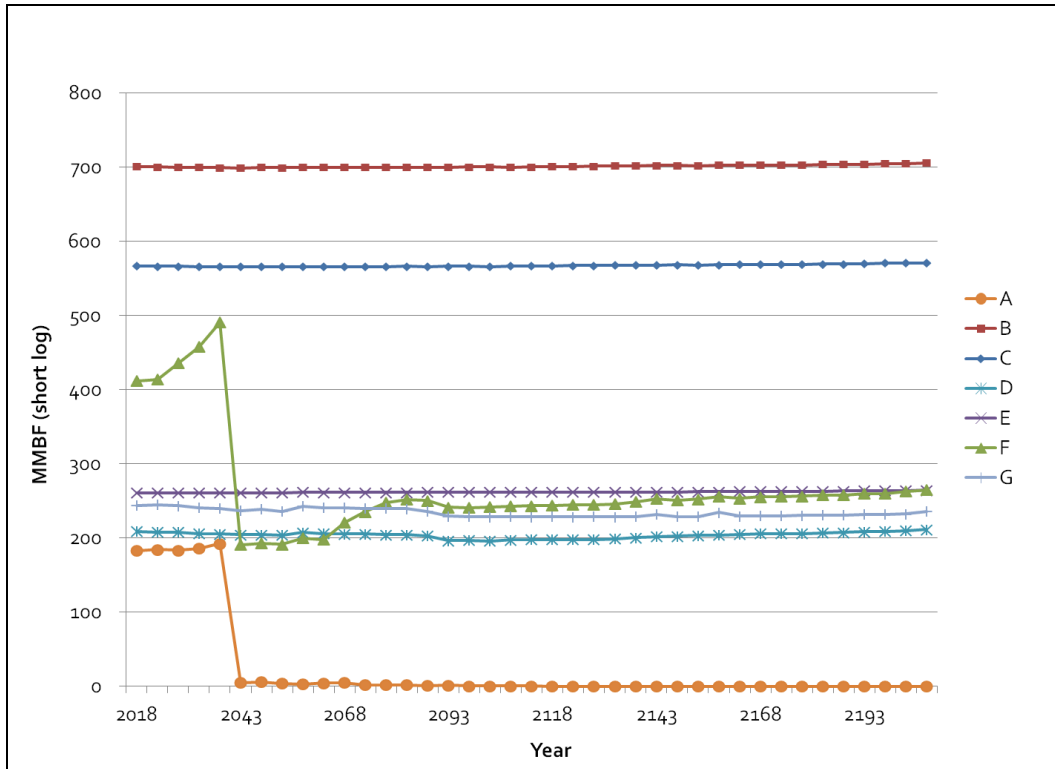


Figure R-9. County Revenue Projections for All Runs Over Time.

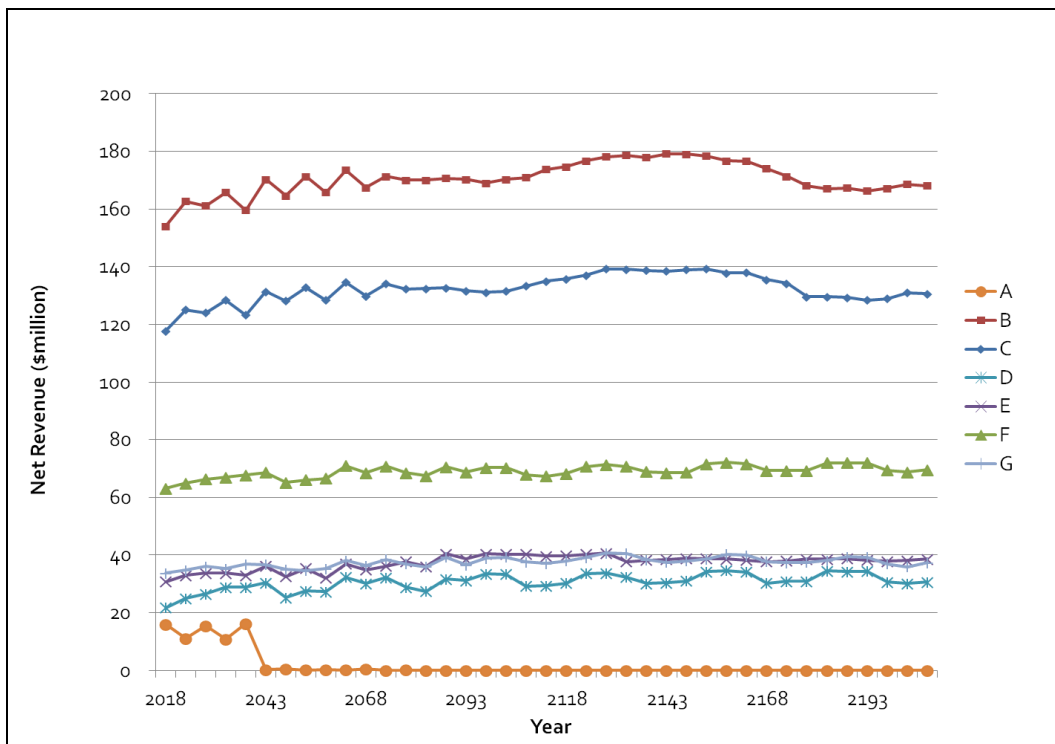
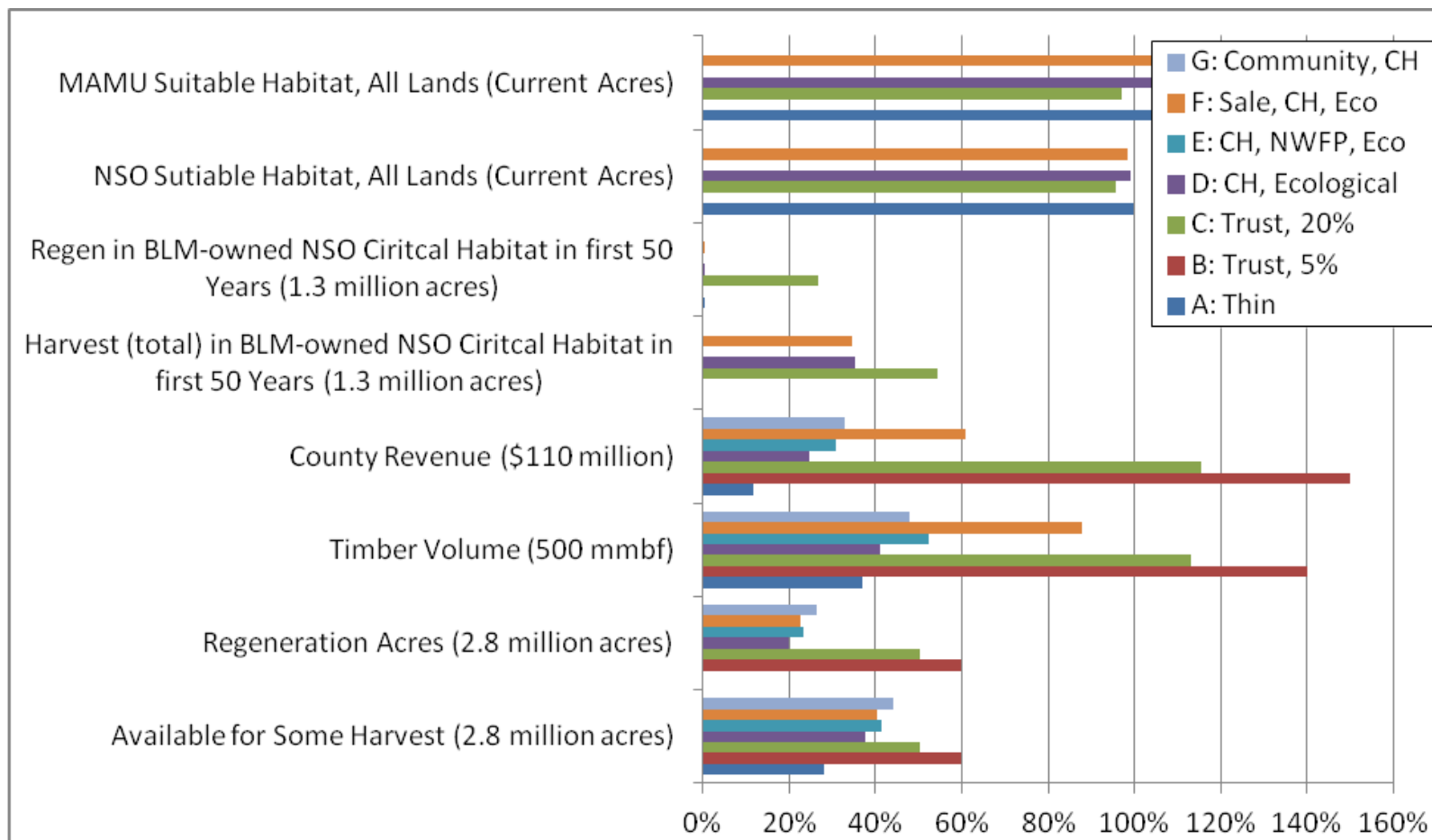


Figure R-10. Relative Comparison of Model Runs for Selected Metrics. Relative base for comparison in parenthesis.



Notes:

- 1) Relative value expressed in parenthesis. For example, Harvest Acres is displayed as the total number of acres scheduled for a harvest as a percent of total acres (2.8 million).
- 2) NSO and MAMU suitable habitat; and NSO Critical Habitat only projected for Runs A, C, D, and F. Runs A, D, and F scheduled no regeneration harvests in Designated NSO Critical Habitat.
- 3) For purposes of this chart only, timber volume is displayed as the average over the first 25 years.

In general, Runs B and C produce the highest amount of timber and revenue, yet are consistently lowest of the runs in conservation outputs. Options A, D, and E generally optimize for conservation objectives but fall short of the long-term sustained yield desired by the Industry and the revenue need as defined by the Counties. Options F and G consistently fall in the middle on most metrics although they deliver more on the conservation objectives than long-term timber and/or revenue.

Long-term Sustained Yield and Regional Distribution of Timber Supply

Long-term sustained yield is important to the timber industry as it facilitates business planning, reinvestment and assuredness of raw material; and to the Counties for employment opportunities. Runs A and F produce distinctly different volumes in the initial 25 year period and a significantly lower long-term sustained yield. In fact, Run A does not show any timber volume beyond the initial 25 year period.

Run F projects a substantial increase in timber volume for the first 25 year period, largely due to the harvest projected for the sale component (63% of the total). That 'private volume' significantly decreases during years 26-50 and stabilizes over the long-term (see Table A-7 in Appendix). The 'supply cliff' created in Run F is an important factor when considering potential policy direction. To maintain a sustained level of timber supply at the initial level, the drop-off in volume across the region would need to be replaced, including a similar level of predictability.

To maintain the existing forest products infrastructure, regional distribution of the timber supply is an important consideration. In general, runs built around Ecological Forestry principles produce less timber volume on the Medford and Roseburg BLM Districts. Run D produces only 19% of the timber volume on the Roseburg District as does Run C (see Table A-7 in the Appendix). Although statewide timber volume for each of Runs D-G is greater than that prescribed under the NW Forest Plan, the regional distribution of that total is somewhat different, producing more timber volume in Salem, Eugene and Coos Bay but significantly less in Roseburg and Medford. In their 2008 Plan revision, the BLM predicted that implementation of the NW Forest Plan would yield 56 MMBF and 59 MMBF for Roseburg and Medford districts, respectively. Runs D-G range between 20-50 MMBF but are more heavily weighted on the low end of that range. However, it should be noted, that silvicultural prescriptions were not built specifically for the application of Ecological Forestry. In order to assess this in more detail, stand-specific yield tables for this new silvicultural approach are needed.

Large Block Strategy for Habitat Conservation and Recruitment

The NW Forest Plan relies on a network of Late-Successional Reserves to serve as refugia for multiple terrestrial and aquatic species. This network accounts for approximately 850,000 acres of the O&C Landscape. In December 2012, the USFWS released their Final Critical Habitat Designation which defines acres necessary specific to habitat development for the NSO. However, there is much overlap of NSO Critical Habitat with MAMU suitable habitat, and with the habitat of other old growth dependent species, such as the red tree vole. The recent designation accounts for approximately 1.3 million acres of the O&C Landscape. While most of the LSR network is contained within Critical Habitat, approximately 219,000 acres of LSRs are outside of the Critical Habitat designation⁵¹.

Both networks were developed with habitat continuity in mind. Akin to regional timber supply, spatial distribution, and particularly connectivity, is a major component of ecological and wildlife habitat

⁵¹ Johnson, N. and J. Franklin. January 2013. Recommendations for Future Implementation of Ecological Forestry Projects on BLM Western Oregon Forests. Final Report. IN REVIEW.

design across the landscape. This is perhaps more critical in the O&C region given the 'checkerboard' distribution of public and private land that by its creation results in discontinuous landscapes. Note that no private land was included in the Final Critical Habitat Designation and therefore, habitat development relies entirely on public land.

Runs B and C propose dividing the landscape by current stand age, assigning a conservation strategy to all stands greater than 125 years old. As modeled above and per this division, slightly more than 1 million acres would be 'off the table' for timber harvests and managed to increase habitat conditions. However, the use of stand age does not result in connectivity and/or continuity of habitat. The spatial distribution of the relatively similar amount of acres is quite different with Runs B and C distributing older forests more scattered across the landscape (see Figure A-17 in the Appendix). It should be noted that due to the checkerboard nature of the BLM Landscape, it is difficult to achieve the same level of connectivity as is possible on "blocked" ownerships such as the USFS. In fact, in the final rule, the USFWS removed acres of Critical Habitat on private land. However, in other states, Habitat Conservation Plans have been developed to provide more habitat connectivity

To illustrate the difference, over half of the Designated Critical Habitat acres on the BLM lands would be placed into the Management Trust proposed in Runs B and C and likely be subject to industrial regeneration harvests. However, under the Management Trust, a significant amount (approximately 400,000 acres) of forests older than 125 years but outside of the Critical Habitat Designation would be managed for conservation.

Stand Age at Timber Harvest

Harvest of older forests and/or individual trees remain controversial in western Oregon. The litigation around the recent BLM Secretarial Pilots are evidence that even a demonstration project applying Ecological Forestry principles is subject to this controversy. As a generality, 80 years has become the threshold for older forest for some members of the conservation community and in which timber harvest is not viewed as acceptable.

Under current implementation of the NW Forest Plan, the Pechman exemptions result in thinning of stands less than 80 years. Run A attempted to model continuance of this into the future and projected that the BLM could only sustain the current level of harvest for 25 years. Many in the Agency believe their thinning opportunities will actually run out in 10 to 15 years and may vary significantly by District. Run E projected 261 MMBF, or 56 MMBF per year more harvest than Run D due to the inclusion of a) NW Forest Plan retention in regeneration harvests (15%), and b) Ecological Forestry applied to stands up to 160 years old. The latter was applied to only 32, 125 acres (or 1% of the O&C Landscape).

In a February 2012 report, Johnson and Franklin⁵² provided estimates of long-term sustained yield timber harvest for application of a restoration strategy on the O&C lands. They estimate that increasing the age of harvests from 80 to 120 on Matrix lands would result in a 14% increase in volume. If the age of harvests was 160 years, they project a 32% increase.

In addition to volume, older trees yield higher quality timber which is particularly important for some of the mills in southwest Oregon and to maintain a diverse product mix. The ability to manage stands up

⁵² Johnson, N. and J. Franklin. February 2012. Southwest Oregon Secretarial Pilot Projects on BLM Lands: Our Experience So Far and Broader Consideration for Long-Term Plans. Pg. 71.

to 120 or 160 years may yield dividends to address regional distribution of timber supply as discussion above. Management of forests older than 80 or 120 years is likely to be a charged issue.

Identifying a Landbase for Sustained Timber Harvest

A critical component to any solution is the ability to actually implement it. As detailed above, the inability of the BLM and Forest Service to fully implement the timber sale components of the NW Forest Plan has resulted in reduced timber harvests and direct Federal payments to County governments. With the recent Critical Habitat Designation, the BLM will have less than 15% of the O&C lands available for sustained yield timber management⁵³. Additional restrictions encumber some of these remaining acres through implementation of the NSO Recovery Plan.

Assuming compliance with the NSO Critical Habitat designation, a key policy question revolves around the role of LSRs outside of Critical Habitat now that that additional designations have been made for the NSO; and to what extent, timber harvests within the LSRs are acceptable. Of the roughly 219,000 acres of LSRs outside CH, more than half is currently less than 80 years old. In their most recent report to the BLM, Johnson and Franklin⁵⁴ estimate an effective doubling of moist forest acres to yield timber supply by redesignating half of the acres less than 80 years old in LSRs (outside of Critical Habitat) and Riparian reserves to Ecological Forestry and a shift in approach to Survey & Manage.

Conservation Values on the O&C Lands

This report hereto has reported projection of ranges for three particular values provided by Oregon's O&C Lands: timber supply, County revenue, and NSO and MAMU habitat. The O&C Lands provide a much broader array of conservation and recreation values. As described above, the modeling/effects analysis is incomplete in respect to most of these values.

The Wild Salmon Center and The Nature Conservancy recently collaborated on a mapping project⁵⁵ that summarizes the range of values across the O&C Landscape. The inclusion of the following list of values is not to assert that forest management and conservation values are exclusive; however, it is important to identify the full range of values provided by the O&C Lands. Some noted highlights of conservation values include:

- Roughly 10% of all salmon-bearing stream miles in Oregon occur on BLM land
- 1.9 million acres of BLM watersheds were identified as having one or more strong salmon populations
- 56 of 63 strong salmon populations spend a portion of their life cycle in watersheds that include BLM lands
- BLM lands support over 75% of the known occurrence for 56 different terrestrial species of conservation concern
- USFWS and NOAA have designated critical habitat for 16 listed species in Western Oregon area; BLM lands support critical habitat for 12 of these species
- In total, over 35 % of BLM lands (840,000 acres) and at least 766 miles of rivers and streams flowing through BLM lands have been designated and mapped as critical habitat for one or more species

⁵³ Personal communication with Norm Johnson in reference to tables from Johnson and Franklin 2013 (below).

⁵⁴ Johnson, N. and J. Franklin. January 2013. Recommendations for Future Implementation of Ecological Forestry Projects on BLM Western Oregon Forests. Final Report. IN REVIEW.

⁵⁵ Atlas of Conservation Values on Bureau of Land Management Holdings in Western Oregon. 2012. Accessed 2/2/2013. <http://oregonexplorer.info/landuse/AtlasofConservationValues>

- BLM lands support 31 of the 34 special habitats mapped in Western Oregon, from sand dunes to subalpine forests, including portions of all 11 habitats highlighted as essential to the conservation of species in the Oregon Conservation Strategy
- Over 2.3 million people live within ten miles of BLM lands in Western Oregon. 75% of BLM lands are within “Drinking Water Protection Areas” identified by the Oregon Department of Environmental Quality.
- Oregonians and visitors take advantage of over 100 developed recreational sites and over 330 miles of trails on BLM lands in Western Oregon, with over 1/5th of the BLM lands identified in BLM’s visual resource inventory as having high scenic qualities or requiring an unaltered natural landscape

Additional Solution Components

Aquatic Conservation Fund on Private lands

Because of the checkerboard nature of the O&C Landscape, and the distinct differences in riparian strategies on private and public land, many conservationists feel that the burden to maintain aquatic standards falls on the O&C lands and the full application of the ACS in the NW Forest Plan. A quick example is shown by the differences in acres dedicated to riparian management between Runs B and C. Using the same harvestable landbase and same set of basic assumptions, Run C, using a 20% estimate for riparian acres, dedicates approximately 270,000 more acres to Riparian Reserves than does Run B, using a 5 % estimate. (Note that application of the ACS would result in 600,000 more riparian acres.)

According to a recent mapping project, 73% of BLM lands have one or more strong populations of salmon⁵⁶ (see Figure A-20 in Appendix). In pursuing policy changes that would apply a less restrictive riparian buffer on public land and thus allow for more timber harvest, non-regulatory voluntary conservation incentives on private forestlands could be promoted on private lands. More specifically:

- A conservation fund financed at \$5 to \$10 million per year through lottery bond proceeds to fund voluntary conservation easements, fee acquisition and riparian restoration activities.
- Cooperative watershed management that supports the highest priority conservation protection and restoration projects in the most important watersheds and targets funds for strengthening private land protection and restoration in priority watersheds, including:
 - Road remediation and protection and restoration opportunities within the checkerboard and throughout the entire watershed, on both public and private lands.
 - Create funds to provide technical assistance to private landowners through existing Watershed Council’s and additional implementation funds for road projects identified and prioritized on private lands.

The Oregon plan for salmon and watersheds could provide a framework for some of these components.

Protection of Special Places

To enhance conservation of the ecological values provided by the O&C Lands, the potential exists to protect special and unique places. A number of contiguous areas possess wilderness characteristics and could be considered for wilderness designations, some of which were identified in the DeFazio/Walden/Schrader draft. The BLM has also identified additional miles of rivers to be eligible as

⁵⁶ Accessed 1/28/2013. See Map 11. <http://oregonexplorer.info/landuse/AtlasofConservationValues>

Wild and Scenic designations. These additional places were removed from the harvest base in modeling runs D-G as described above.

Land Exchanges

The checkerboard O&C ownership creates logistical, financial and environmental challenges that could be averted if a portion of these lands were blocked up. Ten years ago a comprehensive effort was made to try and consolidate lands based on environmental and economic priorities through the Umpqua Land Exchange Project. The Project looked at different ways that the BLM and private landowners could complete land exchanges at scale. While the project was not completed it provides useful information that could serve as a foundation for a new effort. The end goal of such effort should be legislation that facilitated land exchanges that met agreed upon conservation, timber and community objectives. Current processes for land exchanges are too limiting and slow to provide a suitable mechanism for any meaningful program of large-scale land exchanges.

Revenue Portfolio

Given the results of the modeled scenarios above, generating \$110 million for County revenues entirely with Federal timber receipts and respecting environmental laws and their existing interpretation appear to be mutually exclusive. However, given the historical commitment embedded in the O&C Act, economies of Oregon's O&C Counties are inextricably tied to timber harvests on O&C lands, both as a means to generate revenue from timber receipts but also the traded sector employment provided by the timber industry. It is also worth mentioning that non-timber goods and services provided by the O&C lands—such as recreational opportunities, clean drinking water, and habitat for fish and wildlife—also support economic activity in the O&C Counties.

Locally and nationally, conservation interests have called for a portfolio approach to the O&C County funding challenge. Such an approach could include:

- Increased permanent rates of property taxes in the O&C Counties (with the recognition that this may require statutory changes to current Oregon law)
- Additional Forest Products Harvest Tax or Severance Tax with revenues specifically targeted for County governments
- Continuance of some level of Federal appropriations given that the O&C lands provide other values to the American public

For a variety of reasons many of these suggestions will be very difficult to implement. For example, statutory limitations related to property taxes create significant hurdles for Oregon counties to generate the majority of their needed revenue internally. However, there is some opportunity within the bounds placed by Measures 5 and 50. Invariably to keep pace with needs of local citizens, County leaders will need to additional tax revenue. Assuming that a majority of funds for County Revenues are generated through timber receipts or interest earned from a fund created by a small land sale, the State of Oregon could explore filling the gap through a combination of the proposals outlined above.

While the Governor's principles require that a solution be budget neutral, some believe that the Federal government has a responsibility to continue some level of payment to local governments. The O&C Act does create a unique relationship with the 18 O&C Counties and these resources provide the American public with millions of acres of conservation and recreation benefits in addition to timber supply. A continued Federal dedicated payment may be warranted to continue to provide those resources.

Certainty

Perhaps the most challenging O&C issue to resolve is that of “certainty”, meaning the ability to implement the solution that affords assuredness of outputs – terrestrial and aquatic habitat protection and restoration, timber supply, county payments, etc. – in a predictable, manner. This is a controversial issue in part due to the fact that particular forms of certainty achieved through legislation would likely modify existing environmental laws, limit citizens’ access to challenge Federal decisions in court and/or limit application of federal environmental and natural resources conservation laws.

A number of environmental attributes are guaranteed through Wilderness, Wild and Scenic Rivers and other recreational designations. Today, approximately 17% of the O&C lands have been removed from timber production from either Congressional or Administrative withdrawals. An additional 50% of O&C lands are administratively reserved for conservation ends through land allocations in the NW Forest Plan. This latter category, however, are not permanent and could be administratively reversed or partially reversed over time.

Across the BLM area, the timber sale program throughout the 1980s, while not mandated like Wilderness, averaged 1.2 BBF annually before the NWFP was implemented. In achieving these harvest levels, there were large declines in the amount of mature and old growth forest and corresponding habitat for species like the NSO and MAMU needing protection under the Endangered Species Act. As summarized in NW Forest Plan section above, these environmental consequences led in turn to a series of lawsuits in the late 80’s and early 90’s that resulted in the regional timber sale program being enjoined. Within 6 years, certainty for the timber sale program obtained through the annual appropriations bills and administrative process evaporated and certainty for protection of late successional old growth ecosystems was established. So, whereas pre-NW Forest Plan the majority of lands were available for harvest, post NW Forest Plan the majority of lands are protected for conservation purposes.

Listed below are a number of potential ways to provide more certainty for all forest attributes -- timber sales, county payments and conservation attributes. These structures could be used independently or in some combination to meet various environmental and economic policy objectives. Panelists did not agree on utilizing any one or combination of these approaches.

Data Based Certainty – Scientific findings, technical information and perspectives on how to comply with the procedural aspects of NEPA relating to Northern Spotted Owl and other forest related species served as the foundation for the timber sale injunctions and led to the creation of the NW Forest Plan. As originally conceived, the NW Forest Plan attempted to create certainty for timber sales and environmental attributes by creating a scientifically and technically based plan that assessed all available information so that the Plan could withstand appeals and judicial scrutiny. Said differently, the NW Forest Plan did not limit citizens’ ability to challenge Federal timber sales, the Plan attempted to create a scientific basis to withstand those challenges. While this approach worked for the initial years of implementation, new points of concern were successfully litigated through the Courts and the timber sale program declined.

Today, new science and technical information indicates that riparian buffers, for example, might be reduced on a portion of the O&C landscape and still achieve ecological objectives included in the NW

Forest Plan for Federal lands⁵⁷. Successful appeals and challenges to timber sales may be reduced based on this new work, thus, providing an adjusted level of certainty for both timber and riparian outputs. Additional scientific information would be required to support other changes to the NW Forest Plan to avoid the multiple channels that litigants pursue. Even with that science, creating a new scientific and technical basis is not a timely one in that it requires agencies to amend their forest management plans before implementation. In the case of the Western Oregon Plan Revisions, this was a five-year process.

Timber Harvest Area Designations – Similar to Wilderness or Wild and Scenic River designation, a portion of the O&C land base could be set aside and designated for timber production. Such designations would require some agreed upon limitations to how environmental statutes would be applied to those acres. For example, a portion of the land base could be mandated to sell and average, measured over rolling ten year periods, of not less than 35 percent and no more than 50 percent of the net annual forest growth. Conservation encumbrances – riparian buffers, T&E habitat conservation, - could be applied to some degree, but outside those restrictions, trees would be available for harvest without further consideration of federal environmental and/or process requirements.

Land Management Trusts - A land Management Trust could be established whereby a portion of O&C lands are transferred to a Federal or state trust that would retain the lands in public ownership but manage the lands primarily for timber production and to generate revenue for County governments. Governance could take a number of different forms with a key component being that the Trust Board would serve as a fiduciary for the Trust beneficiaries, in this case the O&C Counties. State and Federal governments have established land management Trusts to serve a number of different objectives ranging from serving as tribal stewards to funding educational systems. Again, conservation encumbrances could be applied, but forested stands would be made available for harvest in line with the Trust's fiduciary responsibilities.

Community Nonprofit – A community nonprofit could be established to acquire a portion of O&C lands and manage those lands for multiple purposes including timber production, county payments and environmental conservation. The lands would be privately owned and therefore be subject to state and Federal environmental regulations as applied to other private owners. The BLM could retain a conservation easement that continues to protect agreed upon conservation attributes. Governance would be structured as a business and credit worthy board that included representatives from the timber industry, business and finance sectors, environmental community and natural resource management professions. In addition, this sale would generate a sum of cash that could be placed in a financial trust on behalf of the O&C Counties; thus, generating revenues that are independent from harvest receipts.

Private Land Sale – A portion of O&C lands could be auctioned off to private land buyers that would provide greater certainty in that they would be managed as private lands and would not be subject to federal land management standards. This option would also generate cash that could be placed in a financial trust on behalf of the O&C Counties. Given that there would be few encumbrances, the amount could be substantial for a relatively small amount of acres dedicated to this purpose.

⁵⁷ Note Reeves et al. 2013 include that “a single-minded focus on riparian buffers on federal lands will not be sufficient to recover fish populations.”

Streamlining Environmental Processes – A mechanism that includes a number of ways to provide greater certainty relates to legislatively streamlining existing environmental laws. There is much interest more broadly than the O&C lands in streamlining environmental process as it relates to National Forest Management. This broader dialogue provides some examples that have been implemented or drafted in other legislative attempts to provide additional certainty.

- **Pre-decisional Administrative Review Process (36 CFR 218)** – *The Healthy Forest Restoration Act* established a pre-decisional administrative objection process for hazardous fuel reduction projects initiated under its authority. HFRA applies to both the BLM and the Forest Service. The pre-decisional process is in contrast to the post-decisional appeal process established in the 1992 Forest Service Decision making and Appeals Reform Act. The shorter review process requires legal notice of the proposed action, a 30 – 45 day comment period dependent on whether the decision is a draft EA or draft EIS, and a 45 day appeal period after a decision on the action has been published. Only parties who submitted substantive comment during the commenting period may file an appeal. In August 2012, the Forest Service issued a proposed rule to expand the pre-decisional appeals process for all projects, following a Congressional mandate to do so included in the Consolidated Appropriations Act of 2012. The final rule is expected in March 2013. The Forest Service Rule will not apply to those forest lands managed by the BLM. Decisions on the O&C lands will continue to be reviewed under the process laid out in 43 CFR 5003.3. However, extending pre-decisional authority to the BLM could reduce the timeline for environmental review of proposed actions.
- **Reduced NEPA Alternative Requirements** - HFRA also reduces the number of NEPA alternatives that the Forest Service must analyze as part of its environmental review process. For HFRA projects, the Forest Service is not required to study, develop, or describe more than the proposed agency action and one action alternative in the NEPA document. If an authorized is located no further than 1 1/2 miles from the boundary of an at-risk community, the Forest Service is not required to study, develop, or describe any alternative to the proposed agency action. There were several draft bills in 112th Congress to expand these provisions beyond the current HFRA authority (see HR5744, HR5960, HR6089).
- **Collaborative Sustained Yield and Restoration Unit**- The most significant example of a collaborative approach to national forest management is the Four Forests Restoration Initiative (4FRI). 4FRI is a collaborative effort to restore forest ecosystems on portions of four national forests - Coconino, Kaibab, Apache-Sitgreaves, and Tonto - along the Mogollon Rim in northern Arizona. This is the nation's largest collaborative restoration project. The 4FRI's goals are to plan and implement restoration treatments across 2.4 million acres of ponderosa pine forest, and treat 50,000 acres per year during a 20-year period. The 4FRI approach gives private contractors a guaranteed 10-year supply of timber as an inducement to invest millions in building mills and power plants to utilize the small-diameter trees. While there has been concern over the ability of the contractor to actually complete the restoration and build viable business opportunities, this project is significant in its size. It uses a comprehensive approach to environmental analysis and strategy. Assuming a similar collaborative agreement could be developed, legislation could be passed to authorize more certainty.
- **Agency Direction and Mandates** - There are several draft examples to provide specific agency direction through legislation, removing 'agency discretion' in terms of the number of acres to be treated annually. Both Senator Wyden (D-OR) and Senator Tester (D-MT) use this mechanism in their draft bills.

Senator Wyden's Oregon Eastside Forests Restoration, Old Growth Protection, and Jobs Act of 2011 establishes authority for 15-year restoration projects on national forests in eastern Oregon. It sets acres treated targets of 39,000 acres for fiscal year one; 58,000 acres for fiscal year two; and 80,000 acres per year for each subsequent years until at least 1 ecological restoration project has been initiated on each National Forest, under the authority of this bill. In addition to acreage targets, it prioritizes collaboration. The bill also creates an Eastside Scientific and Technical Advisory Panel to advise the Secretary, collaborative groups, and the public on development of projects.

Senator Testers Forest, Jobs and Recreation Act of 2011 mandates 70,000 acres on Beaverhead-Deerlodge National Forest to be mechanically treated in 10 years and 30,000 acres on Kootenai National Forest to be mechanically treated in 10 years. However, "mechanical treatment" not defined. Additionally, it prioritizes proposals benefitting local communities through employment or training opportunities, in-state processing, and that which promotes value-added industry. The bill also calls into action the streamlined administrative and judicial review provisions included in HFRA.

- **Appeal Deposits** – Concerns have been raised regarding the use of appeals to slow and/or halt large numbers of individual timber sales. While managing appeals does not affect the total amount of timber that can be sold, it does affect the ability of both the agencies and timber purchasers to plan for the future. To the extent that there exist what some characterize as "frivolous" challenges, imposing participation requirements and a reasonable deposit to file an appeal might allow environmentally sound sales to move forward on those areas that have been established for timber harvest.

Next Steps

As mentioned above, modeling was conducted as an "initial feasibility analysis". The purpose of modeling was to illustrate relative relationships of different management approaches. Given the time frames, it only was able to provide general order of magnitude comparisons and should be interpreted here as showing general trends across the landscape for the different management scenarios included.

More rigorous analysis could build off of these results to explore an incremental approach of degrees of effectiveness for conservation and economic outputs. More specifically, next steps would include:

- Developing information for the needed scientific, regulatory (USFWS and National Marine Fisheries Service) and legal analyses for environmental effects
- More robust ecological effects analysis, including:
 - Population modeling for NSO and MAMU given habitat condition changes, including an evaluation of the biological significance of differences produced by the runs
 - Analysis of proposed management changes to the host of terrestrial and riparian-associated species of conservation concern, beyond NSO and MAMU
 - Aquatics impacts to habitat and stream water conditions for listed salmonids and native fish species
 - Water quality effects, particularly relating to domestic water sources and intakes
 - Watershed-level summaries of riparian acres and effectiveness resulting from amendment of only Federal riparian buffer standards

- More refinement of silvicultural prescriptions used in the harvest scheduling model that:
 - Provide more specificity to what kind and level of ecological forestry regeneration harvests can be applied in Northern Spotted Owl Critical Habitat as identified in the Final NSO Critical Habitat Designation
 - Incorporate stand-level yield tables that are specific to the application of Ecological Forestry Principles in both moist and dry forests
- Explore anew the creation of an adaptive management framework whereby a land management plan produces certain timber, aquatic, terrestrial and other outputs for a 10-20 year period and that structurally includes research, monitoring and program protocols to create the information that can provide for adaptive management during the subsequent period. This framework should include the identification of specific landscapes to explore new management approaches such as were initially envisioned in the NW Forest Plan's Adaptive Management Areas.

Appendix

Table A-1. Projected Acres of NSO Suitable Habitat on Federal lands in Oregon.

Table A-2. Projected Acres of MAMU Suitable Habitat on Federal lands in Oregon.

Table A-3. Acres of NSO Designated Critical Habitat with a Scheduled Harvest During First 50 Years.

Table A-4. Percent of NSO Designated Critical Habitat Unit with a Scheduled Harvest During First 50 Years.

Figure A-1. Acres of Regeneration Harvest in Designated NSO Critical Habitat by Critical Habitat Unit.

Figure A-2. Acres of Thinning in Designated NSO Critical Habitat by Critical Habitat Unit.

Figure A-3. Acres of NSO Critical Habitat and NSO Suitable Habitat at Year 0 Harvested During First 50 years.

Figure A-4. Acres of MAMU Suitable Habitat at Year 0 Harvested During First 50 years.

Table A-5. Acres of NSO Suitable Habitat (at Year 0) with a Scheduled Harvest During First 50 Years.

Table A-6. Acres of MAMU Suitable Habitat (at Year 0) with a Scheduled Harvest During First 50 Years.

Figure A-5. Acres of Regeneration Harvest in NSO Suitable Habitat at Year 0 by Physiographic Region.

Figure A-6 Acres of Thinning in NSO Suitable Habitat at Year 0 by Physiographic Region.

Figure A-7. Acres of Regeneration Harvest in MAMU Suitable Habitat at Year 0 by Physiographic Region.

Figure A-8. Acres of Thinning in MAMU Suitable Habitat at Year 0 by Physiographic Region.

Table A-7. Projected Average Timber Volume over Different Timeframes by Current BLM District.

Figure A-9. Model Results for Run A: Thin Only.

Figure A-10. Model Results for Run B: Management Trust, 5% Riparian.

Figure A-11. Model Results for Run C: Management Trust, 20% Riparian.

Figure A-12. Model Results for Run D: Critical Habitat and Ecological Forestry.

Figure A-13. Model Results for Run E: Critical Habitat, NW Forest Plan Silviculture and Ecological Forestry.

Figure A-14a. Model Results for Run F: Land Sale, Critical Habitat and Ecological Forestry; Sale Component.

Figure A-14b. Model Results for Run F: Land Sale, Critical Habitat and Ecological Forestry; Public Land Component.

Figure A-14c. Model Results for Run F: Land Sale, Critical Habitat and Ecological Forestry; Combined Timber and Revenue.

Figure A-15a. Model Results for Run G: Community Forest, Critical Habitat and Ecological Forestry; Sale Component.

Figure A-15b. Model Results for Run G: Community Forest, Critical Habitat and Ecological Forestry; Public Land Component.

Figure A-15c. Model Results for Run G: Community Forest, Critical Habitat and Ecological Forestry; Combined Timber and Revenue.

Figure A -16. Acres by for Modeled Runs by Silvicultural Regime, including total acres in the Sustained Timber Base.

Figure A-17. Draft O&C Trust Map of South River Resource Area.

Figure A-18. NSO Suitable Habitat Projection at Year 50. Blue is Suitable, Orange is Not Suitable.

Figure A-19. MAMU Suitable Habitat Projection at Year 50. Blue is Suitable, Orange is Not Suitable.

Figure A-20. Map of Selected Watershed Values Across Western Oregon.

Table A-1. Projected Acres of NSO Suitable Habitat on Federal lands in Oregon. Suitable habitat on State and private lands are not included in the totals.

	STATEWIDE RESULTS			
NSO - Suitable Habitat	Acres of Suitable Habitat			
Run A	Year 0	Year 20	Year 50	% Change 0-50
BLM Lands	847,929	1,078,631	1,205,371	42%
Forest Service O&C	247,339	164,539	192,210	-22%
<i>O&C Landbase</i>	<i>1,095,268</i>	<i>1,243,170</i>	<i>1,397,581</i>	<i>28%</i>
All other Federal lands	2,543,448	2,212,362	2,236,816	-12%
TOTAL	3,638,716	3,455,533	3,634,397	0%
Run C	Year 0	Year 20	Year 50	% Change 0-50
Trust Lands	204,589	212,410	210,572	3%
Section 231 Lands	890,679	997,357	1,034,325	16%
<i>O&C Landbase</i>	<i>1,095,268</i>	<i>1,209,767</i>	<i>1,244,897</i>	<i>14%</i>
All other Federal lands	2,543,448	2,212,362	2,236,816	-12%
TOTAL	3,638,716	3,422,129	3,481,713	-4%
Run D	Year 0	Year 20	Year 50	% Change 0-50
BLM Lands	847,929	1,078,564	1,181,308	39%
Forest Service O&C	247,339	164,539	192,210	-22%
<i>O&C Landbase</i>	<i>1,095,268</i>	<i>1,243,104</i>	<i>1,373,518</i>	<i>25%</i>
All other Federal lands	2,543,448	2,212,362	2,236,816	-12%
TOTAL	3,638,716	3,455,466	3,610,334	-1%
Run F	Year 0	Year 20	Year 50	% Change 0-50
200K Lands	22,576	13,376	7,069	-69%
BLM Lands	825,353	1,048,052	1,180,702	43%
Forest Service O&C	247,339	164,539	192,210	-22%
<i>O&C Landbase</i>	<i>1,095,268</i>	<i>1,225,968</i>	<i>1,379,981</i>	<i>26%</i>
All other Federal lands	2,543,448	2,212,362	2,236,816	-12%
TOTAL	3,638,716	3,438,330	3,616,797	-1%

Table A-2. Projected Acres of MAMU Suitable Habitat on Federal lands in Oregon. Suitable habitat on State and private lands are not included in the totals.

	STATEWIDE RESULTS			
MURRELETS - Suitable Habitat	Acres of Suitable Habitat			
Run A	Year 0	Year 20	Year 50	% Change 0-50
BLM Lands	357,780	378,616	383,086	7%
Forest Service O&C	23,725	24,014	24,078	1%
<i>O&C Landbase</i>	<i>381,505</i>	<i>402,630</i>	<i>407,164</i>	<i>7%</i>
All other Federal lands	326,678	314,801	369,738	13%
TOTAL	708,183	717,431	776,902	10%
Run C	Year 0	Year 20	Year 50	% Change 0-50
Trust Lands	78,705	29,537	15,043	-81%
Section 231 Lands	302,800	305,140	303,694	0%
<i>O&C Landbase</i>	<i>381,505</i>	<i>334,677</i>	<i>318,737</i>	<i>-16%</i>
All other Federal lands	326,678	314,801	369,738	13%
TOTAL	708,183	649,478	688,475	-3%
Run D	Year 0	Year 20	Year 50	% Change 0-50
BLM Lands	357,780	378,571	378,093	6%
Forest Service O&C	23,725	24,014	24,078	1%
<i>O&C Landbase</i>	<i>381,505</i>	<i>402,585</i>	<i>402,171</i>	<i>5%</i>
All other Federal lands	326,678	314,801	369,738	13%
TOTAL	708,183	717,386	771,909	9%
Run F	Year 0	Year 20	Year 50	% Change 0-50
200K Lands	5,775	1,374	538	-91%
BLM Lands	352,005	375,182	375,623	7%
Forest Service O&C	23,725	24,014	24,078	1%
<i>O&C Landbase</i>	<i>381,505</i>	<i>400,571</i>	<i>400,239</i>	<i>5%</i>
All other Federal lands	326,678	314,801	369,738	13%
TOTAL	708,183	713,997	769,438	9%

Table A-3. Acres of NSO Designated Critical Habitat with a Scheduled Harvest During First 50 Years.

Critical Habitat Unit	Run C: Trust, 20% Riparian			Run D: CH & Ecological			Run F: Sale & CH		
	Regen	Thin	Total	Regen	Thin	Total	Regen	Thin	Total
East Cascades South	8,109	778	8,887	0	2,070	2,070	0	1,733	1,733
Klamath East	80,227	34,554	114,781	0	50,014	50,014	0	46,823	46,823
Klamath West	57,905	27,854	85,759	0	41,385	41,385	0	39,810	39,810
North Coast Ranges	35,500	40,189	75,689	0	45,878	45,878	0	45,988	45,988
Oregon Coast Ranges	142,195	213,012	355,207	0	265,551	265,551	0	263,696	263,696
West Cascades South	32,157	51,753	83,910	0	62,632	62,632	0	62,664	62,664
Subtotal	356,093	368,140	724,233	0	467,530	467,530	0	460,714	460,714
BLM-only CH	27%	28%	55%	0%	35%	35%	0%	35%	35%
Oregon CH (all owners)	8%	8%	16%	0%	10%	10%	0%	10%	10%

Table A-4. Percent of NSO Designated Critical Habitat Unit with a Scheduled Harvest During First 50 Years.

Critical Habitat Unit	Acres ¹	Run C: Trust, 20% Riparian			Run D: CH & Ecological			Run F: Sale & CH		
		Regen	Thin	Harvest	Regen	Thin	Harvest	Regen	Thin	Harvest
East Cascades South	368,380	2%	0%	2%	0%	1%	1%	0%	0%	0%
Klamath East	1,052,731	8%	3%	11%	0%	5%	5%	0%	4%	4%
Klamath West	1,197,389	5%	2%	7%	0%	3%	3%	0%	3%	3%
North Coast Ranges	824,500	4%	5%	9%	0%	6%	6%	0%	6%	6%
Oregon Coast Ranges	859,864	17%	25%	41%	0%	31%	31%	0%	31%	31%
West Cascades South	1,355,198	2%	4%	6%	0%	5%	5%	0%	5%	5%
Total	5,658,062	6%	7%	13%	0%	8%	8%	0%	8%	8%

¹ Acres are total for each unit and includes both Federal and State ownerships in OR, WA, and CA if applicable. There is no private land included in Designated Critical Habitat.

Figure A-1. Acres of Regeneration Harvest in Designated NSO Critical Habitat by Critical Habitat Unit. Note that no regeneration harvests were scheduled for Runs D and F. See Table A-3.

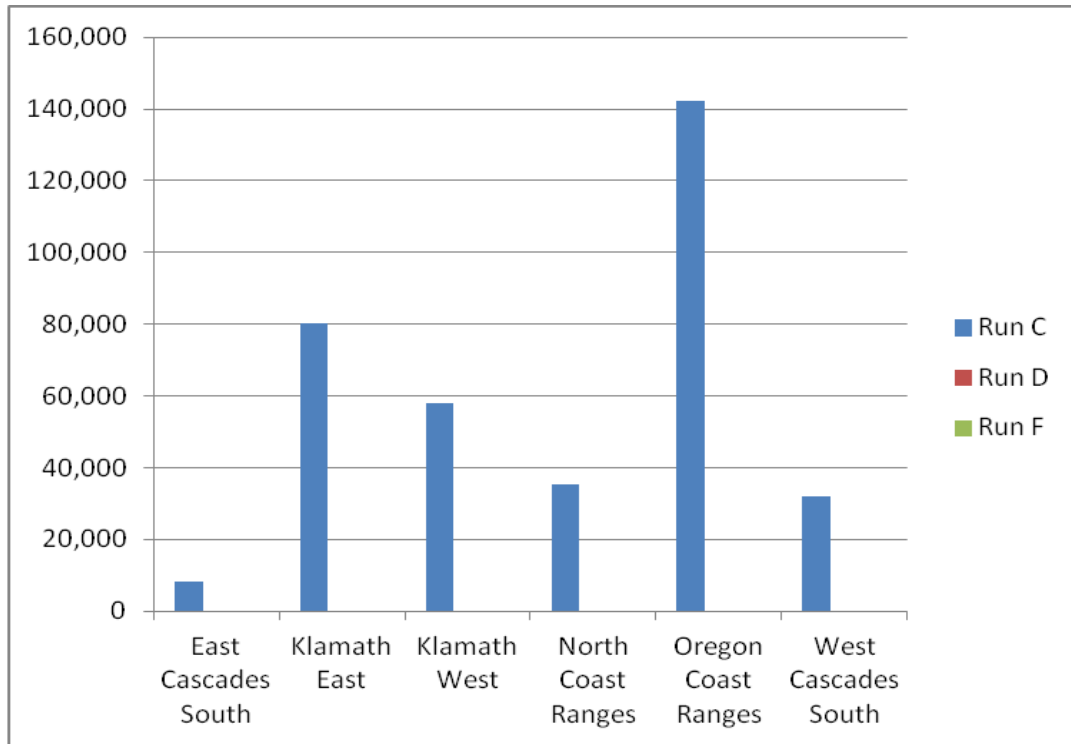


Figure A-2. Acres of Thinning in Designated NSO Critical Habitat by Critical Habitat Unit. See Table A-3.

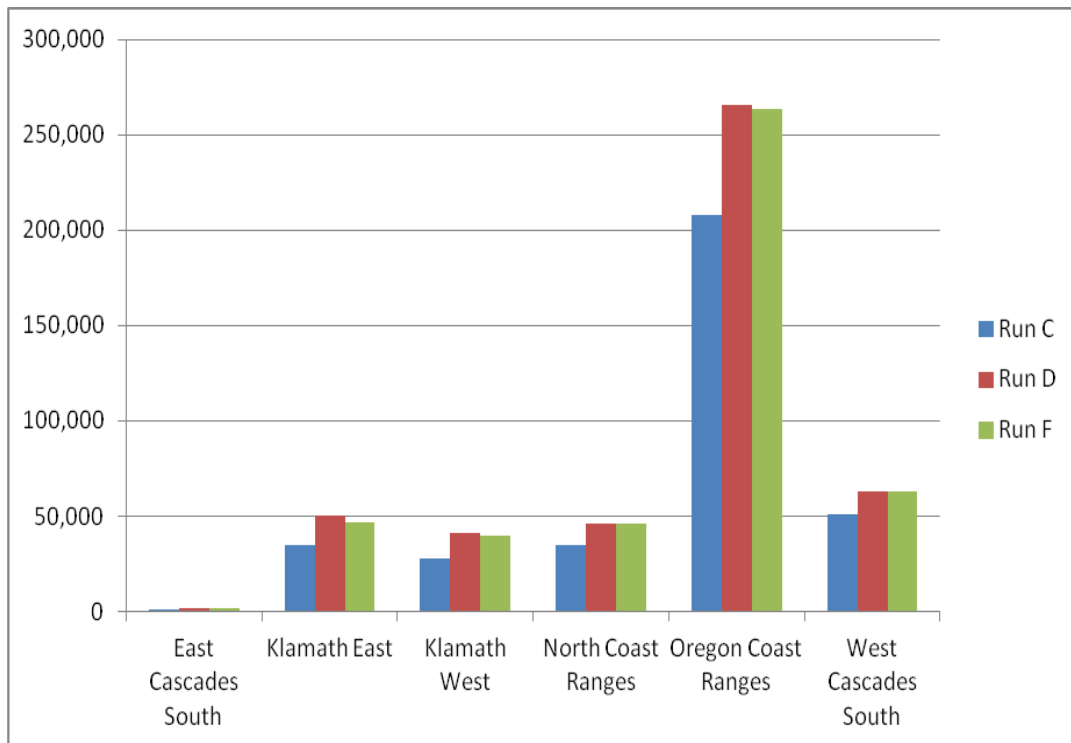


Figure A-3. Acres of NSO Critical Habitat and NSO Suitable Habitat at Year 0 Harvested During First 50 years. See Tables A-3 and A-5.

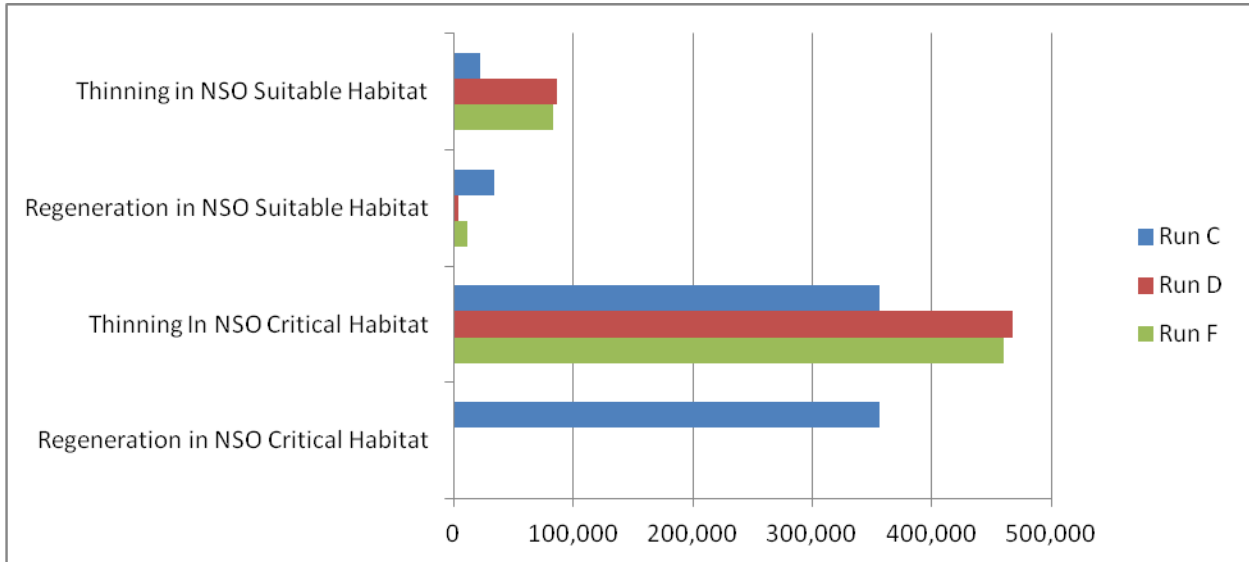


Figure A-4. Acres of MAMU Suitable Habitat at Year 0 Harvested During First 50 years. See Table A-6.

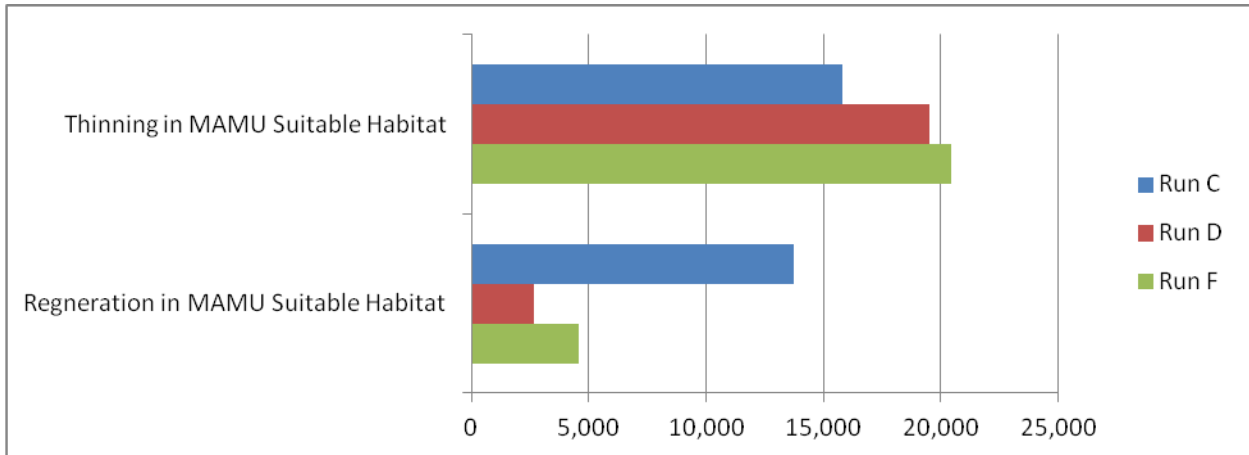


Table A-5. Acres of NSO Suitable Habitat (at Year 0) with a Scheduled Harvest During First 50 Years.

Physiographic Province	Run C: Trust, 20% Riparian			Run D: CH & Ecological			Run F: Sale & CH		
	Regen	Thin	Total	Regen	Thin	Total	Regen	Thin	Total
Cascades East	277	0	277	0	2,334	2,334	1,314	0	1,314
Cascades West	42,569	5,140	47,709	17,743	3,976	21,719	16,188	12,944	29,132
Coast Range	66,784	15,796	82,580	15,814	3,084	18,898	14,785	10,042	24,827
Klamath Mountains	84,735	689	85,424	6,582	61,967	68,549	1,175	64,974	66,149
Willamette Valley East	1,538	282	1,820	938	68	1,006	0	0	0
Willamette Valley West	483	50	533	174	0	174	0	0	0
Total	196,386	21,957	218,343	41,251	71,429	112,680	33,462	87,960	121,422
% of O&C Suitable at Yr 0	18%	2%	20%	4%	7%	10%	3%	8%	11%
% of Suitable (all Fed) at Yr 0	5%	1%	6%	1%	2%	3%	1%	2%	3%

Note: Total NSO suitable habitat at Year 0 totaled 1,095,268 acres on O&C Landscape and 3,638,716 acres on all Federal land.

Table A-6. Acres of MAMU Suitable Habitat (at Year 0) with a Scheduled Harvest During First 50 Years.

Physiographic Province	Run C: Trust, 20% Riparian			Run D: CH & Ecological			Run F: Sale & CH		
	Regen	Thin	Total	Regen	Thin	Total	Regen	Thin	Total
Coast Range	65,867	15,637	81,504	11,452	6,355	17,807	8,921	12,940	21,861
Klamath Mountains	10,274	151	10,425	1,269	13,199	14,468	949	13,230	14,179
Subtotal	76,141	15,788	91,929	12,721	19,554	32,275	9,870	26,170	36,040
% of O&C Suitable at Yr 0	20%	4%	24%	3%	5%	8%	3%	7%	9%
% of Suitable (all Fed) at Yr 0	11%	2%	13%	2%	3%	5%	1%	4%	5%

Note: Total MAMU suitable habitat at Year 0 totaled 381,505 acres on O&C Landscape and 708,183 acres on all Federal land.

Figure A-5. Acres of Regeneration Harvest in NSO Suitable Habitat at Year 0 by Physiographic Region. See Table A-5.

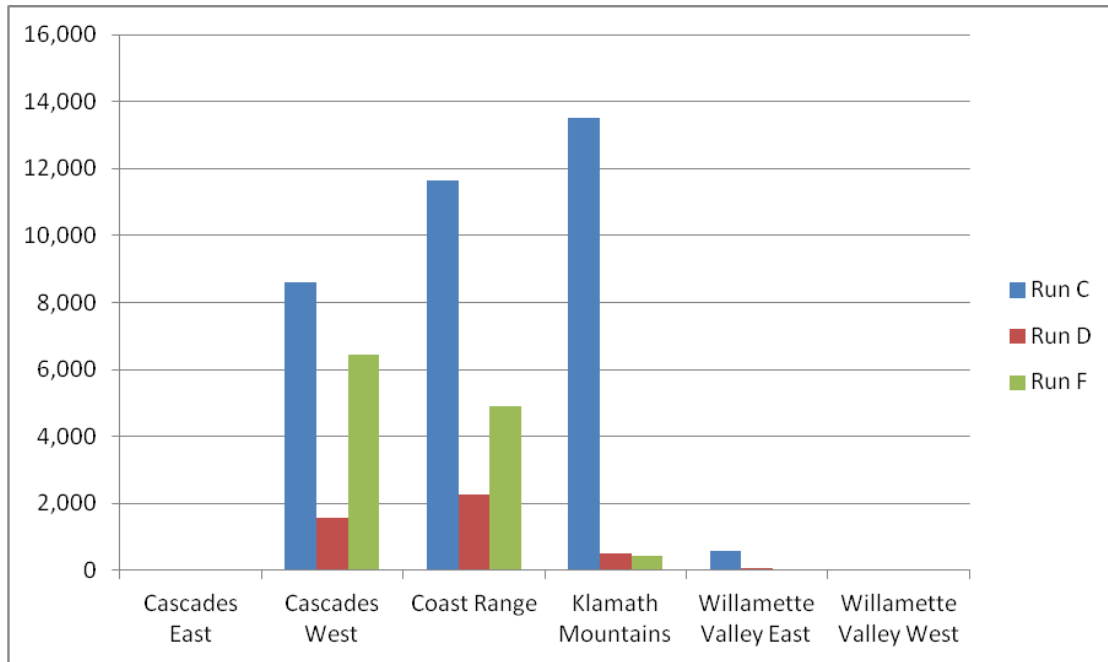


Figure A-6 Acres of Thinning in NSO Suitable Habitat at Year 0 by Physiographic Region. See Table A-5.

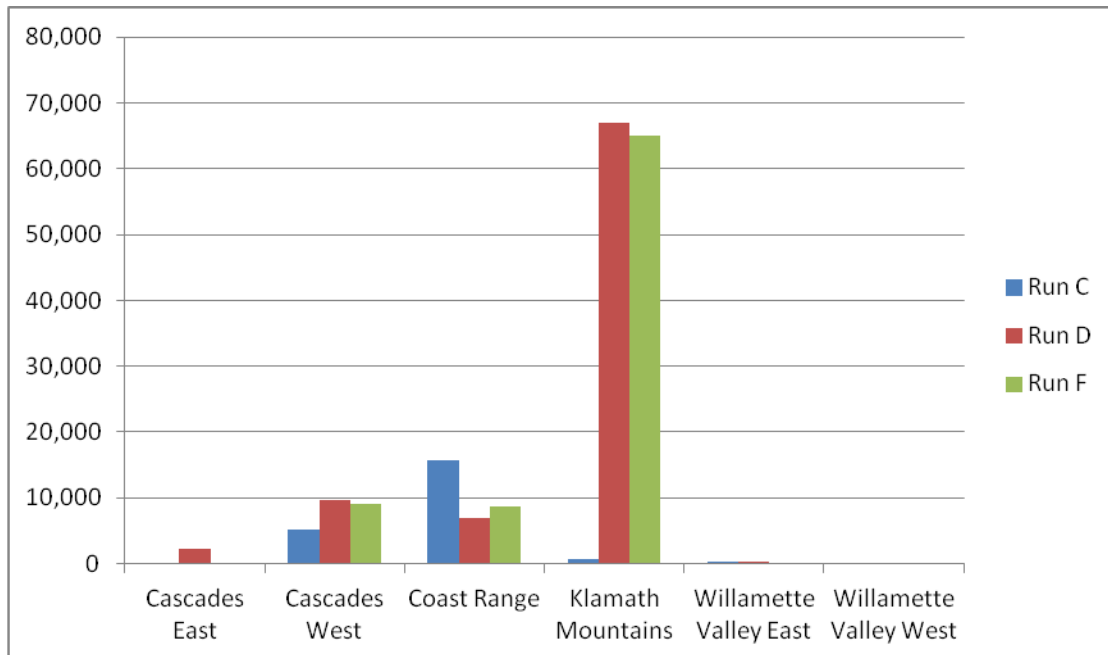


Figure A-7. Acres of Regeneration Harvest in MAMU Suitable Habitat at Year 0 by Physiographic Region. See Table A-6.

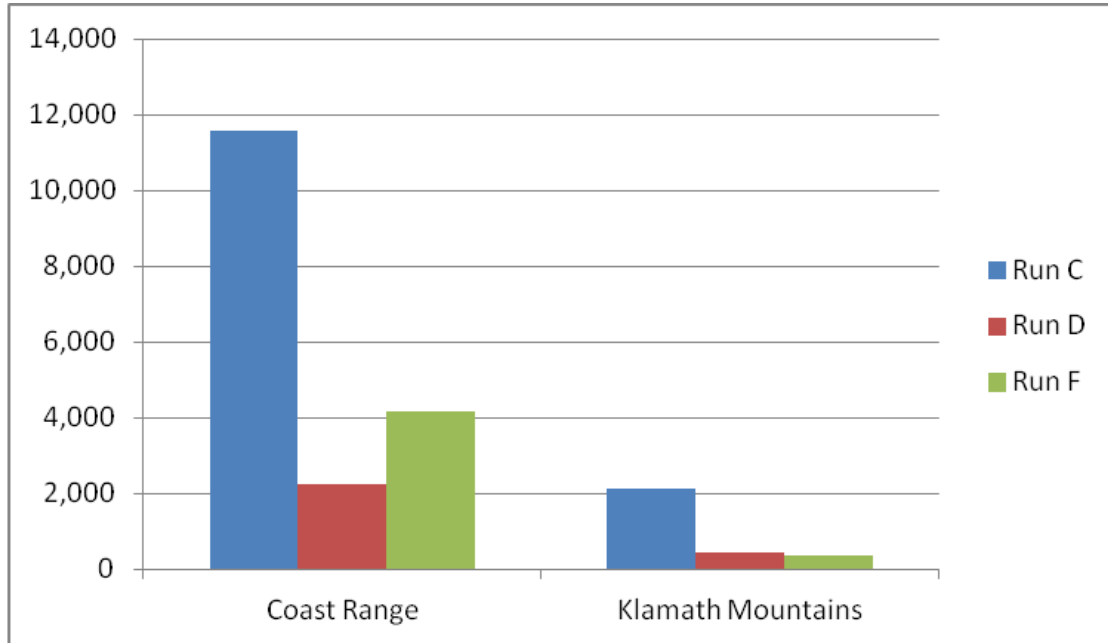


Figure A-8. Acres of Thinning in MAMU Suitable Habitat at Year 0 by Physiographic Region. See Table A-6.

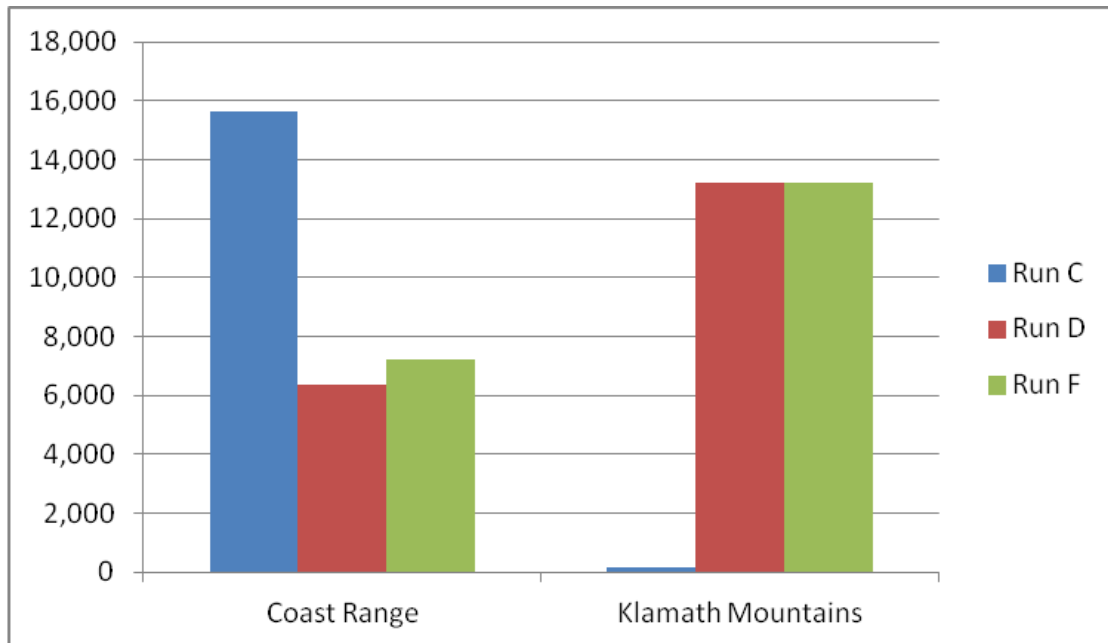


Table A-7. Projected Average Timber Volume over Different Timeframes by Current BLM District.

Run	Timeframe	Coos Bay	Eugene	Lakeview	Medford	Roseburg	Salem
A	Year 0-25	37.6	58.2	0.2	16.2	29.3	44.3
	Year 26-50	1.3	0.9	0.0	0.0	0.3	1.8
	Year 51-200	0.1	0.1	0.0	0.0	0.0	0.2
B	Year 0-25	91.5	179.1	9.9	120.3	73.4	226.0
	Year 26-50	115.5	204.3	11.1	105.7	73.9	189.2
	Year 51-200	114.4	173.2	8.5	115.0	114.3	176.5
C	Year 0-25	74.1	143.7	9.1	107.9	61.1	170.5
	Year 26-50	90.2	167.0	10.2	93.0	61.1	144.4
	Year 51-200	90.9	141.6	8.4	101.0	93.1	133.0
D	Year 0-25	40.0	57.2	4.9	28.0	21.3	55.6
	Year 26-50	42.1	53.0	3.4	23.9	24.9	57.7
	Year 51-200	44.3	58.3	2.8	14.8	17.5	65.3
E	Year 0-25	45.2	65.6	1.5	37.2	26.6	84.8
	Year 26-50	48.4	69.0	1.8	32.2	29.2	80.3
	Year 51-200	51.8	60.7	5.2	39.8	30.8	74.0
F	Year 0-25	53.9	153.9	14.3	50.3	27.2	142.4
	Year 26-50	41.4	55.4	1.8	24.2	24.1	47.6
	Year 51-200	50.1	79.4	1.6	15.3	19.2	84.0
G	Year 0-25	44.8	59.9	1.9	36.3	23.4	76.2
	Year 26-50	53.2	58.3	2.1	29.4	23.6	72.2
	Year 51-200	52.4	64.5	1.6	20.4	19.1	73.7

Figure A-9. Model Results for Run A: Thin Only.

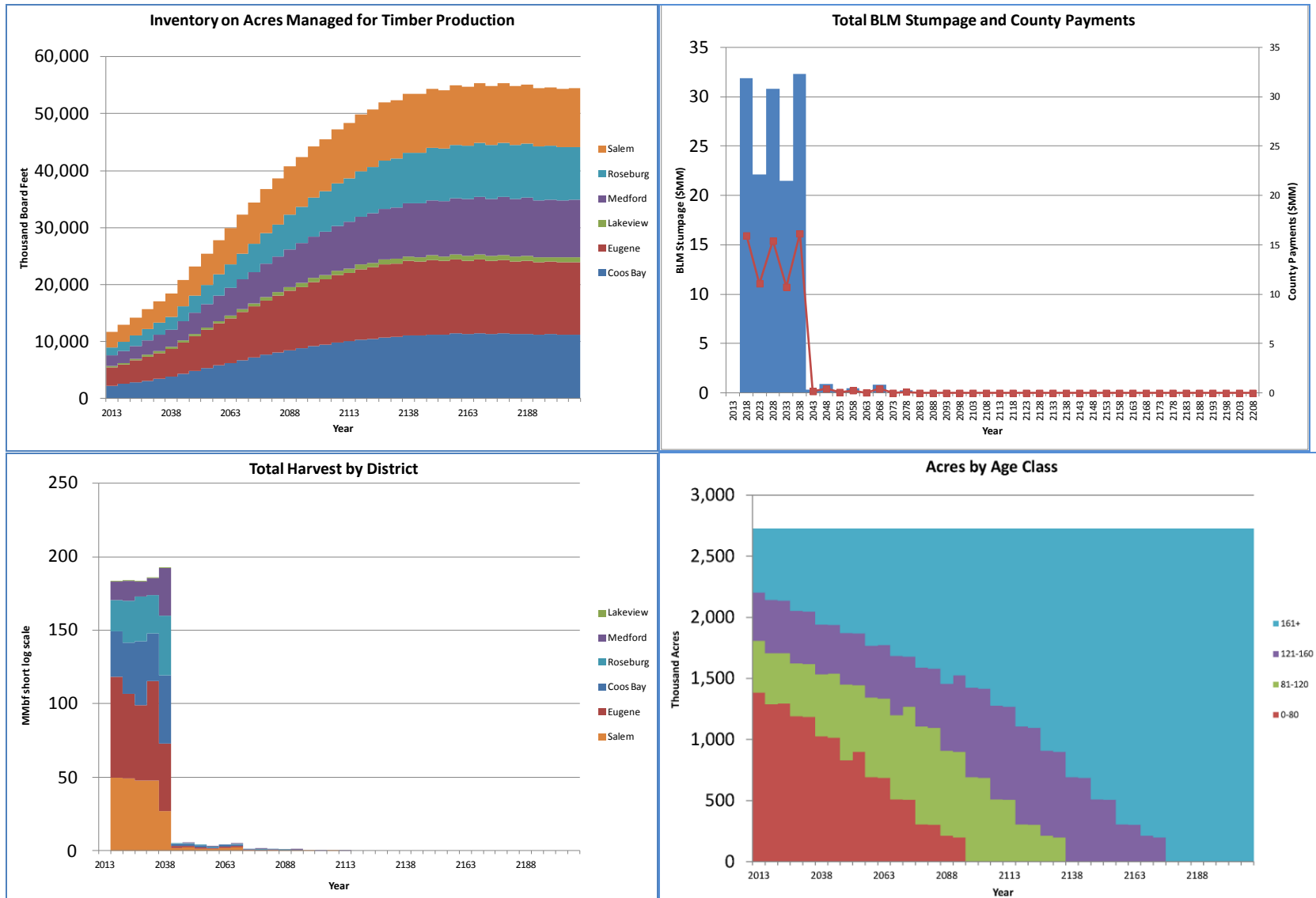


Figure A-10. Model Results for Run B: Management Trust, 5% Riparian.

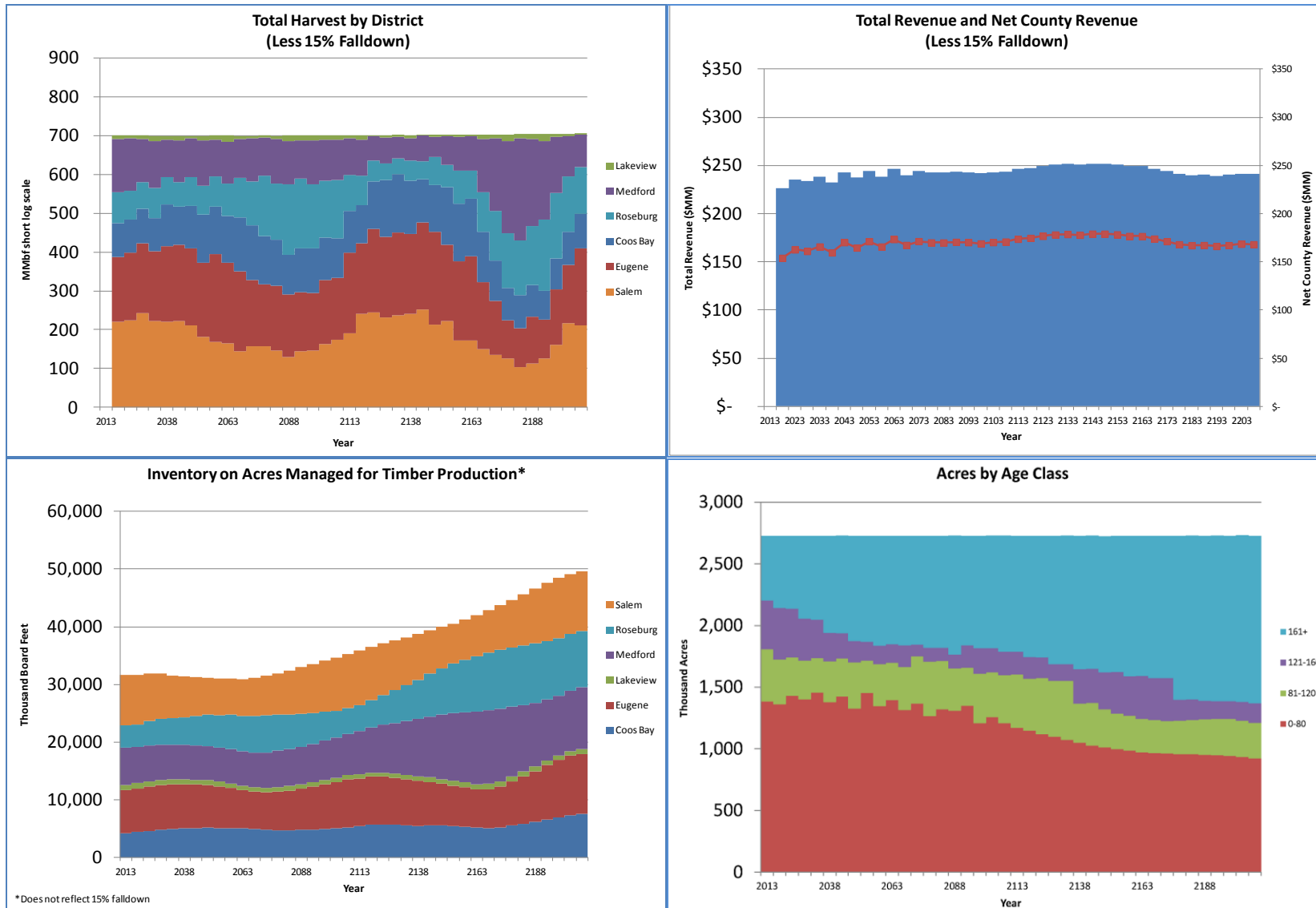


Figure A-11. Model Results for Run C: Management Trust, 20% Riparian.

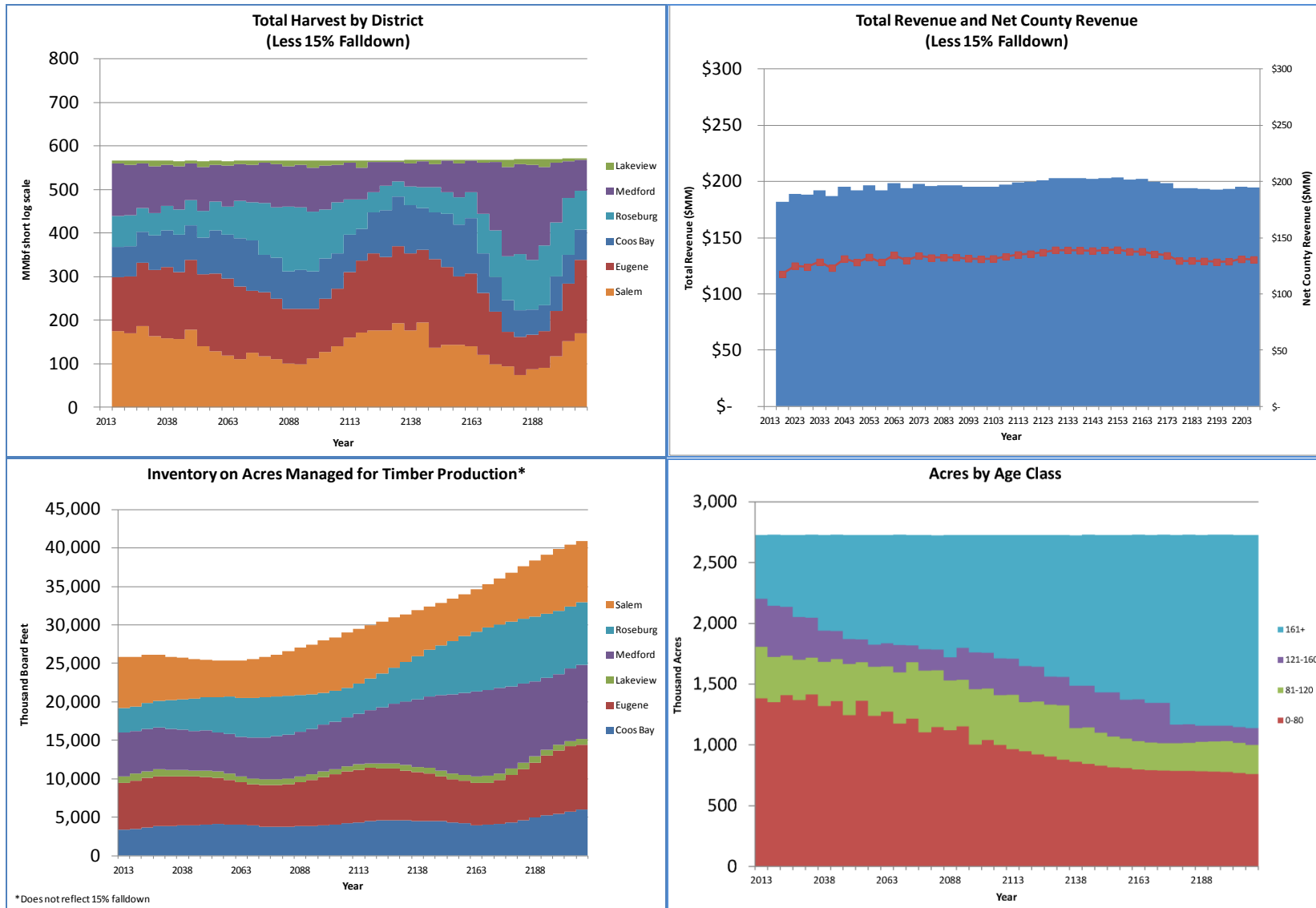


Figure A-12. Model Results for Run D: Critical Habitat and Ecological Forestry.

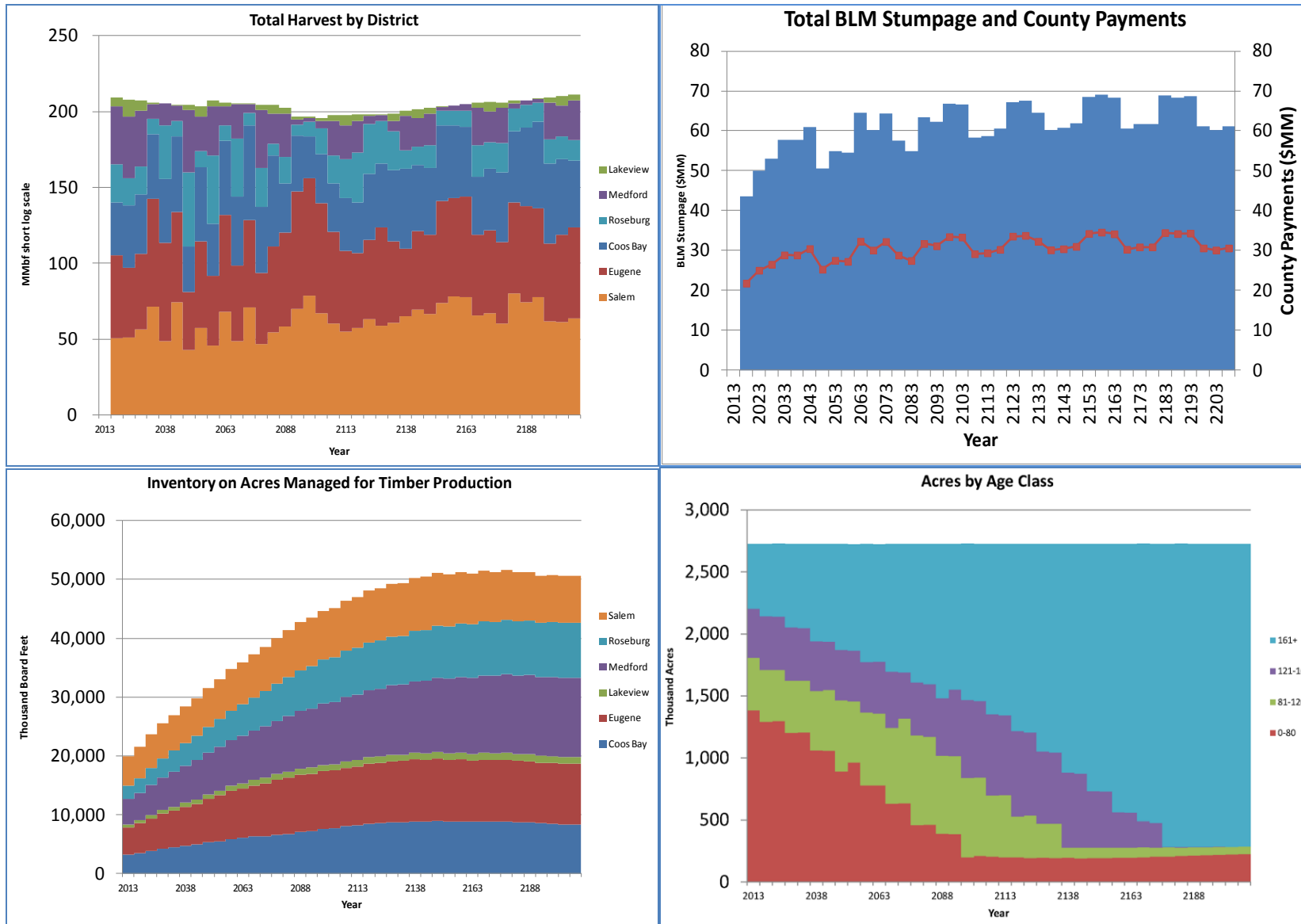


Figure A-13. Model Results for Run E: Critical Habitat, NW Forest Plan Silviculture and Ecological Forestry.

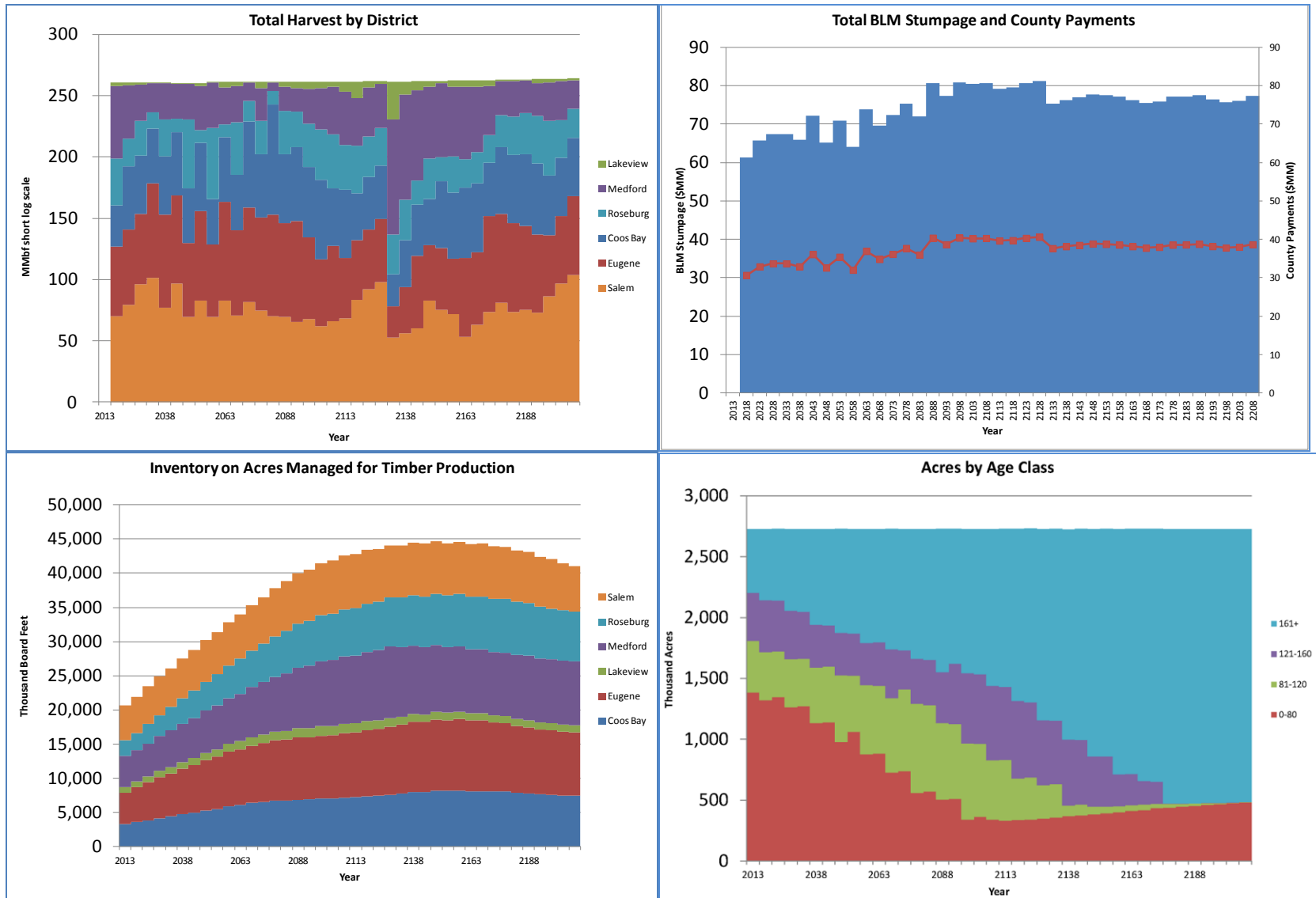


Figure A-14a. Model Results for Run F: Land Sale, Critical Habitat and Ecological Forestry; Sale Component.

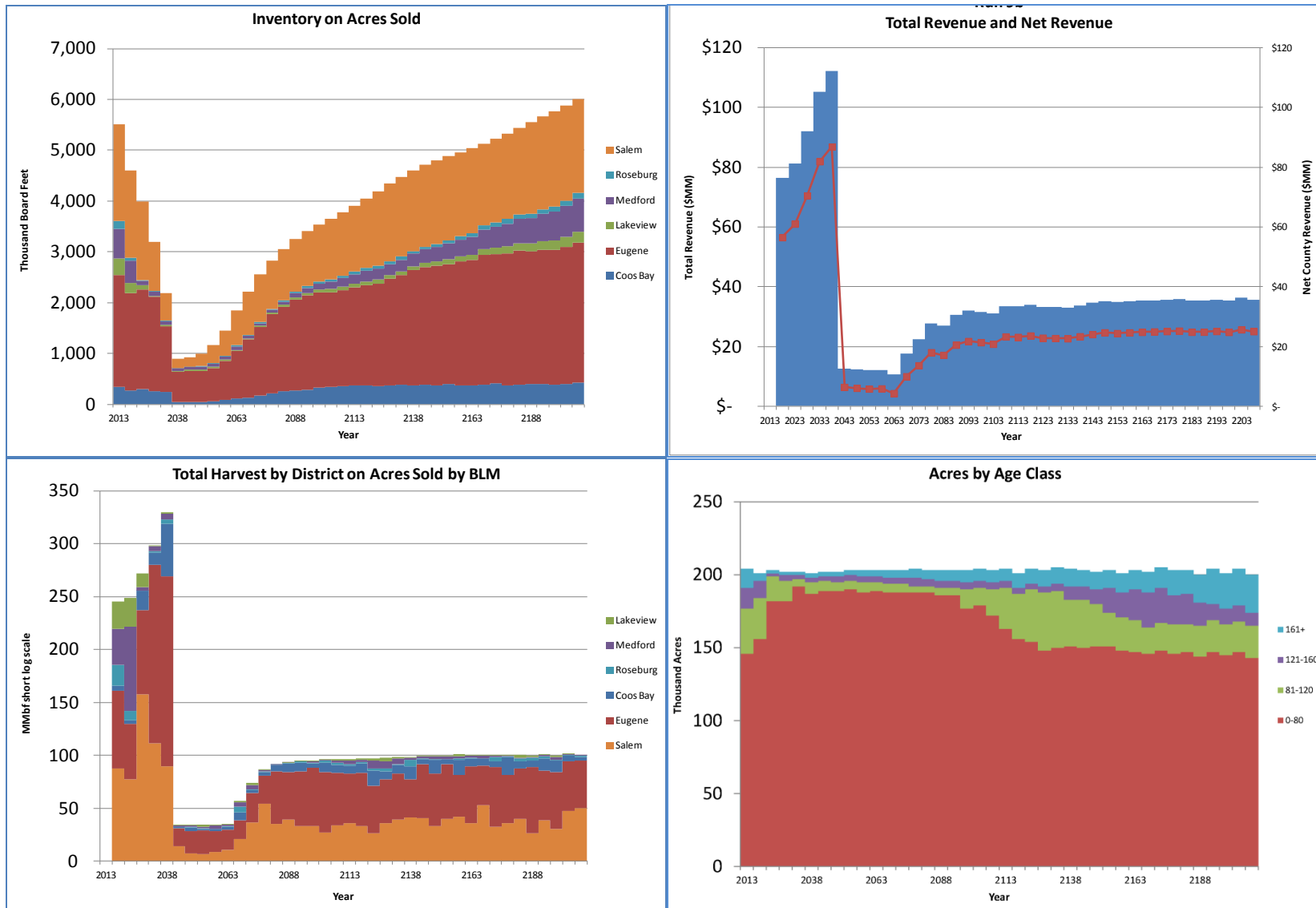


Figure A-14b. Model Results for Run F: Land Sale, Critical Habitat and Ecological Forestry; Public Land Component.

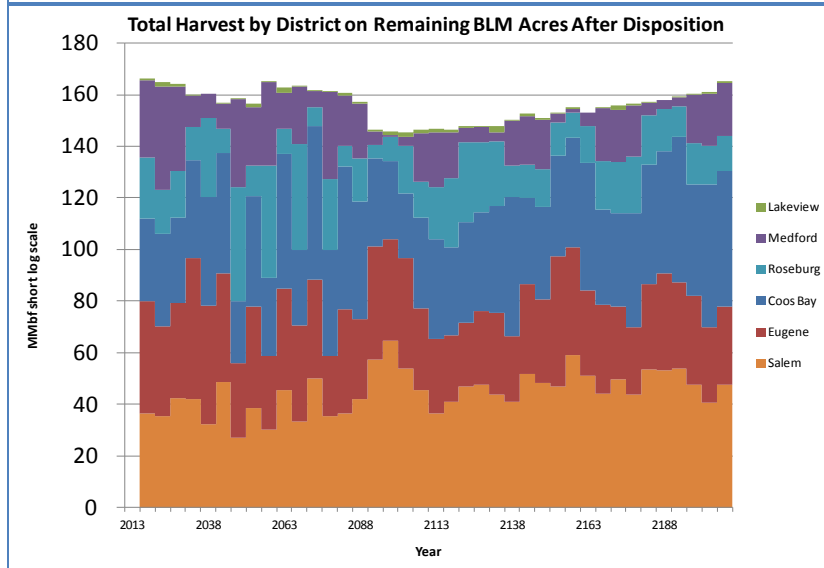
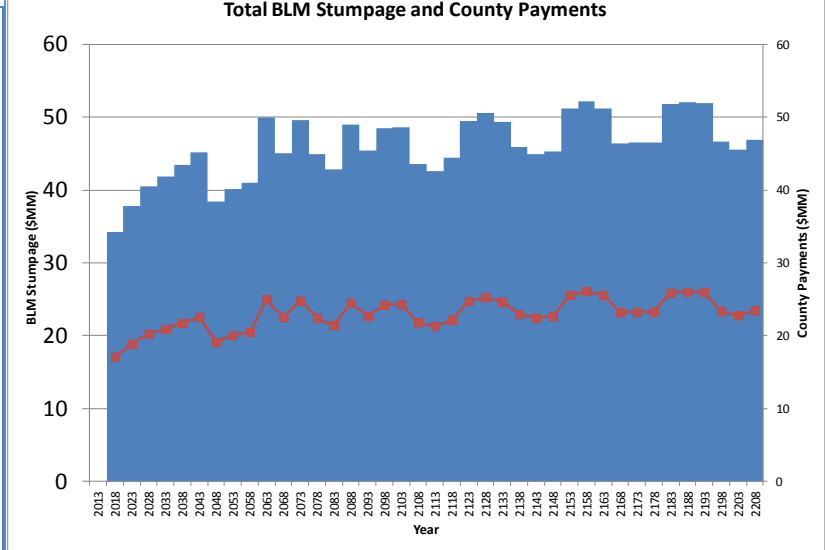
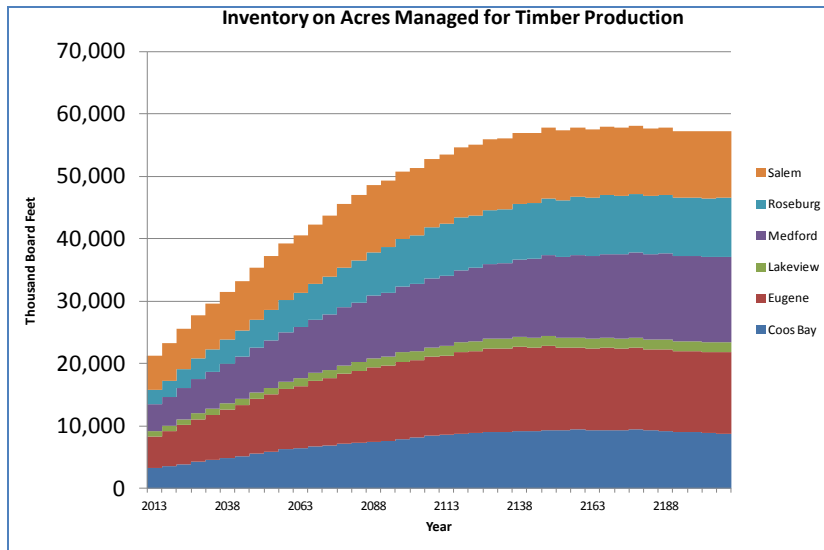


Figure A-14c. Model Results for Run F: Land Sale, Critical Habitat and Ecological Forestry; Combined Timber and Revenue.

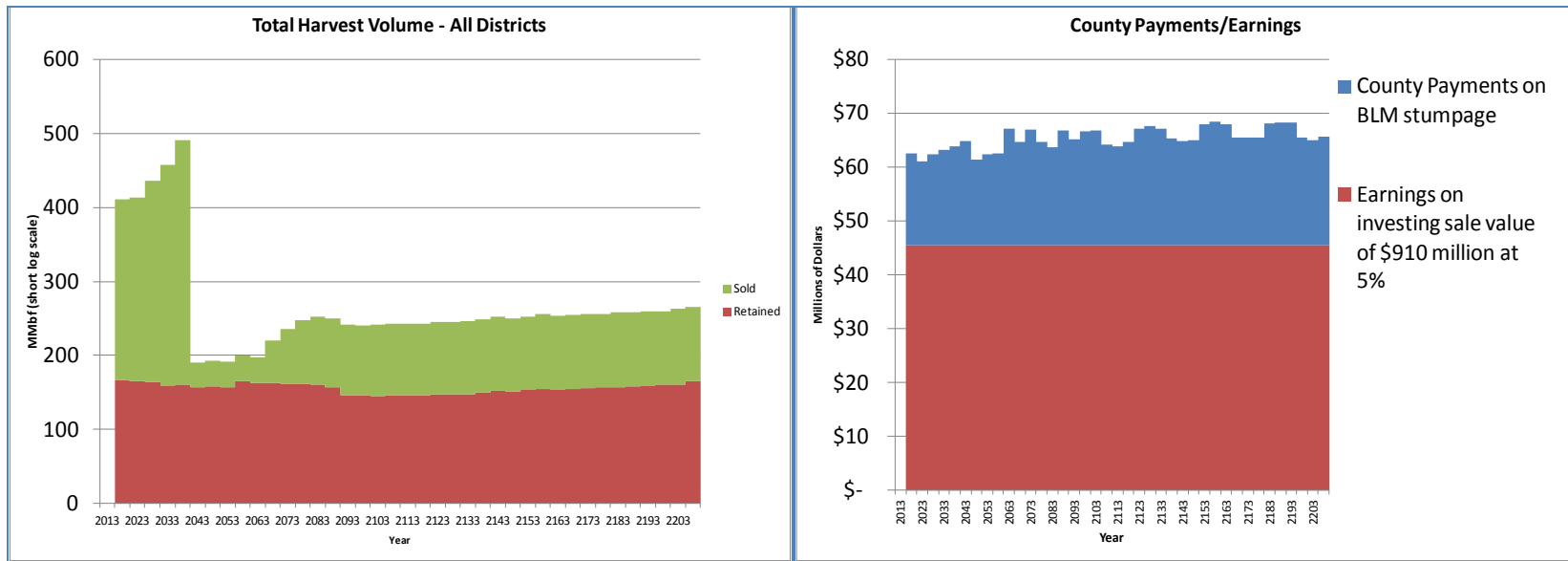


Figure A-15a. Model Results for Run G: Community Forest, Critical Habitat and Ecological Forestry; Sale Component.

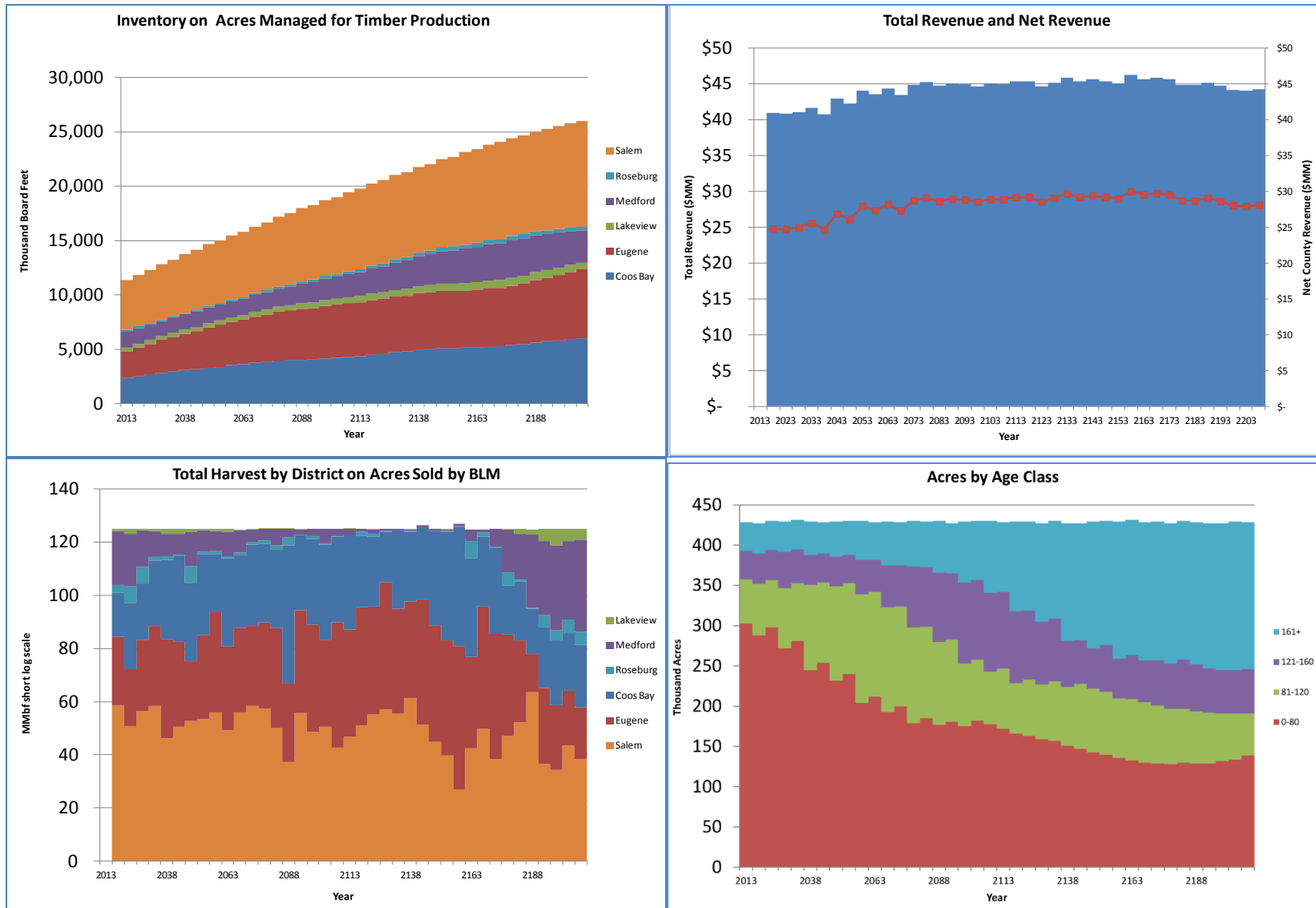


Figure A-15b. Model Results for Run G: Community Forest, Critical Habitat and Ecological Forestry; Public Land Component.

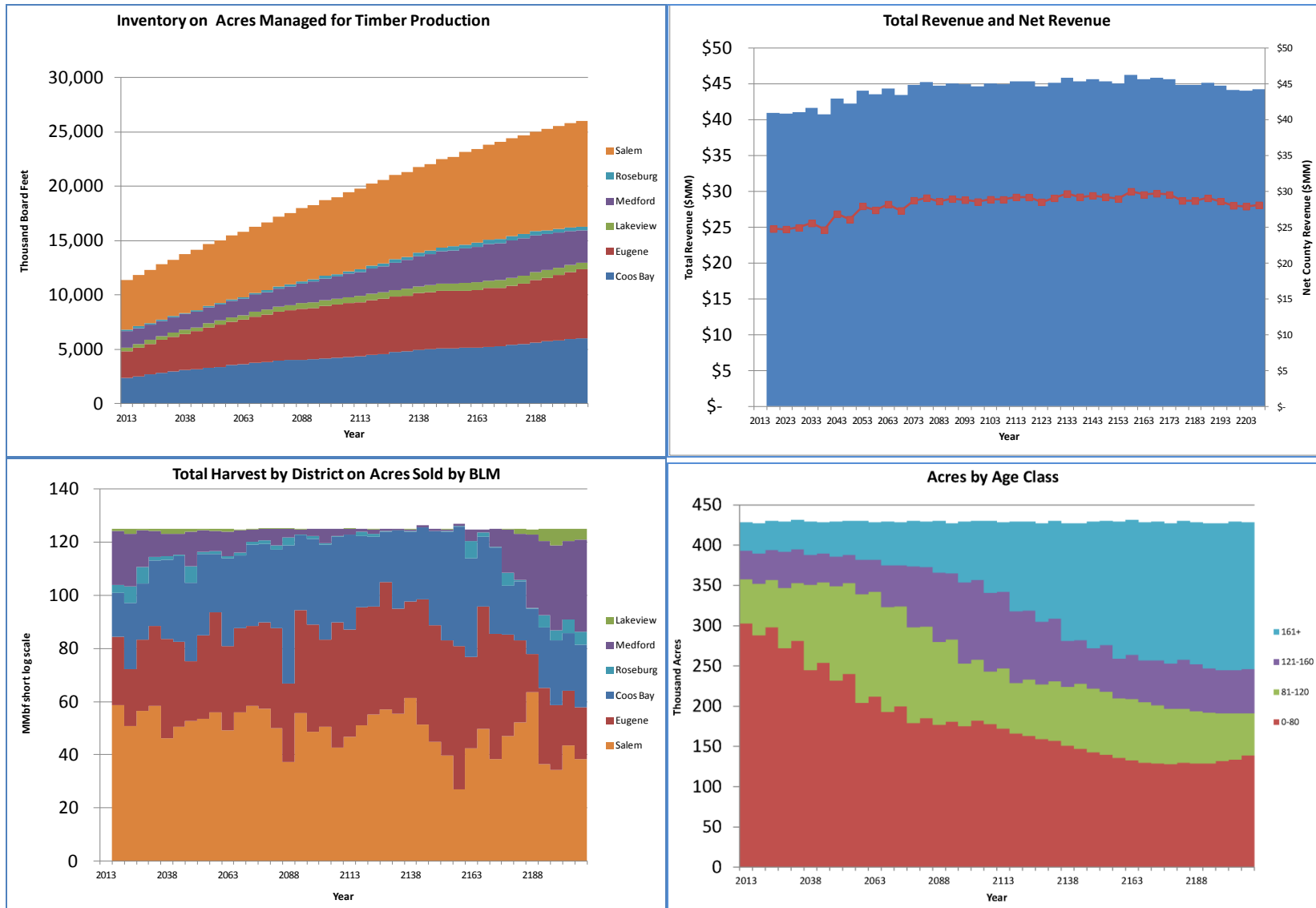


Figure A-15c. Model Results for Run G: Community Forest, Critical Habitat and Ecological Forestry; Combined Timber and Revenue.

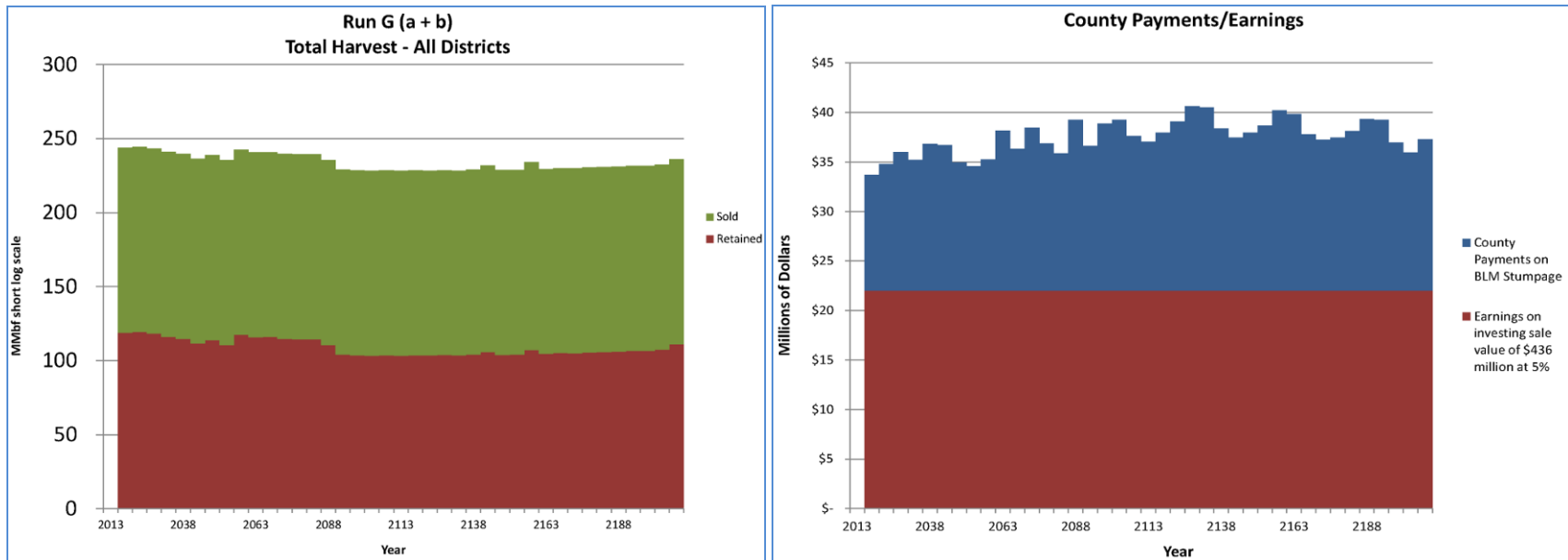


Figure A -16. Acres by for Modeled Runs by Silvicultural Regime, including total acres in the Sustained Timber Base.

Run	No Harvest	Thin Only ¹	Sustained Timber Base ²	NWFP (15% GTR)	Ecological Forestry Moist	Ecological Forestry Dry	Industrial Regen	Riparian	Total
A – Thin Only	1,444,932	772,634	0	0	0	0	0	547,612	2,765,178
B – Trust, 5%	1,022,031	0	1,655,990	0	0	0	1,655,990	87,157	2,765,178
C – Trust 20%	1,022,031	0	1,385,472	0	0	0	1,385,472	357,675	2,765,178
D – CH, Ecological	1,109,297	496,100	544,464	0	295,779	248,685	0	615,316	2,765,177
E – CH, NWFP, Ecological	959,923	496,100	645,551	544,465	32,125	68,961	0	663,604	2,765,178
F – Private Sale & CH	1,079,603	496,100	622,465	0	218,779	211,490	192,196	567,010	2,765,178
<i>Public Land</i>	1,079,603	496,100	430,269	0	218,779	211,490	0	556,894	2,562,866
<i>Private Sale</i>	0	0	192,196	0	0	0	192,196	10,116	202,312
G – Community & CH	1,033,682	496,100	728,111	0	550,063	178,048	0	507,285	2,765,178
<i>Public Land</i>	1,033,682	496,100	320,728	0	142,680	178,048	0	485,843	2,336,353
<i>Community Forest</i>	0	0	407,383	0	407,383	0	0	21,441	428,824

¹ Thin only acres are not considered part of the Sustained Timber Base. In Runs D, F, and G these acres are in NSO Critical Habitat.

² Sustained Timber Base includes acres receiving NWFP, Ecological Forestry or Industrial Regen harvest regimes. It does not include any Riparian acres.

Figure A-17. Draft O&C Trust Map of South River Resource Area. Note light yellow lands would be managed under the O&C Trust and green lands are older forests to be transferred to management under the US Forest Service.

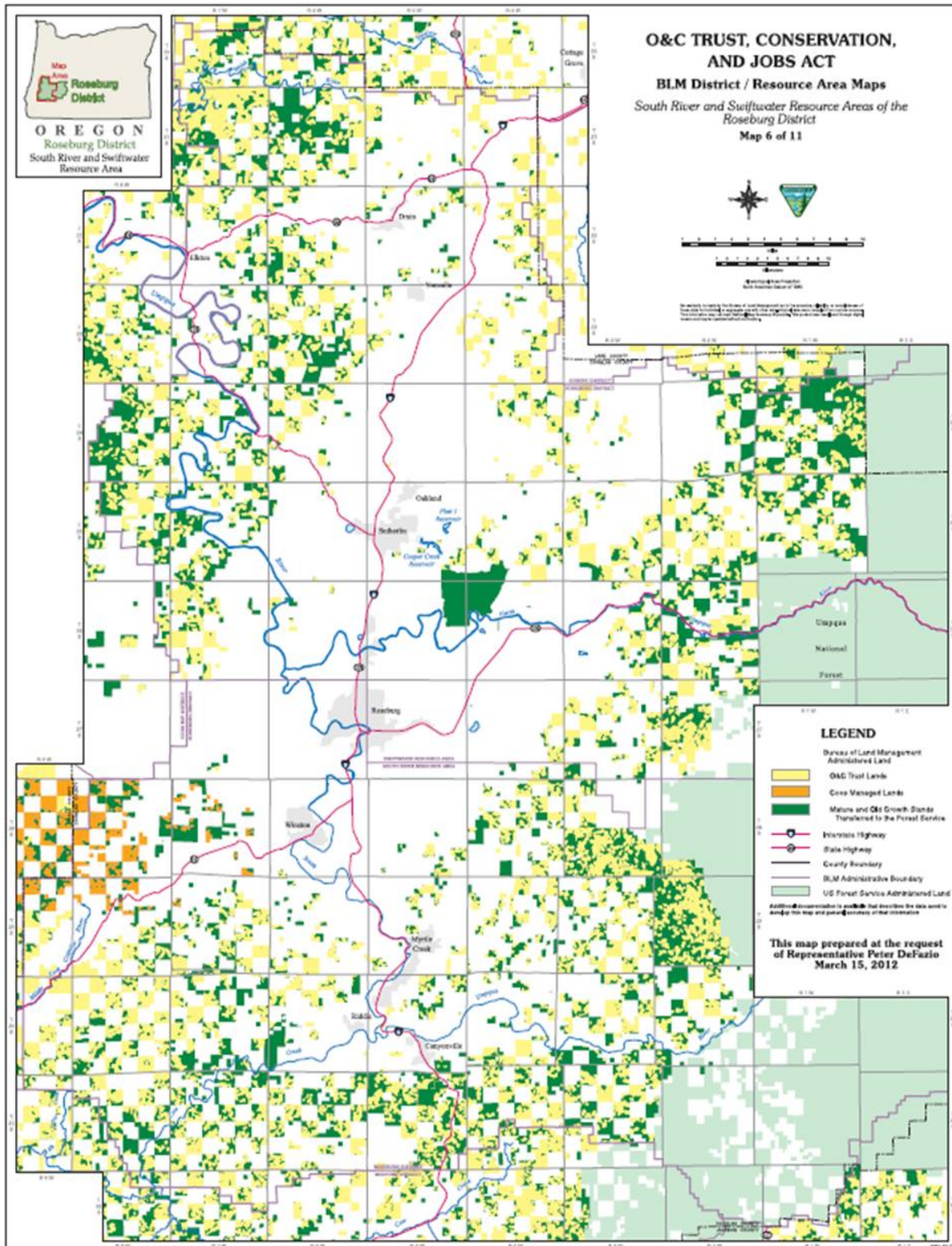


Figure A-18. NSO Suitable Habitat Projection at Year 50. Blue is Suitable, Orange is Not Suitable. (Suitability defined at threshold of 0.3)

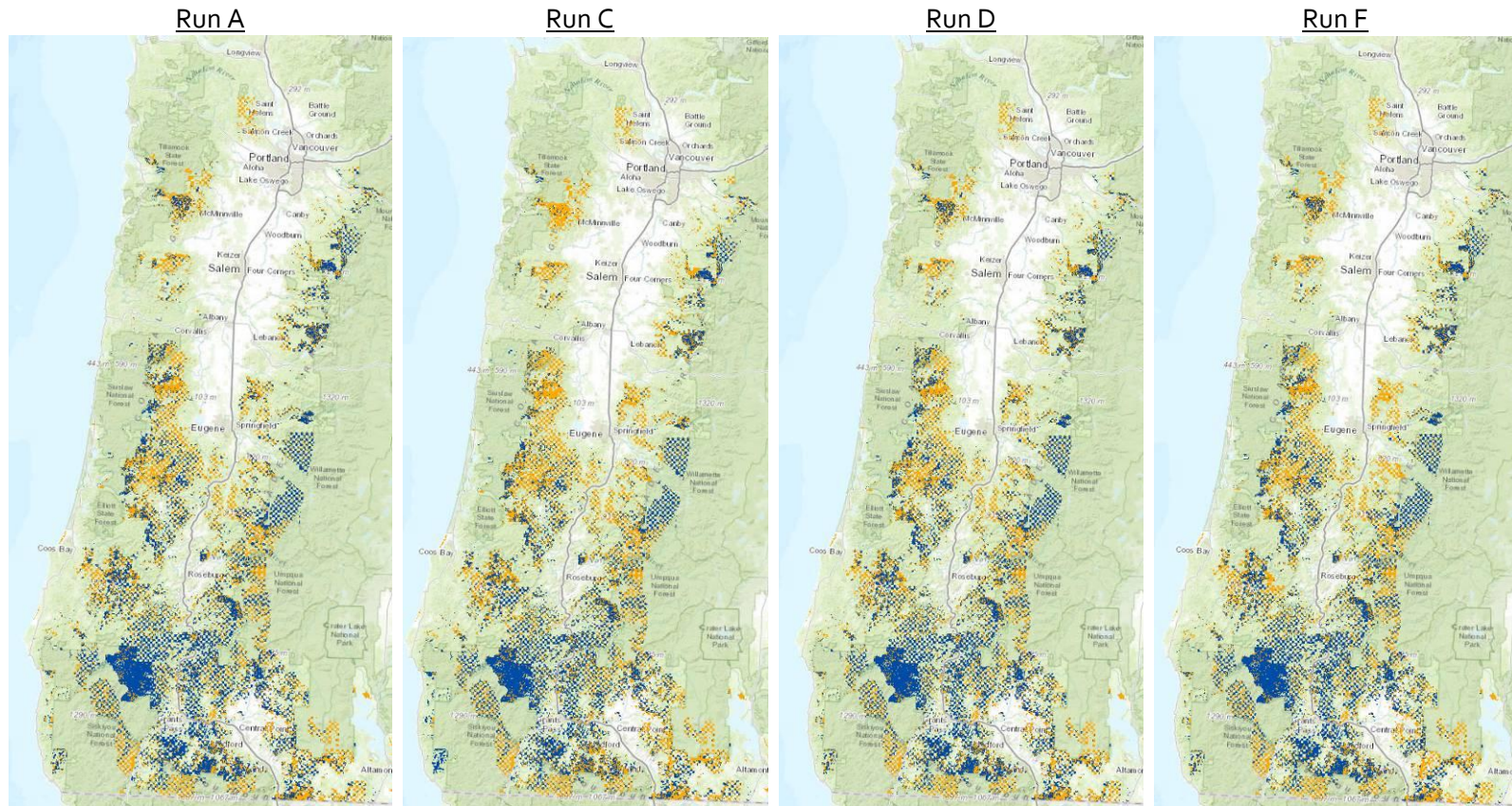


Figure A-19. MAMU Suitable Habitat Projection at Year 50. Blue is Suitable, Orange is Not Suitable. (Suitability defined at threshold of 0.3)

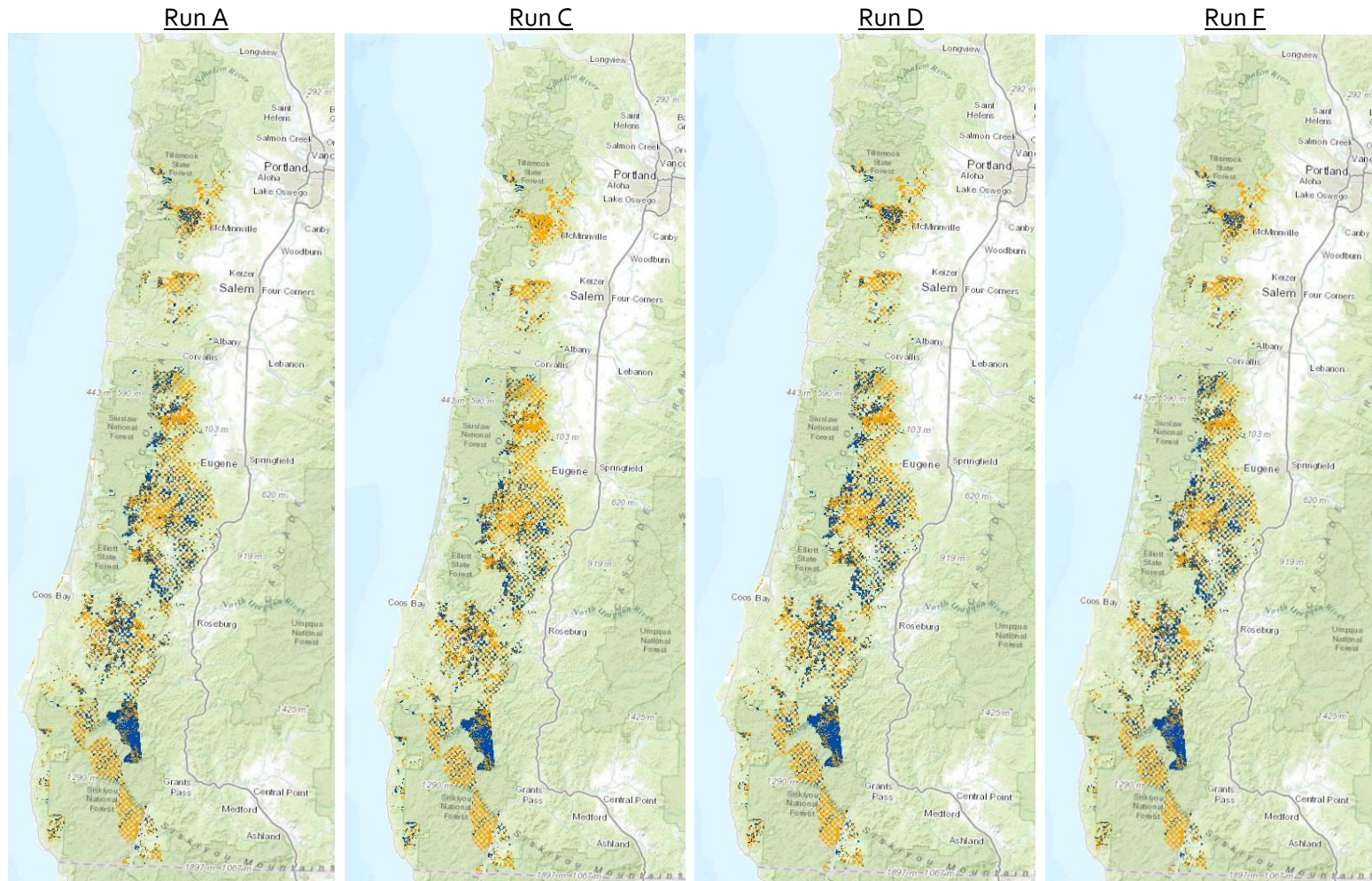


Figure A-20. Map of Selected Watershed Values Across Western Oregon.

