



**Comments of American Forest Resource Council et al. on the
Proposed Rule, Critical Habitat for the
Northern Spotted Owl (*Strix occidentalis caurina*),
85 Fed. Reg. 48,487 (Aug. 11, 2020)
Docket #FWS-R1-ES-2020-0050**

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IDENTITY OF COMMENTERS

These comments are submitted on behalf of the American Forest Resource Council (AFRC) and the other signatories listed on the final page.

AFRC is a regional trade association whose purpose is to advocate for sustained-yield timber harvests on public timberlands throughout the West to enhance forest health and resistance to fire, insects, and disease. AFRC promotes active management to attain productive public forests, protect the value and integrity of adjoining private forests, and assure community stability. We work to improve federal and state laws, regulations, policies and decisions regarding access to and management of public forest lands and protection of all forest lands. AFRC represents over 50 forest product businesses and forest landowners throughout California, Idaho, Montana, Oregon, and Washington. These businesses provide tens of thousands of family-wage jobs in rural communities.

SUMMARY OF EXCLUSIONS REQUESTED

The U.S. Fish and Wildlife Service (Service) should exclude at least 2,506,890 acres beyond the proposal, for a total exclusion of **2,711,543 acres** and a remaining critical habitat designation of 6,866,426 acres—virtually equivalent to the original 1992 designation of about 6,887,000 acres. *See* 57 Fed. Reg. 1796, 1809 (Jan. 15, 1992). We support the Service’s proposal to exclude all Bureau of Land Management (BLM) Harvest Land Base (HLB) acres and lands managed by the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians and the Cow Creek Band of Umpqua Tribe of Indians.

BLM-HLB:	184,476
<u>Tribal Lands:</u>	<u>20,177</u>
Total Proposal	204,653 ac

We request minimum exclusions based on status as O&C lands and severe economic impact of designating uninhabited lands otherwise available for sustained timber production. For ease of administration and reference, the small portion of non-O&C lands administered by BLM are included in our request.

AFRC Minimum Exclusion Request	
BLM (outside HLB)	1,135,806 ac
<u>USFS Uninhabited Matrix¹</u>	<u>1,371,084</u>
Subtotal	2,506,890
Exclusions Proposed By FWS (BLM-HLB and Tribal lands)	<u>204,653</u>
Total Exclusion Request	2,711,543 ac

¹ Acres defined as “uninhabited” are done so by using habitat as a surrogate for “habitable” acres. Here, uninhabited is synonymous with “Capable” habitat, which we discuss under section III.A. As such, these areas likely do not constitute habitat which qualifies for designation under *Weyerhaeuser*.

Alternative and Additional Exclusion Requests

The proposed rule acknowledges significant designations of younger forest areas that are not spotted owl habitat, but claims that mapping and identifying the areas is impractical. We do not believe that is accurate, as described below and in the accompanying Economic Analysis prepared by The Brattle Group. As an alternative, the Service should exclude subunits in their entirety where significant portions of the subunit outside reserves (50% or more) consist of these younger forests.

<i>Sub-Units Dominated by Younger Forests in Areas Outside Reserves</i>		
Unit	Subunit	Size
East Cascades North	ECN 8	94,622 ac
Klamath East	KLE 5	38,283
Oregon Coast	ORC 4	8,263
East Cascades South	ECS 3	112,179
Klamath East	KLE 3	111,410
Inner California Coast Ranges	ICC 2	204,400
East Cascades North	ECN 7	139,983
Klamath West	KLW 1	147,326
West Cascades South	WCS 2	150,105
Klamath West	KLW 7	255,779
Inner California Coast Ranges	ICC 7	119,742
Klamath East	KLE 2	101,942
Inner California Coast Ranges	ICC 1	332,042
East Cascades North	ECN 6	81,852
East Cascades South	ECS 1	127,801
Total	15 Subunits	2,025,729 acres

As a further alternative, the Service should consider subunits for exclusion due to environmental effects of critical habitat designations in fire-prone dry forests. As described below, these subunits are dominated by dry forests at high risk of further catastrophic fire and extreme fire behavior.

- | | |
|---|------------|
| 1. East Cascades North (ECN) 3, 4, 5, 7 | 865,218 ac |
| 2. Klamath West (KLW) 4, 7, 8, 9 | 678,021 |
| 3. Klamath East (KLE) 4, 6, 7 | 565,352 |
| 4. Interior California Coast (ICC) 1, 4 | 453,039 |

Together, these 13 subunits total **2,561,630** acres.

Additionally, we request that areas of low-quality habitat and fragmented sections of the critical habitat unit (CHU) be excluded. These requests are defined and quantified based on habitat description and contiguous acreage amounts respectively. These requests are outlined and described in sections III.B and IV respectively. Due to limited data and mapping capabilities, we were unable to derive a specific acreage total for these exclusions.

However, we believe our clear descriptions in the sections below are sufficient to permit the government from identifying those areas and effectively excluding them.

FACTUAL AND PROCEDURAL BACKGROUND

I. AFRC's Interests and Involvement in NSO Critical Habitat Rulemakings and Litigation.

AFRC's members have been significantly affected by the overbroad northern spotted owl (NSO) critical habitat designation issued by the Service in 2012. 77 Fed. Reg. 71,876 (Dec. 4, 2012). Our previous comments are incorporated by reference. These include but are not limited to comment letters of August 2, 2007, June 20, 2008 and July 6, 2012.

The Service designated 9,577,969 acres of critical habitat for the owl in 2012. U.S. Fish & Wildlife Serv., *Endangered and Threatened Wildlife and Plants; Designation of Revised Critical Habitat for the Northern Spotted Owl*, 77 Fed. Reg. 71,876 (Dec. 4, 2012). Of the lands designated as critical habitat, more than 2.8 million acres were Matrix lands reserved for timber production under the Northwest Forest Plan (NWFP). *Id.* at 71,876, 71,880 (noting that “matrix areas [are] where timber harvest would be the goal”).

President Clinton sold the NWFP with the claim that the NWFP was a management strategy that would “protect the old-growth related species and produce a sustainable level of timber.” NWFP ROD at 3.² He gave lip service to “the human and the economic dimensions of these problems. Where sound management policies can preserve the health of forest lands, sales should go forward. Where this requirement cannot be met, we need to do our best to offer new economic opportunities for year-round, high-wage, high-skill jobs.” *Id.*

A key component of the NWFP was the idea that Matrix acres would be available to support sustainable timber management, rural communities, and forest health. The Matrix was originally 3,975,300 acres. The Service abrogated that promise by designating 2,801,660 acres, or seventy percent of the Matrix, as critical habitat. With the 2016 RMP for BLM lands, the combined Matrix/HLB shrank to 3,752,517 acres, so three-quarters of the land pledged for timber production is under restrictions flowing from critical habitat. You don't have to take our word for it. The Forest Service itself complains that “northern spotted owl critical habitat designation has reduced the land base available for primary timber production.” Bioregional Assessment at 62. The agency admits “timber production is no longer emphasized on much of the NWFP matrix land because large areas of matrix have been designated as critical habitat for the northern spotted owl.” *Id.* at 60.

² U.S. Dep't of Agric., Forest Serv.; U.S. Dep't. of the Interior, Bureau of Land Mgmt., *Record of decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl*, Apr. 13, 1994; <https://www.fs.fed.us/r6/reo/library/docs/NWFP-ROD-1994.pdf>.

The Service commissioned an economic analysis of the impacts of the designation, as required by Section 4(b)(2) of the Endangered Species Act (ESA), 16 U.S.C. § 1533(b)(2). Industrial Economics, Inc., *Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl: Final Report*, Nov. 20, 2012 (FEA). This analysis found that NWFP reserves “are not likely to experience any changes in proposed timber management as a result of critical habitat designation.” FEA at 4-7. However, “areas that are likely to be unoccupied [are] more likely to experience incremental effects to timber harvest practices.” *Id.* Thus, unoccupied Matrix lands were found most likely to experience effects to harvest due to the designation. *Id.* at 4-9. The Service’s own analysts found that the critical habitat designation could reduce timber harvest in these lands by 20%. *Id.* at 4-32. Depending on economic conditions, total losses from reduced timber harvest were projected to approach \$100 million over the first 20 years. *Id.* at 4-36.

Accordingly, the Service concluded that “economic impacts to [Forest Service] timber harvest are relatively more likely in unoccupied matrix lands or approximately 1,158,314 acres of 2,629,031 total acres of all [Forest Service] matrix lands.” 77 Fed. Reg. at 72,028. But the Service significantly underestimated economic impacts on unoccupied Matrix lands by relying on faulty assumptions and unreasonably constraining the scope of its economic review. It concluded “only a portion of the overall proposed revised designation will result in more than incremental, minor administrative costs.” *Id.* at 71,946. As described in detail below, this was a vast underestimate of the actual effect.

AFRC requested the Service exclude all O&C lands from the critical habitat designation because those lands “have a unique statutory purpose and historical context that justifies an exclusion from critical habitat under the Secretary’s discretionary power.” AFRC Comments, July 6, 2012, at 54. The Service *never responded* to this request.

The Service concluded its analysis by determining not to exclude any federal lands, regardless of economic impact. It stated:

While there is uncertainty over whether such [economic] impacts will occur and to what extent, *even assuming higher economic impacts* suggested by some commenters, we would not exclude these lands from designation under section 4(b)(2) because a critical habitat designation on these [matrix] lands will have benefits in conserving this essential habitat.

77 Fed. Reg. at 71,947 (emphasis added). By a logical reading of the ESA’s definitions of terms, *all* critical habitat, both occupied and unoccupied, must be essential to the species’ conservation, or at least contain features essential to conservation. 16 U.S.C. § 1532(5)(A). The Service’s approach in the 2012 designation would render section 4(b)(2) meaningless, by essentially finding that economic impacts can never justify exclusion. Section 4(b)(2), however, only forbids exclusion if the result would be extinction of the species. 16 U.S.C. § 1533(b)(2).

The Service’s approach departed not only from the statute but also from the agency’s past practice. The first spotted owl Critical Habitat Rule recognized “the overall effects on

the Northwest timber industry and to some counties in particular, were potentially severe. . . .” U.S. Fish & Wildlife Serv., *Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Northern Spotted Owl*, 57 Fed. Reg. 1796, 1807 (Jan. 15, 1992). That first designation excluded some federal lands to mitigate the worst job losses. *Id.* at 1807-08.

In early 2013, a coalition filed suit against the 2012 rule, including Carpenters Industrial Council (now Pacific Northwest Regional Council of Carpenters), Siskiyou County, California, AFRC, Hampton Affiliates, The Murphy Company, Rough & Ready Lumber LLC (which sadly closed in 2016 due to lack of federal timber), Perpetua Forests Company, Seneca Sawmill Company, Seneca Jones Timber Company, Swanson Group Mfg. LLC, and Trinity River Lumber Company. *Carpenters Indus. Council et al. v. Salazar*, No. 1:13-cv-00361-RJL, ECF 1 (D.D.C. Complaint Filed Mar. 21, 2013), ECF 34 (Amended Complaint, Jan. 30, 2014). Three Washington Counties intervened as Plaintiffs. *Id.*, ECF 31 (Jan. 24, 2014).

After the case was fully briefed on summary judgment, Judge Leon dismissed it for lack of standing at the same time he dismissed two other matters in the wake of *Swanson Group Mfg. LLC v. Salazar*, 790 F.3d 235 (D.C. Cir. 2015). *Carpenters Indus. Council v. Jewell*, 139 F.Supp.3d 7 (D.D.C. 2015). Plaintiffs appealed this dismissal, and the D.C. Circuit reversed.

[T]he Service’s designation will likely cause a decrease in the supply of timber from designated forest lands. The Service’s argument to the contrary belies the text, purpose, and operation of the Final Rule designating the critical habitat in this case. Not to mention, it defies basic common sense.

Carpenters Indus. Council v. Zinke,
854 F.3d 1, 6 (D.C. Cir. 2017) (per Kavanaugh, J.)

The Court of Appeals, in an opinion by then-Judge Kavanaugh, held “the Service’s designation will likely cause a decrease in the supply of timber from designated forest lands.” *Carpenters Indus. Council v. Zinke*, 854 F.3d 1, 6 (D.C. Cir. 2017). The court further held the Service’s “argument to the contrary belies the text, purpose, and operation of the Final Rule designating the critical habitat in this case. Not to mention, it defies basic common sense.” *Id.* The case was remanded to the district court. On

April 26, 2020, the Court approved a stipulated settlement agreement under which the Service prepared the Proposed Rule at issue here and must submit a final determination to the Federal Register by December 23.

II. Procedural Framework.

The proposed rule “particularly” seeks comments regarding “[a]ny additional areas, including Federal lands, that should be considered for exclusion under section 4(b)(2),” plus “any National Forest System lands ... that should be considered for exclusion under section

4(b)(2) of the Act.” 85 Fed. Reg. at 48,488. It also asks for input as to how to consider ongoing litigation regarding the O&C Act. *Id.*

The proposal gives notice that the final rule “may exclude additional areas if we find that the benefits of exclusion outweigh the benefits of inclusion or may remove areas if we find that the area does not meet the definition of ‘critical habitat.’” Consistent with general administrative law principles, the final rule should be a “logical outgrowth” of the proposal. A proposal must include “either the terms or substance of the proposed rule or a description of the subjects and issues involved.” 5 U.S.C. § 553(b)(3). “The object, in short, is one of fair notice.” *Long Island Care at Home, Ltd. v. Coke*, 551 U.S. 158, 174 (2007). The test for “whether notice is adequate is ‘whether interested parties reasonably could have anticipated the final rulemaking’ from the proposed rule.” *Empire Health Found. for Valley Hosp. Med. Ctr. v. Azar*, 958 F.3d 873, 882 (9th Cir. 2020) (quoting *Nat. Res. Def. Council v. E.P.A.*, 279 F.3d 1180, 1186 (9th Cir. 2002)).

The proposed rule states: “Any changes made in the final rule should be of a type that could have been reasonably anticipated by the public, and therefore a logical outgrowth of the proposal.” 85 Fed. Reg. at 48,488. “Changes in a final revision would be reasonably anticipated if: (1) We base them on the best scientific and commercial data available and take into consideration the relevant impacts; (2) we articulate a rational connection between the facts found and the conclusions made, including why we changed our conclusion; and (3) we base removal of any areas on a determination either that the area does not meet the definition of ‘critical habitat’ or that the benefits of excluding the area will outweigh the benefits of including it in the designation.” *Id.* Thus, the Service (and the Secretary) have preserved broad discretion to make additional exclusions. The initial proposal should be viewed as a floor, not a ceiling.

A. ESA Section 4(b)(2).

Congress specifically revised the ESA in 1978 and again in 1984 to provide additional limits on the use of critical habitat designations. In addition to requiring an economic impact analysis, the 1978 amendments narrowed the statutory definition of critical habitat and provided the current mechanism for exclusion of areas of critical habitat where “the benefits of exclusion outweigh the benefits of specifying such areas as part of the critical habitat.” Pub. L. 95-632, § 11(7), 92 Stat. 3766 (amending 16 U.S.C. § 1533(b)(2)); H.R. Rep. No. 95-1625, at 17 (1978). *See also* National Defense Authorization Act, Pub. L. 108-136 (2003) (adding national security language). These important changes resulted in the addition of language requiring consideration of “the economic impact, the impact on national security, and any other relevant impact” of designating an area as critical habitat.

The Secretary may exclude any area if “the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat,” limited only by the requirement that the exclusion not result in extinction. ESA section 4(b)(2), 16 U.S.C. § 1533(b)(2).

B. *Weyerhaeuser* Followed the ESA's Plain Terms to Require Critical Habitat to Be 'Habitat'.

In *Weyerhaeuser*, the Supreme Court unanimously ruled that ESA “Section 4(a)(3)(A)(i) does not authorize the Secretary [of the Interior] to designate [an] area as *critical* habitat unless it is also *habitat* for the species.” *Weyerhaeuser v. FWS*, 139 S. Ct. 361, 368 (2018) (emphasis in original) (citing 16 U.S.C. § 1533(a)(3)(A)(i)). In other words, “[o]nly the ‘habitat’ of [an] endangered species is eligible for designation as critical habitat,” not areas that might develop into habitat in the future, even if the Service believes designation of such areas to be “essential for the conservation of the species.” 139 S. Ct. at 368.

Weyerhaeuser rejected the Service’s practice of designating areas as critical habitat that are not currently habitat for a species but the Service nonetheless believes to be “essential for the conservation of the species. The Service had persisted in this practice until *Weyerhaeuser* even though a court rejected it fourteen years earlier. *Cape Hatteras Access Preservation Alliance v. DOI*, 344 F.Supp.2d 108, 122 (D.D.C. 2004) (“The Service’s argued-for interpretation, essentially that [critical habitat] designation is proper merely if [habitat features] will likely be found in the future, is simply beyond the pale of the statute.”).

In *Weyerhaeuser*, the Service found that an area that “lacked the open-canopy forests (and, of course, the [dusky gopher] frogs) necessary for designation as occupied critical habitat, [nonetheless] met the statutory definition of unoccupied critical habitat because its rare, high-quality breeding ponds and its distance from existing frog populations made it essential for the conservation of the species.” 139 S. Ct. at 366. *Weyerhaeuser*, which owned a timber lease on the property, challenged the designation, arguing that the area “could not be critical habitat for the dusky gopher frog because the frog could not survive there: Survival would require replacing the closed-canopy timber plantation encircling the ponds with an open-canopy longleaf pine forest.” *Id.* at 367. The District Court upheld the designation and the Fifth Circuit affirmed, rejecting the view “that the definition of critical habitat contains any ‘habitability requirement.’” *Id.*

The Supreme Court unanimously disagreed. The Court ruled that “[e]ven if an area otherwise meets the statutory definition of unoccupied critical habitat because the Secretary finds the area essential for the conservation of the species, Section 4(a)(3)(A)(i) does not authorize the Secretary to designate the area as *critical* habitat unless it is also *habitat* for the species.” *Id.* at 368 (emphasis in original); *id.* at 369 n.2. The decision followed the ESA’s plain language:

[The ESA] states that when the Secretary lists a species as endangered he must also “designate any *habitat of such species* which is then considered to be critical habitat.” * * * Only the “habitat” of the endangered species is eligible for designation as critical habitat.

Id. at 368 (quoting 16 U.S.C. § 1533(a)(3)(A)(i)) (emphasis in original). The Court explained that “[a]ccording to the ordinary understanding of how adjectives work, ‘critical habitat’ must also be ‘habitat.’ Adjectives modify nouns—they pick out a subset of a category that

possesses a certain quality. It follows that ‘critical habitat’ is the subset of ‘habitat’ that is ‘critical’ to the conservation of an endangered species.” *Id.*

In *Weyerhaeuser*, the unit at issue lacked the essential feature of an open-canopy forest, but the Service “determined that an open-canopy forest could be restored on the surrounding uplands ‘with reasonable effort.’” 139 S. Ct. at 366. The Service contended before the Court that “habitat includes areas that, like Unit 1, would require some degree of modification to support a sustainable population of a given species.” *Weyerhaeuser* argued “that habitat cannot include areas where the species could not currently survive.” 139 S. Ct. at 369. *Weyerhaeuser* had the better of this argument, as the Supreme Court unanimously found. An area is not habitat if modification or natural growth is required before it could actually support the species.

C. The 2012 Designation Unlawfully Includes Substantial Areas that Are Not Habitat for the NSO.

The Service has acknowledged significant portions of the 2012 NSO designation *are not habitat*. For example, the Service admitted:

[T]he Service did not limit the designation to nesting, roosting, foraging, and dispersal habitat, but also included additional areas with lower RHS [Relative Habitat Suitability] values that the Service found essential to the conservation because they provide “connectivity between occupied areas, room for population expansion or growth, or the ability to provide sufficient suitable habitat on the landscape for owls in the face of natural disturbance regimes, such as fire.” AR1:655-56. *These areas include younger forests – not currently providing habitat preferred by owls – that the Service found essential because they can develop additional habitat necessary to support viable northern spotted owl populations in the future.*

Carpenters Indus. Council v. Bernhardt, No. 1:13-cv-00361-RJL, Defs.’ Summ. J. Mem., ECF No. 44, at 28-29 (D.D.C. filing of Sept. 8, 2014) (emphasis added).

The designation explicitly designated younger forest “areas anticipated to develop into suitable habitat in the future.” 77 Fed. Reg. at 77,026. The Service asserted that the “recovery goal of achieving viable populations across the range of the owl cannot be achieved without the development of some areas that are presently younger forest into additional habitat capable of supporting northern spotted owl populations into the future.” *Id.* The Service, “therefore, determined [these younger forest areas] to be essential for the conservation of the species” and included them in its designation. *Id.* at 71,878. The accompanying Economic Analysis of the proposed designation acknowledged that the designation included “unoccupied areas that are not presently spotted owl habitat, but are areas of younger forest [claimed to be] essential to the conservation of the species due to their potential to develop into suitable habitat.” Final Economic Analysis, Nov. 20, 2012, at 4-10.

In the Revised Recovery Plan for the Northern Spotted Owl, the Service defines “Dispersal Habitat” narratively, stating “[j]uvenile spotted owls often must disperse through a range of forest types prior to finding NRF habitat on which to establish a territory. These forest types include nesting, roosting, and foraging habitat in addition to forest that meets the definition of dispersal habitat.” Revised Recovery Plan, G-1. It goes on to set particular criteria for “dispersal” habitat. *Id.* Dispersal “habitat” was adopted as PCE 4 for the species. 77 Fed. Reg. at 71,907. The description of dispersal “habitat” in the rule makes clear that there are no features unique to these that are required to enable dispersal.

Although habitat that allows for dispersal may currently be marginal or unsuitable for nesting, roosting, or foraging, it provides an important linkage function among blocks of nesting habitat both locally and over the owl's range that is essential to its conservation. However, as noted above, we expect dispersal success is highest when dispersers move through forests that have the characteristics of nesting-roosting and foraging habitats.

77 Fed. Reg. at 71,906. Mere connectivity is not an element of habitat or critical habitat and effects only on connectivity cannot constitute “adverse modification” in violation of the ESA. *See Defs. of Wildlife v. Zinke*, 856 F.3d 1248, 1262 (9th Cir. 2017); *see also Weyerhaeuser*, 139 S. Ct. at 366 (vacating and remanding where the Service found that land that “lacked the open-canopy forests (and, of course, the [dusky gopher] frogs) necessary for designation as occupied critical habitat, [nonetheless] met the statutory definition of unoccupied critical habitat because its rare, high-quality breeding ponds and *its distance from existing frog populations* made it essential for the conservation of the species” (emphasis added)).

The Revised Recovery Plan also designates “Habitat-capable Area,” which is made up of “[f]orests below the elevation limits of occupancy by territorial spotted owls that are capable of growing and sustaining structural (Davis and Lint 2005) and ecological conditions of spotted owl habitat.” RRP at G-2. Such “Habitat-capable Areas” parallel the younger forests designated in the spotted owl rule and similarly, by definition, are not habitat. “Habitat,” if it is to have any meaning, cannot include such areas that are not habitat at the time a species is listed.

DISCUSSION

I. Economic Benefits of Exclusion: Uninhabited Matrix & BLM Lands Should Be Excluded Because Conservation Benefit Is Negligible and Economic Impacts Are Calamitous.

A. Robust Economic Analysis Demonstrates the Need for Exclusions.

The attached study prepared by The Brattle Group shows that designation of uninhabited Matrix and BLM lands has disastrous consequences—losses of up to **\$1.2 billion** with little or no corresponding conservation benefit. The Brattle study estimates about 1.7 million uninhabited acres were designated as critical habitat that are otherwise designated for timber production. Their estimates use the 2012 FEA as a starting point, but

consider economic consequences of the designation beyond those to the Service and other agencies (which apparently was where Industrial Economics, which prepared the FEA, was instructed to limit its analysis).

On these 1.7 million acres, CHU designations greatly diminish harvest and cause losses to the market of between \$66.4 million and \$77.2 million on an annualized basis and between \$753 million and \$1.18 billion over 20 years on a net present value (NPV) basis. Looking to the broader economy, estimates for employment impacts show that timber harvest at issue lead to substantial local economic impacts. Benefits of exclusion include \$55 million in additional timber harvest in Oregon, which would generate \$70 million in state GDP and \$46 million in worker earnings. Across California, Oregon, and Washington, increased timber harvest results in benefits from exclusion of \$100 million in GDP, \$66 million in worker earnings, and 1,286 jobs annually.

Conversely, the combined effect of the NWFP and 2012 rule is catastrophic. Since 1994, timber harvests decreased by 85% on federal lands,³ leading to socioeconomic carnage—direct loss of over 25,000 family-wage jobs and over half a million more people living in communities with low or very low social well-being,⁴ and forests overrun with illegal marijuana grow operations.⁵

B. Economic Impact – A Forestry Perspective.

The potential benefits of excluding these areas that offer little benefits to the owl (and, indeed, are primarily not habitat) are primarily associated with timber production, rural economic health, and forest health specifically associated with fuels reduction.

The prioritization of retention of late-seral forest habitat as well as canopy cover levels on mid-seral and mature forests often puts spotted owl management in direct conflict with sustainable timber management; specifically in those areas of the region where even-aged management is the only viable method of managing sustainably. Douglas-fir forests, for example, rely on full sunlight to properly regenerate. Harvesting a mature stand of Douglas-fir and establishing a new cohort of young trees, which is the foundation of sustainable timber management, cannot be accomplished while maintaining the level of forest canopy cover required for spotted owl habitat needs outlined in the critical habitat designation. The benefits of exclusion will manifest in the form of a flow of sustainable timber products that support local communities on those lands allocated for such objectives.

In order to quantify the economic benefits of sustainable timber management we relied on recent timber sale data from federally managed forestland across two distinct forest types in western Oregon—moist forests and dry forests. Our objective is to analyze data that is

³ Deanna H. Olson et al. ed., *People, Forests, and Change: Lessons from the Pacific Northwest* 52–54 (2017).

⁴ 2 Charnley, 6–10 (2006); 3 Charnley 28, 40–43.

⁵ Scott Bauer et al., *Impacts of Surface Water Diversions for Marijuana Cultivation on Aquatic Habitat in Four Northwestern California Watersheds*, 10(3) PLOS ONE e0120016 (2015); <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0120016>.

representative of a truly sustainable timber program. Since truly sustainable timber management does not occur on most federally managed forest land in the region, our options for a dataset were limited to that 20% of land managed by the BLM for sustainable timber production as described in their 2016 RMP. The remaining 80% of BLM land was placed in reserves where sustainable timber management was prohibited. We used timber sale data from sales sold under the Northwestern and Coastal Oregon (NCO) RMP and Southwestern Oregon (SWO) RMP to inform values for moist and dry forests respectively. Full implementation of this RMP did not initiate until fiscal year 2019. It is from this fiscal year that our economic analysis focuses. Due to a paucity of timber sale data from the Medford District, we opted to also include sales under the 2016 RMP from 2018 and 2020.

In fiscal year 2019 the BLM sold 36 timber sales in the NCO planning area and 16 sales in the SWO planning area. These sales included a mixture of intermediate thinnings and final regeneration harvests, and as such, provide an accurate sample of a single year of sustainable timber management. These sales also contain many of the standard design features common to timber sales from federal land management agencies. These design features typically include mitigation measures for resource protection and thus result in higher costs associated with delivering logs to their final destination. These higher costs are reflected in the final bid value, which ultimately is lower than if no design features were imposed. Similar design features regularly occur on sales from Forest Service land and therefore the reduced costs from BLM sales would be fairly representative for similar Forest Service sales. Once again, we were unable to ascertain any useful timber sale data reflective of sustainable timber management on Forest Service land since the Forest Service does not manage its forest land based on the principles of sustained yield.

In fiscal year 2019, timber sales representative of sustainable timber management on the NCO BLM lands generated an average of \$8,600/acre. The corresponding value on SWO BLM lands was \$2,797. The data set for these values is illustrated in the tables below.

BLM NCO - Moist Forests

District	Timber Sale	Acres	Value	Value/Acre
Salem 2019	Sweet Pea	25	\$740,430	\$29,617
	Moore's Meadow	191	\$2,700,899	\$14,141
	Groovy Tunes	330	\$3,826,622	\$11,596
	Silver Lining	297	\$2,252,950	\$7,586
	Laurel Mountain	69	\$71,642	\$1,038
	Voodoo Child	178	\$1,808,477	\$10,160
	Lucky Rowell	203	\$1,954,225	\$9,627
	Lookout Below	256	\$2,537,722	\$9,913
	Flight Path	341	\$5,100,104	\$14,956
	Purple Hazen	242	\$4,081,040	\$16,864
	Watchtower	247	\$3,534,560	\$14,310
Eugene 2019	Kelly Green	137	\$607,020	\$4,431
	High Roller	244	\$2,683,207	\$10,997
	Crooked Roller	177	\$1,158,934	\$6,548

	Green Oaks	473	\$1,644,674	\$3,477
	London Road	193	\$2,052,024	\$10,632
	Nails Creek	102	\$2,056,024	\$20,157
	Wolf Point	203	\$752,600	\$3,707
	Turn and Burn	255	\$181,967	\$714
	Ratified	228	\$3,472,539	\$15,230
	Garoutte Road	93	\$932,947	\$10,032
	Table for 22	127	\$2,657,340	\$20,924
Coos Bay 2019	Rock Weaver	72	\$358,152	\$4,974
	Ebenezer	264	\$355,005	\$1,345
	Camas Overlook	35	\$370,500	\$10,586
	Lookout	40	\$291,419	\$7,285
	Sister Sweden	196	\$494,500	\$2,523
	Glide Path	141	\$799,840	\$5,673
	Slater 21	61	\$476,163	\$1,249
	Kenyon Mountain	69	\$190,970	\$2,768
	Church Yard	211	\$214,884	\$1,018
Roseburg 2019	Flat as a Pancake	167	\$680,179	\$4,073
	Tommy Tot	237	\$1,380,646	\$5,826
	Harvest Moon	257	\$1,454,598	\$5,660
	Styx and Stones	199	\$742,362	\$3,730
	Kernel Klink	197	\$1,230,322	\$6,245

Average	\$8,600
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BLM SWO - Dry Forests

District	Timber Sale	Acres	Value	Value/Acre
Roseburg 2019	Daydream	110	\$304,782	\$2,771
	Bygone Days	198	\$742,362	\$3,749
	Daily Bread	310	\$2,499,597	\$8,063
Medford 2019	Evan's Gem	377	\$231,149	\$613
	O'Windy	938	\$721,588	\$769
	Savage Murph	118	\$47,865	\$406
	Beef Stew	61	\$27,085	\$444
	Wild Bill	62	\$74,521	\$1,202
	Bear Creek	70	\$44,029	\$629
Medford 2020	Ranchero	589	\$4,988,766	\$8,470
Medford 2018	Griffin Half Moon	860	\$2,004,799	\$2,331
	Long Branch	101	\$376,412	\$3,727
	Obenchain	271	\$1,372,388	\$5,064
Lakeview 2019	Stag	390	\$1,349,331	\$3,460

Lakeview 2020	Bryant Mountain	490	\$78,475	\$160
Lakeview 2018	Sweet Vidalia	400	\$1,154,707	\$2,887

Average	\$2,797
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In order to quantify this data in the context of long-term sustained yield management over time, we must assume a certain management rotation. In other words, these values represent the average per-acre value in one given year of sustained yield management. If executed properly on a land base of any size, this management paradigm will generate a fixed amount of thinning and a fixed amount of regeneration each year. For example, if 10,000 acres of moist forest land are managed sustainably on an 80-year rotation (where stands are regenerated at age 80), then every year 125 acres will be regenerated and 125 acres will be thinned. This cycle is sustainable in perpetuity.

The BLM and Forest Service have management direction that generally guides them to conduct regeneration harvest at an age where tree growth begins to decline; this is often referred to as Culmination of Mean Annual Increment (CMAI) and represents the age when a stand's growth reaches its maximum annual increment and starts to decline.⁶ This age varies widely based on site conditions. This practice is likely to persist as policy guiding federal timber management generally favors a balance between value, volume, and forest habitat—all of which factor into CMAI.

The BLM selected an alternative for their final RMP that assumed a rotation age of 100 years would be attained in 100 years.⁷ The Willamette National Forest's Land and Resource Management Plan assumed rotation ages ranging from 80-100 years based on site condition.⁸ The Siskiyou Land and Resource Management Plan assumed rotation ages ranging from 95-105 years.⁹ Given these assumptions we are assuming a 100 year rotation age.

So, if the Service were to consider excluding 500,000 acres of CHU in moist forest areas, we assume that 5,000 acres would be regeneration harvested each year and 5,000 acres would be thinned each year under a system of sustainable timber management. Under this scenario, the economic benefits solely from timber harvest would equate to \$8,600/per acre; or \$86,000,000 per year. An equal number of excluded acres on dry forests would equate to \$27,970,000 per year.

Socioeconomic benefits from timber products should also be a factor, particularly in a region that is so heavily dependent on a robust timber products industry. Calculations from

⁶ Society of American Foresters, *The Dictionary of Forestry* 42 (2d ed 2018).

⁷ U.S. Department of the Interior, Bureau of Land Management. 2015. *Proposed Resource Management Plan/Final Environmental Impact Statement*. Pg. 317.

⁸ U.S. Department of Agriculture, Forest Service. 1990. *Land and Resource Management Plan for the Willamette National Forest*. Pg. IV44.

⁹ U.S. Department of Agriculture, Forest Service. 1989. *Land and Resource Management Plan for the Siskiyou National Forest*. Pg. IV141.

the BLM Proposed Resource Management Plan/Final Environmental Impact Statement assumed 13 local non-federal jobs are created or maintained for every one-million board feet (MMBF) harvested (PRMP/FEIS, Table 3-181, pg. 678). The dataset we used to calculate value/acre was based on timber sales that generated 221.2 MMBF of timber on the moist forests and 78.3 MMBF of timber on the dry forests. This equates to 32.7 MMBF/acre on the moist forests and 14.6 MMBF/acre on the dry forests. Under the scenario above, 10,000 acres would be harvested each year. This equates to 327 MMBF per year on the moist forests and 146 MMBF per year on the dry forests, generating 4,251 jobs in the moist forest areas and 1,898 jobs in the dry forest areas, for a total of 6,149 jobs created or maintained for 500,000 acres of CHU exclusion.

II. Forest Health Benefits of Exclusion: How Critical Habitat Designation Interferes With Land Management Actions.

As quoted above, the Service argued to the D.C. Circuit that CHU designation does not interfere with timber management or cause losses to companies and workers who rely on federal timber. Though the Court flatly rejected the Service's prior position, specific examples demonstrate how designation is a barrier to reasonable timber management.

A. Conflicting Management Direction Related to Northern Spotted Owl Designated Critical Habitat Affects Anticipated Timber Harvest.¹⁰

In July 2020, the Forest Service published a document that assessed current land management trends and informed future Forest Management Plan revisions on approximately 24 million acres of federally managed land from the Canadian border through northern California, including the entire range of the Northern Spotted Owl. The assessment area encompasses 19 individual National Forests and Grasslands including all those whose current plans were amended by the NWFP in 1994. Among other things, the Bioregional Assessment for Northwest Forests evaluates the effectiveness of current management plans, identifies challenges of implementing those plans, and highlights recommendations for future plan revisions. Through these recommendations, the Assessment lays the groundwork for plan revisions and begins to form the blueprint for both the substance of those revisions and their direction and focus.

Since its establishment, regulatory and land management agencies have asserted that the Critical Habitat Rule was not intended to replace Resource Management Plan Direction and should not be interpreted as such in a manner that would interfere with the attainment of actual directives. Instead, this Rule was intended as supplementary guidance. On the contrary, the Assessment makes convincing and troubling conclusions based on years of empirical review that contradict the proclaimed notion that the CHU functions merely as tangential *guidance* as opposed to *direction*. As a legal matter, the idea that a critical habitat designation is guidance is baseless. The ESA gives areas designated as critical habitat

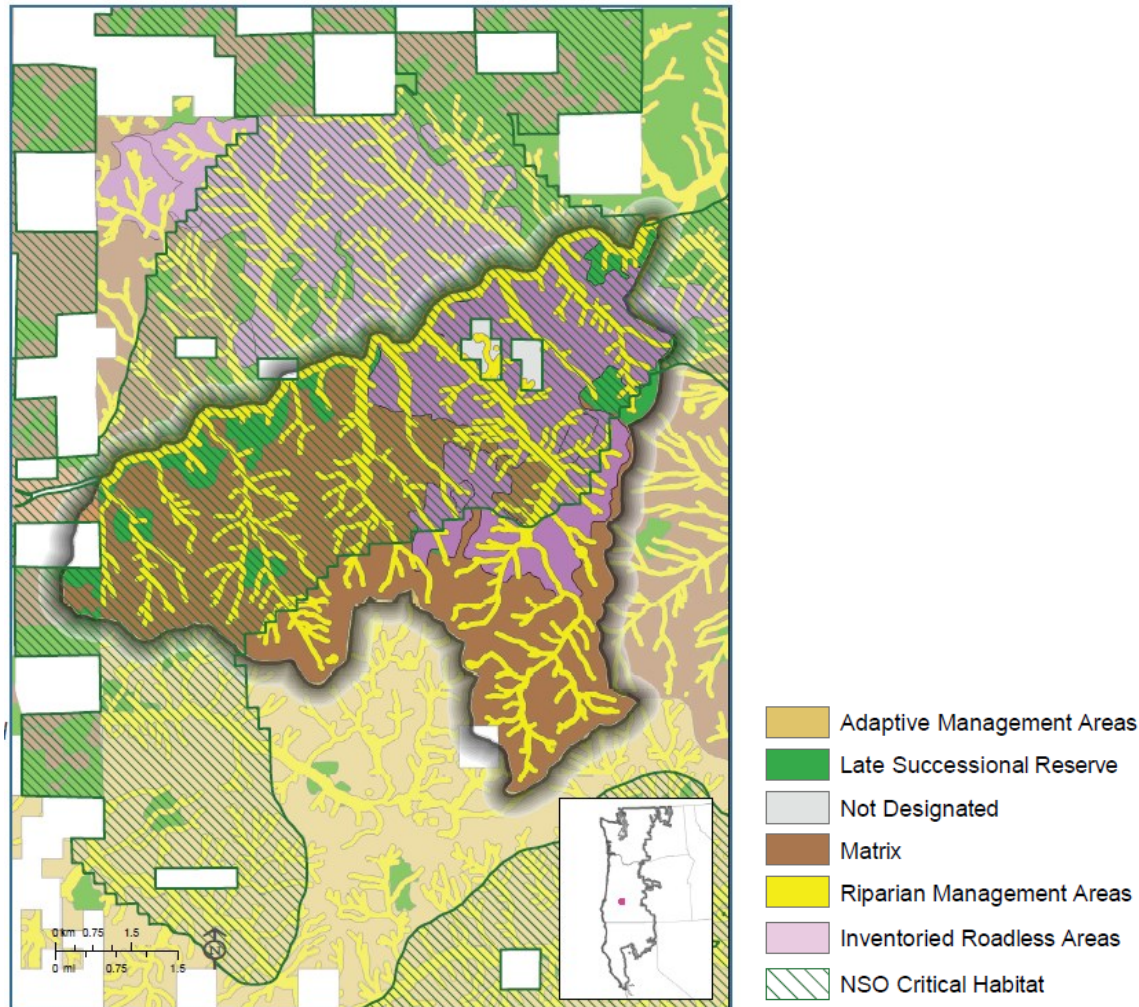
¹⁰ U.S. Department of Agriculture (2020). *Bioregional Assessment of Northwest Forests*. Available at <https://www.fs.usda.gov/detail/r6/landmanagement/planning/?cid=FSEPRD677501>.

mandatory procedural and substantive protection. *See* 16 U.S.C. § 1536(a)(2), 50 C.F.R. §§ 402.02, 402.14.

These findings and conclusions should eliminate any doubt that critical habitat designations indeed interfere with existing management plan direction. Furthermore, these findings should confirm the fact that the NSO CHU has not only interfered with existing plan direction but in fact developed into its own unique quasi-plan directive. The statement in bold below bluntly identifies management direction associated with the NSO CHU and is merely one example of this reality clarified through the findings in the Assessment.

The implications of the NSO critical habitat designation to the adherence to existing land management direction and its interference with the attainment of existing land management objectives are clear and abundant. The Assessment concludes that “Harvest levels are unlikely to increase under current plans because the objectives for **timber production and restoration often conflict with habitat protection objectives**. For example, timber production is no longer emphasized on much of the NWFP matrix land because large areas of matrix have been designated as critical habitat for the northern spotted owl.” Here, the Assessment clearly indicates the Forest Service’s conflation of CHU guidance with both objectives and direction (described here as “emphasis”). Consequently, the objectives for both sustained yield timber management and forest health have been essentially replaced with objectives that emphasize habitat protection as described in the Critical Habitat Rule.

The management implications of the CHU overlay are further articulated in the Assessment through a mapping exercise on page 61, which is shown below. This exercise provides a glimpse into how the Forest Service views the CHU’s influence over land management direction. Here, the CHU is clearly being “overlaid” on top of the Matrix land allocation as a means to distinguish two distinct pieces of land management direction: Matrix with CHU and Matrix without CHU.



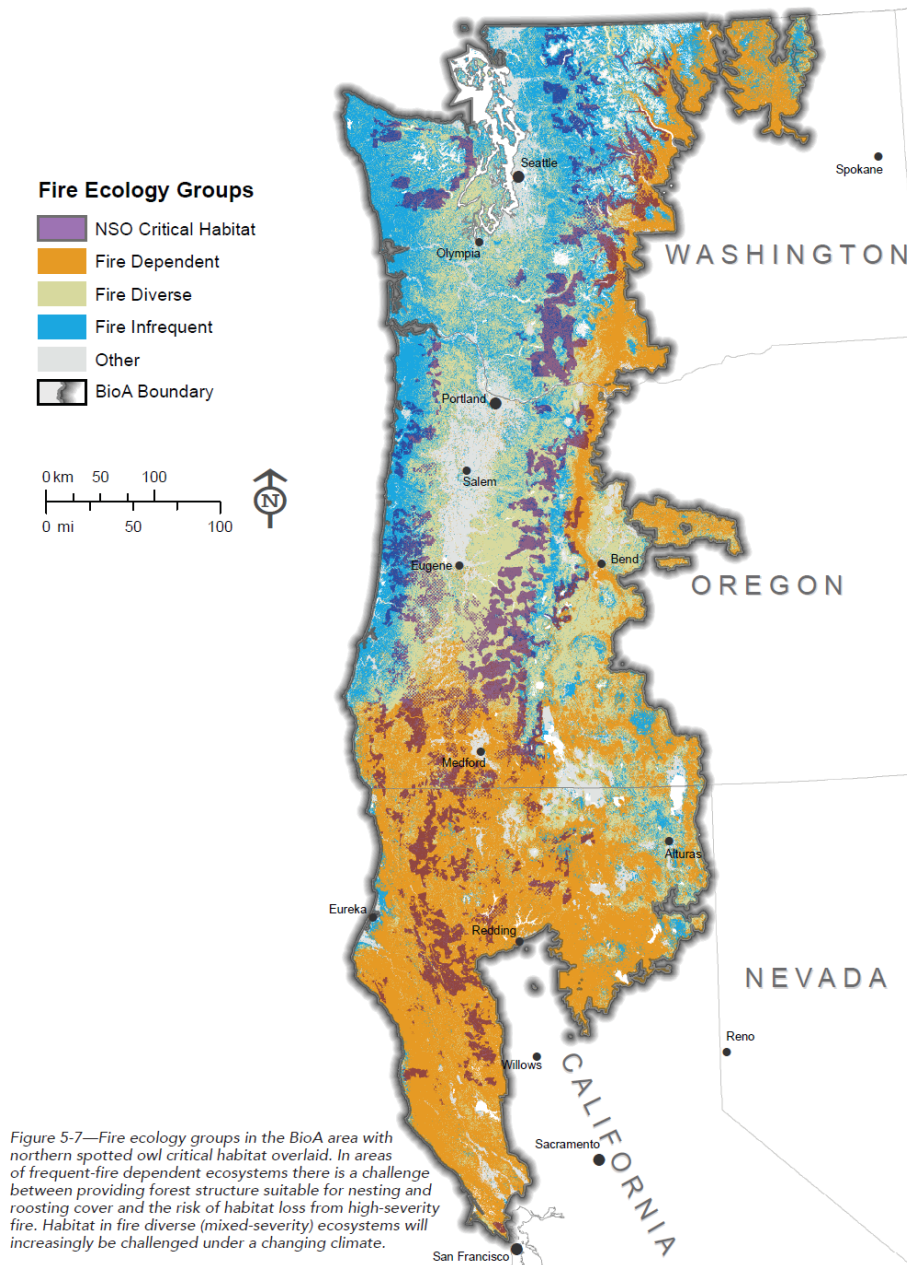
The Assessment makes the following conclusion from this mapping exercise: “land available for timber production under the NWFP is much less than what was left undesignated in NWFP matrix land. Plan direction and Inventoried Roadless Area designation often conflict with assumptions about timber production. Matrix was assumed to emphasize timber production, but timber production goals in Matrix are superseded by more restrictive stipulations, such as minimum canopy cover requirements for ungulates and requirements for tree retention or limited tree stumps. Inventoried Roadless Areas limit timber harvest. **Unmapped riparian reserve, survey and manage standards and guidelines, and northern spotted owl critical habitat designations create further complexity and unpredictability for timber production. And, northern spotted owl critical habitat designation has reduced the land base available for primary timber production.**” This closing sentence summarizes and epitomizes the fact that the NSO CHU has indeed replaced not only the land base, which in this case is the Matrix land use allocation, but also the plan direction, which in this case is timber production, that is attached to this land base.

The fact that the CHU guidance has become conflated with Resource Management Plan Direction is further validated in the Assessment's recommendations to align critical habitat designations with reserve allocations. In this discussion, the Assessment concludes that "harvesting trees to meet restoration goals is often restricted by a combination of planning incompatibilities, such as direction for late successional reserves." The Assessment expands on this notion by stating that "two examples where active restoration through timber harvest might be needed but is limited under current plan direction are managing scenery resources where trees might be cut to open up views and managing habitat for ungulates, such as deer, where trees might need to be cut to generate forage." The Assessment goes on to recommend that "updates to land allocations to better align with the habitats they are trying to protect, such as critical habitat for northern spotted owl and late successional reserves." The clamor for alignment of critical habitat designations such as the NSO CHU with land management reserve allocations validates the fact that current designations are viewed as management direction and that view interferes with management plan implementation.

The Assessment also contains findings that highlight the conflict between the NSO CHU and management objectives and direction beyond those contained in the Matrix land allocation associated with timber production. Of particular concern are those conflicts associated with hazardous fuels reduction in areas identified as being fire dependent. These areas require active management including timber harvest to mitigate the risk of undesirable wildfire. Such management done properly often includes significant reduction of forest canopy levels. Figure 5-7 on page 75 of the Assessment represents "Fire ecology groups in the BioA area with northern spotted owl critical habitat overlaid." That figure is copied below. The caption reads: "In areas of frequent-fire dependent ecosystems there is a challenge between providing forest structure suitable for nesting and roosting cover and the risk of habitat loss from high-severity fire." This "challenge" is once again a function of the land management agency's view of the CHU as management direction. In this scenario, the management agency apparently sees forest canopy reduction as consistent with their management plan direction but has identified a conflict with this reduction and the direction from the CHU. These findings suggest that those managing forest land identified as 'orange' in the table below are regularly conflicted with:

1. Managing hazardous fuel loads consistent with plan direction in a manner that results in healthy forests that are resilient to wildfire; or
2. Maintaining vegetative cover consistent with spotted owl habitat needs that may retard the ability to attain forest health and resiliency direction.

This conflict, validated in the Assessment, occurs regularly in "fire dependent" landscapes resulting in the failure to meet management plan direction for multiple resources including hazardous fuel loading and wildfire mitigation. The critical habitat designation in these areas does not benefit conservation or forest management, and exclusion is therefore appropriate.



B. Specific Project Examples.

1. Smokey Project (Mendocino NF)

The [Smokey Project](#) on the Mendocino National Forest is an example of how critical habitat designation may interfere with much-needed land management actions. As the name suggests, the Smokey Project was designed to prevent wildfire events, particularly in the Buttermilk Late Successional Reserve (LSR), where current stand conditions present a significant risk. The Forest Service rated the project area as at “severe departure from historic conditions,” with “significant chance for the loss of species or habitats” from fire.

The agency concluded “there is a need to treat stands to reduce the risk of large scale loss of LSR habitat components.” The Smokey Project uses techniques, including thinning from below, plantation thinning, and hand thinning to treat about 6,300 acres with 930 acres to be commercially thinned. AFRC member Trinity River Lumber holds the timber sale contract, which was expected to generate 8.5 MMBF of timber.

The Smokey Project was subject to ten years of planning and six years of active litigation. The Forest Service issued the EA for the project and a Decision Notice/Finding of No Significant Impact (DN/FONSI) in 2012. The project received *three separate biological opinions* from the Service. The second biological opinion was triggered based on the need to reinitiate consultation due to the designation of spotted owl critical habitat in 2012. The third biological opinion was triggered based on the apparent movement of one owl pair. For all three biological opinions, the Service determined that the project would not likely appreciably diminish the value of critical habitat for both the survival and recovery of the northern spotted owl.

The Smokey Project was litigated in the U.S. District Court of the Eastern District of California (Sacramento Division) in September 2013. Because the first re-initiation of consultation was underway at the time, the parties agreed to stay the case. The stay was later extended through the second reinitiated consultation process. The district court ruled in favor of Defendant-Intervenor Trinity River and the Forest Service as to eight of the ten claims, but subsequently issued a remedy order which remanded the project to the Forest Service for six months, during which any removal of trees greater than 20-inch diameter was enjoined. In 2018, the district court ultimately dissolved the injunction. *Conservation Cong. v. United States Forest Serv.*, No. 2:13-CV-01977-JAM-DB, 2018 WL 1142199, at *1 (E.D. Cal. Mar. 2, 2018). The case was later appealed to the Ninth Circuit. In June 2019, the Ninth Circuit upheld the project allowing implementation to move forward. *Conservation Cong. v. United States Forest Serv.*, 775 F. App’x 298 (9th Cir. 2019).

This delay due to consultation and litigation has had significant negative impacts on the landscape. In Fall 2020, the August Fire impacted the entirety of the Smokey Project and Trinity River Lumber is unable to move forward with implementation until the Forest Service evaluates the impacts resulting from the fire. Ironically, the Smokey Project, if implemented timely, was intended to address the threats to stands and reduce the risk of wildfire in LSR habitat that has now occurred on the landscape.

2. Crystal Clear Restoration Project (Mt. Hood NF)

The Forest Service developed the [Crystal Clear Restoration Project](#) on the Mt. Hood National Forest with a dual purpose of addressing forest health and wildfire concerns, and maintaining a sustainable supply of timber. The Forest Service proposed to thin 11,742 acres, applying a variable density thinning prescription with 4,244 acres of sapling thinning, 4,004 acres of plantation thinning, and 3,494 acres of non-plantation thinning. The CCR Project will treat 358 acres within the White River LSR to protect the LSR from large-scale wildfire and/or insect and disease epidemics. The remaining 97 percent of the project is within Matrix lands, where timber harvest is encouraged.

The CCR Project is located in northern spotted owl critical habitat, specifically Critical Habitat Unit Eastern Cascades North, subunit ECN 7. However, there were **no owls** that occupied the project area and only eight known or potential nest sites. The original proposed action stated that 12,725 acres would be treated, however that number was significantly reduced during the NEPA process even though consultation with the Service determined that the Project “is not likely to destroy or adversely modify spotted owl critical habitat,” or result in any “take.” In the Final EA, roughly 605 acres were removed from treatment because they contained owl habitat. Following an objection period, the Forest Service issued a final DN/FONSI that modified the proposed action by removing an additional 327 acres from thinning. In addition, 50 acres were removed due to an intervening wildfire in the planning area, resulting in a total of 11,742 acres left in the project area.

Like with the Smokey Project, the CCR Project was subject to litigation, which included a challenge under NEPA regarding whether the impacts on spotted owl critical habitat were significant, requiring the preparation of an EIS and whether the Forest Service complied with its obligations under NFMA. *Bark v. United States Forest Serv.*, 393 F.Supp.3d 1043, 1048 (D. Or. 2019). Although the district court affirmed the CCR Project, the Ninth Circuit reversed and remanded the Project to the Forest Service in 2020. *Bark v. United States Forest Serv.*, 958 F.3d 865 (9th Cir. 2020).

Mere days after the Ninth Circuit denied the request for a petition for rehearing, the White River Fire impacted portions of the CCR Project area with intense heat.

3. Green Mountain Project (Willamette NF)

In June 2016, the Willamette National Forest published the Green Mountain Project Environmental Impact Statement. The project’s Purpose and Need was to:

1. Provide a sustainable supply of timber products
2. Increase vegetative habitat complexity and hardwood composition along streams
3. Shift age class and structural diversity

These objectives were derived from the Willamette Land and Resource Management Plan (LRMP) as amended by the Northwest Forest Plan. Page 17 of the EIS states that “The Willamette National Forest Land and Resource Management Plan as amended by the Northwest Forest Plan, includes goals to produce an optimum and sustainable yield of timber that helps maintain the stability of local and regional economies, and contribute valuable resources to the national economy on a predictable and long-term basis.” Treatment units and action alternatives were developed to meet this, and other, management plan direction, particularly in the Matrix land use allocation (LUA).

This project provides a unique opportunity to see the actual implications of the NSO CHU to a Forest Service vegetation management project due to the timing of the project development. Page 125 of the EIS states that “The Green Mountain Project was planned

and consulted on prior to the release of the revised 2012 critical habitat boundaries.” Here, we are offered a glimpse of what a project in the Matrix LUA looks like on the same piece of ground with the NSO CHU overlaid and without the NSO CHU overlaid.

Page 125 of the EIS goes on to state that “[a]fter the 2012 northern spotted owl critical habitat rule was released, the project was re-evaluated and it was determined that a portion of the project was located in 2012 Critical Habitat Unit West Cascades South, subunit WCS 4, which is approximately 29,830 acres. Conferencing was conducted on Proposed Revised Critical Habitat and effects to northern spotted owls (USDA Forest Service 2012). After the final revised Critical Habitat was determined, USFWS conferred that the Conference Opinion was the Biological Opinion for the purposes of consultation on revised Critical Habitat for the Green Mountain Project (FWS reference: 01EOFW00-2013-TA-0034). **Alternatives 2 and 3 were modified to reduce acres in Critical Habitat, and regeneration harvest treatments within critical habitat were dropped, reducing overall effects. The project was also modified to ensure that the final average canopy cover post-harvest for all thinning units proposed in current suitable and dispersal habitats (within critical habitat) would remain at least 40 percent and thus meet dispersal habitat requirements.** The exception are the five proposed heavy thin units (5120, 5130, 5140, 5370, and 5380) located in the 9D Cascade Special Habitat Area.”

Here we see the clear and simple results of the CHU to how the Forest Service implements its LRMP. Where CHU was overlaid, the agency “modified” and “reduced acres.” In addition to dropping units outright, the Forest Service also modified its density management treatments to meet “average canopy cover” on those units that remained. The outcome was the sacrifice of attainment of the project’s Purpose and Need and subsequently the sacrifice of the Forest’s ability to meet the direction from its LRMP as a direct result of the conflicting direction of the NSO CHU.

4. Bieber Salt EA (BLM Medford District)

The BLM is tasked with managing a portion of its lands in compliance with the O&C Act. Among other things, the O&C Act mandates that the BLM manage its timber resources under the principles of long term sustained yield. This mandate requires a cyclical style of management that includes thinning treatments to encourage growth and regeneration treatments to capture timber volume and reestablish a new cohort of trees. Both treatments often conflict with the habitat needs of the northern spotted owl.

In May 2016, the BLM published the Bieber Salt Forest Management EA. The project analyzed treatments under the BLM’s 1994 RMP in lands allocated as Matrix. Matrix objectives described in the EA included:

1. Production of a sustained yield of products;
2. Promote tree survival and growth.

To meet these objectives the BLM developed several density management treatments. Design of those treatments was partly driven by the CHU. Page 2-4 of the EA stated that

“The 2012 Final Critical Habitat Rule and principles in the 2011 Revised Recovery Plan were used to inform specific prescriptions when treatment units were located within the 2012 Designated Critical Habitat. **Adverse effects were avoided in occupied sites within critical habitat.** Adverse effects in critical habitat located outside of the home ranges of known owl sites were only proposed in areas where the habitat could be improved in the long-term (i.e., proposed treatments in capable, dispersal, or roosting/foraging habitat within high habitat suitability according to the relative habitat suitability model); or treatments would improve stand resiliency.” The impacts to proposed treatment units in light of this “avoidance of adverse effects” were described on page 3-35 as “Canopy cover within treated nesting/roosting/foraging, roosting/foraging, or dispersal stands would be retained at or above 60% and 40%, respectively.”

The sacrifice of attainment of RMP direction and the objectives of the Bieber Salt project are described on page 3-16, where the BLM states that “Due to competing management objectives, some stands proposed for treatment (approximately 23% of the proposed treatment acres) would not meet the long-term silvicultural objectives of shifting the trajectory of stands to more optimal growth and resiliency.” The decision outlined on pages 3-35 to modify treatment prescriptions due to the “avoidance of adverse effects” to the NSO CHU resulted in the following determination regarding the attainment of the project objectives: **“Retaining 60% canopy cover or greater in select stands would not allow for forest health objectives to be met.”**

The Bieber Salt EA provides an example of the type of treatment modifications regularly taken when managing lands in the NSO CHU. These modifications clearly retard not only the BLM’s ability to manage its timber resources in a sustainable manner, but also their ability to manage for general forest health objectives.

III. Requested Exclusions

A. Areas That Must Be Excluded Because They Are Not *Habitat*.

Section 3 of the ESA defines “critical habitat” as “the specific areas within the geographical area occupied by the species, at the time it is listed” where there “are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection.” 16 U.S.C. § 1532(5)(A)(i). Areas not occupied at the time of listing may be designated “upon a determination by the Secretary that such areas are essential for the conservation of the species.” 16 U.S.C. § 1532(5)(A)(ii). But regardless of occupancy at the time of listing, critical habitat must be a subset of “habitat of such species.” See 16 U.S.C. § 1533(a)(3)(A)(i). That is, “[o]nly the ‘habitat’ of the endangered species is eligible for designation as critical habitat. Even if an area otherwise meets the statutory definition of unoccupied critical habitat because the Secretary finds the area essential for the conservation of the species, Section 4(a)(3)(A)(i) does not authorize the Secretary to designate the area as *critical* habitat unless it is also *habitat* for the species.” *Weyerhaeuser*, 139 S. Ct. at 368. As the Court reasoned: “Adjectives modify nouns — they pick out a subset of a category that possesses a certain quality. It follows that ‘critical habitat’ is the subset of ‘habitat’ that is

‘critical’ to the conservation of an endangered species.” *Id.* This is consistent with the ESA’s admonition that in the ordinary course critical habitat “shall not include the entire geographical area which *can be occupied* by the threatened or endangered species.” 16 U.S.C. § 1532(5)(C) (emphasis added). If a geographical area cannot be occupied, it cannot be designated.

The ESA does not define “habitat” so the Services have proposed a regulatory definition. The proposed definition contains language that limits habitat to “areas with existing attributes that have the capacity to support individuals of the species.”¹¹ The CHU includes lands that do not contain the features necessary to support any life function of spotted owls. These areas are often defined as “capable” habitat. The Revised Recovery Plan defines Habitat Capable areas as “Forests below the elevation limits of occupancy by territorial spotted owls that are capable of growing and sustaining structural (Davis and Lint 2005) and ecological conditions of spotted owl habitat.” Habitat Capable land is land that does not have existing attributes that have the capacity to support individuals of the species. Therefore “capable” habitat is not habitat at all. We assert that lands that do not meet the definition of habitat are not habitat and therefore should be excluded from the CHU.

The current science identifies various categories of spotted owl habitat. These categories each support different life cycle needs of the owl. They can exist independently of one another, or together on the same piece of land. Generally, these categories are identified as: dispersal, foraging, roosting, and nesting. Each category has habitat feature thresholds that are defined and measurable for the purpose of informing land management decision making. Generally, habitat defined as either “nesting, roosting, or foraging” is regarded as “suitable” habitat or “high quality” habitat. The Revised Recovery Plan defines high quality habitat as “older, multi-layered structurally complex forests that are characterized as having large diameter trees, high amounts of canopy cover, and decadence components such as broken-topped live trees, mistletoe, cavities, large snags, and fallen trees.” Dispersal habitat is defined in the Revised Recovery Plan through references to The Interagency Scientific Committee (ISC) and the 1990 Conservation Plan which defined dispersal habitat as “forest stands with average tree diameters >11 inches and conifer overstory trees with closed canopies (>40 percent canopy closure in moist forests and >30 in dry forests) and with open space beneath the canopy to allow spotted owls to fly can provide the minimum conditions needed for successful dispersal” (Thomas et al. 1990:310).

Capable habitat, therefore, is defined as forest land that does not meet the minimum definition of dispersal habitat.¹² These are lands with average tree diameters <11 inches and conifer overstory trees with canopies < 40 percent closure in moist forests and < 30 percent in dry forests. Any forest stand that fails to meet these minimum thresholds is only habitat capable, which is not currently habitat and therefore cannot be designated as critical habitat under the ESA. Those non-habitat areas must be excluded from the CHU as a matter of

¹¹ Proposed Rule, 85 Fed. Reg. 47,333 (Aug. 5, 2020).

¹² The Service assumes that lands categorized as nesting, roosting, and foraging habitat also functions as dispersal habitat. In its definition of “nesting, roosting and foraging habitat”, a Biological Opinion on a BLM project notes that “NRF habitat also functions as dispersal habitat.”

law. They also merit exclusion because they offer no “existing attributes” to support the species and therefore no present benefit to the species, whereas their inclusion imposes very significant economic impacts, as discussed above.

The benefits of including these areas are negligible based on our discussion above. The benefits of excluding those areas are vast and vary depending on the corresponding management direction. Areas designated as Matrix would benefit from the economic and social factors we outline in the Economic Impact section of our comments under I.A, B. Areas designated as Late-Successional Reserve benefit from an expedited analysis process due to reduced level of CHU consultation as well as fewer management conflicts, particularly on dry forest types, that we highlight in the Interference with Land Management section of our comments under II.A and II.B.1,2.

B. Areas That Must Be Excluded Because They Are Low Quality Habitat.

Despite their past classification as meeting the legal definition of “habitat”, we believe that those lands categorized as “dispersal” must also be excluded from the CHU. Our rationale is twofold:

1. The regulations in 50 CFR 424.12 preclude its inclusion of these dispersal areas because the Service lacked sufficient data to distinguish between habitat and non-habitat “dispersal” areas;
2. The ESA’s definition of critical habitat as “essential” to the conservation of the species precludes its inclusion.

The Proposed Rule recognizes the inclusion of this habitat type and refers to it as “low quality” on page 37. Here, the proposed rule states that “[o]ur preliminary analysis of potential areas to consider for exclusion revealed small areas of lower quality interspersed with higher quality habitat scattered across and imbedded within critical habitat subunits.” It then goes on to justifying the rationale for not excluding those areas by stating that “formally excluding these lower quality areas from critical habitat would require significant mapping and analytical effort.” Even taking it at face value, this explanation clearly indicates that the Service does not believe that these dispersal or “low quality” habitat areas are appropriate for designation in the CHU, but nonetheless designated them so it would not have to map them. The Revised Recovery Plan discusses the role of dispersal habitat on page *vi* in its general definition of “habitat requirements” and states that “Although spotted owls can disperse through highly fragmented forested areas, the stand-level and landscape-level attributes of forests needed to facilitate successful dispersal have not been thoroughly evaluated or described.”

Accordingly, both the Proposed Rule and the Revised Recovery Plan recognize that the Service lacked sufficient data to distinguish between habitat and non-habitat “dispersal” areas. Designation of such areas is prohibited by 50 CFR § 424.12(a)(2), which states that “Designation of critical habitat is not determinable when one or both of the following situations exist: (i) Data sufficient to perform required analyses are lacking; or (ii) The

biological needs of the species are not sufficiently well known to identify any area that meets the definition of critical habitat.”

Because (1) the Service says that it cannot distinguish between habitat and non-habitat without more mapping and analysis; and (2) the revised recovery plan recognizes that dispersal habitat needs have not been thoroughly evaluated, section 424.12(a)(2) precludes the inclusion of dispersal habitat due to lack of proper analysis and uncertainty of the biological needs of the species.

The proposed rule states on page 9 that “Under the first prong of the Act’s definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features which are essential to the conservation of the species.” We believe that those areas identified as “low quality” are not essential to the conservation of the species and should therefore be excluded from the CHU. The Revised Recovery Plan defines “Habitat Requirements” on page *vi* as “mature and old-growth forests because these habitats contain the structures and characteristics required for nesting, roosting, and foraging.”¹³

Those areas defined and categorized as dispersal-only should be excluded from the CHU. How dispersal-only habitat is defined is outlined in our section regarding “capable” habitat. To further clarify how dispersal-only should be defined, we direct you again to a Biological Opinion from the Medford BLM District. This Opinion states that dispersal habitat “at a minimum consists of stands with adequate tree size and canopy to provide protection from avian predators and at least minimal foraging opportunities. Dispersal habitat may include younger and less diverse forest stands than foraging habitat, such as even-aged, pole-sized stands, but such stands should contain some roosting structures and foraging habitat to allow for temporary resting and feeding for dispersing juveniles (USDI FWS 1992). Dispersal habitat is generally forest stands with an average stand canopy cover of 40 percent or greater and an average diameter at breast height (DBH) of 11 inches or greater.”¹⁴

The benefits of including these areas are minimal based on our discussion above. The benefits of excluding those areas are vast and vary depending on the corresponding management direction. Areas designated as Matrix would benefit from the economic and social factors we outline in the Economic Impact section of our comments under I.B. Areas designated as Late-Successional Reserve benefit from an expedited analysis process due to reduced level of CHU consultation as well as fewer management conflicts, particularly on dry forest types, that we highlight in the Interference with Land Management section of our comments under II.A and II.B.1,2.

On Forest Service lands, the Service conducted a cursory analysis, finding “small areas of lower quality interspersed with higher quality habitat scattered across and imbedded

¹³ USFWS (U.S. Fish and Wildlife Service). 2011. *Revised Recovery Plan for the Northern Spotted Owl*.

¹⁴ Biological Opinion – Medford District BLM FY18 April Batch of Projects 01EOFW00-2018-F-0476.

within critical habitat subunits.” 85 Fed. Reg. at 48,496. It claims “excluding these lower quality areas from critical habitat would require significant mapping and analytical effort.” *Id.* This claim is dubious. The FEA identified unoccupied matrix acres on a subunit-by-subunit basis. The 2012 rule also noted “of 60 subunits designated, 4 (NCO-4, NCO-5, and ORC-1) contain proportionally greater areas of younger forests that are essential for the conservation of the species, because they can develop additional habitat necessary to support viable northern spotted owl populations in the future.” 77 Fed. Reg. at 71,917. But to the extent the statement in the proposed rule is accurate, the Service should exclude subunits dominated by such younger forests.

C. Areas That Must Be Excluded Because They Are Not Capable of Supporting Owls.

Page A-13 of the Revised Recovery Plan states that “Revised spotted owl critical habitat was designated based on large blocks of habitat identified for spotted owl conservation.” Our discussion below will highlight the fact that this claim is false and that areas of fragmented habitat were wrongly included in the CHU.

1. Checkerboarded or Fragmented Landscapes Cannot Be Effectively Managed As Critical Habitat, So Any Designated Unit or Subunit Must Be No Less than 3,000 Acres.

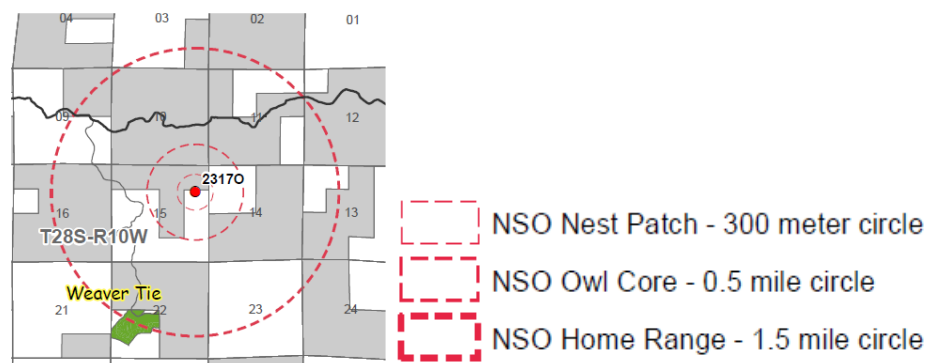
Habitat that occurs in less fragmented (that is, contiguous) blocks is better than habitat that is more fragmented.

The proposed regulatory definition of habitat contains language that limits habitat to “areas with existing attributes that have the capacity to support individuals of the species.” 85 Fed. Reg. at 47,334. Here, AFRC would like to emphasize the significance of the term “capacity to support” regarding a given area’s ability to function as habitat in spatial terms. Not only does habitat suitability rely on specific features, but also on the spatial extent covered by those features. The italicized language above is from page 23 of the 1990 NSO Conservation Strategy and paves the foundation for our argument against including fragmented landscapes in the CHU.

Spotted owl research dating back to the 1980s has considered not only the ecological features necessary to support owls but also the arrangement and spatial scale that those features must exist in. Guidelines developed from this research by regulatory agencies have assisted land management agencies with making decisions on habitat manipulation for decades. The most widely accepted scale for determining owl survivability and success is the owl “circle” made up of a nest patch, core area, and home range. The Conservation Strategy from 1990 stated that “A circle approximating the annual home range of a pair of spotted owls was used to bound areas within which SOHAs on FS lands were delineated.

These circles ranged from 1.5 to 2.1 miles in radius and amounts of prescribed suitable habitat ranged from 1000 to 3000 acres, depending on physiographic province.”¹⁵

The graphic below is taken from a BLM Environmental Assessment on the Coos Bay District called Lone Pine and illustrates the concept and layout of the owl circle, including the home range, that is the standard scale at which the BLM, Forest Service, and the Service use to consider impacts to owls.¹⁶ The outer circle represents the home range is approximately 4,520 acres in size.



Over time, the science has concluded that home ranges vary in size dependent on location within the range of the NSO. The two excerpts below are from a recent Biological Assessment from the NW BLM District/Siuslaw National Forest and a recent BA from the Medford BLM District, respectively. Here, they outline the size of home ranges that are being used.

Home Range (or Median Provincial Home Range): An estimated area of habitat used by a spotted owl pair. For the Oregon Coast Range, this estimate is about 1.5 miles (radius circle) around a known or potential spotted owl site (Thomas et al. 1990 p. 194, Table II; USDA & USDI, 1994c, p.12; Courtney et al. 2004, Table 5-1; Wiens et al. 2014, p. 17, Table 4).*

[*This equates to approximately 4,520 acres]

* * *

Home Range Circle is an approximation of the median home range size used by spotted owls. The Medford District uses the median home range estimated for southwestern Oregon of 2,895 acres or a circle with a radius of 1.2 for the West Cascades Province and 3,400 acres or a circle with a radius of 1.3 miles for the Klamath Province (Thomas et al., 1990; Courtney et al., 2004).

¹⁵ Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon and J. Verner. 1990. *A conservation strategy for the northern spotted owl*. Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl. U.S. Forest Service, U.S. Bureau of Land Management, U.S. Fish and Wildlife Service, and U.S. National Park Service, Portland, Oregon.

¹⁶ Bureau of Land Management, Coos Bay District. 2013. Lone Pine Environmental Assessment. DOI-BLM-OR-C040-2011-0006-EA.

In summary, home ranges vary in size from approximately 3,000 acres in the Klamath provinces to 4,500 acres on the coast range.

The importance of habitat availability at the home range scale is well documented. The content of these two assessments validates the importance placed upon these home ranges by the Service. The Biological Opinion issued to the BLM in 2018 states that “Due to the prioritization, the District attempted to place all treatments outside of spotted owl known home ranges.”¹⁷ This Opinion also stated that “best available information indicates that spotted owl sites that are occupied over the long-term are positively associated with mosaics of forest habitat at the provincial core-use area and home range scales that are capable of providing the resources necessary to meet the essential life functions of individual spotted owls.” It goes on to conclude that “the reduction of the amount of NRF habitat, or large proportions of habitat within home ranges, especially close to the nest site, can be expected to have negative effects on spotted owls.”

The emphasis on the home range scale can also be found in the 2011 Spotted Owl Revised Recovery Plan. This plan identified numerous integral actions to assist in recovery to the species. Among those was Recovery Action 10, which focused on the conservation of spotted owl sites. The Plan described the importance of this level of conservation by concluding that “At the scale of a spotted owl territory, several studies have shown a positive association between spotted owl fitness and spotted owl habitat or a mosaic of habitat types (Franklin *et al.* 2000, Dugger *et al.* 2005, Olson *et al.* 2004).¹⁸ Dugger *et al.* described the scale of a “territory” as “730 m and 2230 m radius circles (167 ha and 1565 ha respectively) centered on nest sites or primary roost areas (site centers) over the six-year period to represent the core use area and home range of owls (habitat characteristics for each territory did not vary by year).”¹⁹ These 1,565 hectare home ranges equate to approximately 3,870 acres. The Plan goes on to find that “research suggests retention of spotted owl habitat within spotted owl territories positively affects demographic rates. Because spotted owls on established territories are likely to be more successful if they remain in those locations (Franklin *et al.* 2000), managing to retain spotted owls at existing sites should be the most effective approach to bolstering the demographic contribution of a habitat conservation network and the highest priority for land managers.”

These guidelines from the Plan coupled with the voluminous amount of research that informed them, along with the documentation of project implementation through Biological Assessments and Opinions, supports the conclusion that spotted owls are not only dependent on a particular type of forest habitat containing specific features, but also on a certain grouped arrangement of that forest habitat (the base scale for this grouped arrangement is the home range, which ranges from 3,000 to 4,500 acres). Consideration of

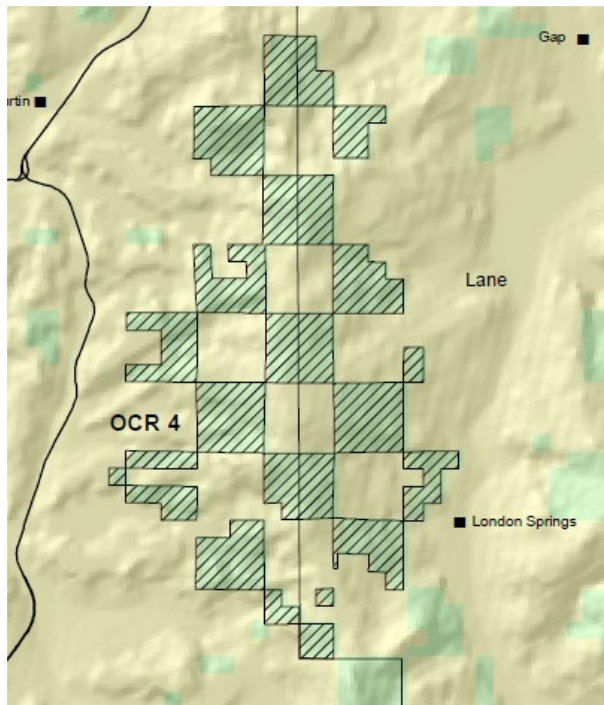
¹⁷ Biological Opinion – Medford District BLM FY18 April Batch of Projects 01EOFW00-2018-F-0476.

¹⁸ USFWS (U.S. Fish and Wildlife Service). 2011. *Revised Recovery Plan for the Northern Spotted Owl*.

¹⁹ Dugger, K.M., F. Wagner, R.G. Anthony and G.S. Olson. 2005. *The relationship between habitat characteristics and demographic performance of northern spotted owls in southern Oregon*. Condor 107:863–878.

this spatial scale is integral in identification of viable spotted owl habitat. **Ultimately, the science should lead to the determination that areas of forestland less than 3,000 contiguous²⁰ acres should be deemed incapable of supporting spotted owls and therefore not be considered habitat and excluded from the CHU.**

CHU designation patterns such as the one illustrated below for OCR 4 illustrate the type of designations that should be excluded due to the inability of such units to provide habitat capable of supporting owls.



At bottom, designation of critical habitat on any individual section of land that is less than 3,000 acres is not supported by the current science and recovery directives. Such fragmented units are incapable of supporting viable owl populations and therefore are not suitable or beneficial for designation as critical habitat.

The benefits of including these areas are minimal based on our discussion above. The 1990 Conservation Strategy identifies such fragmented areas as inferior habitat. Identifying inferior habitat as “critical” is inconsistent with the intent of the rule. The benefits of excluding those areas are vast and vary depending on the corresponding management direction. Areas designated as Matrix would benefit from the economic and social factors we outline in the Economic Impact section of our comments under I.B. Areas designated as Late-Successional Reserve benefit from an expedited analysis process due to reduced level of CHU consultation as well as fewer management conflicts, particularly on dry forest types,

²⁰ For the purpose of this request, we are considering the term contiguous to refer to land parcels joined by more than a single point. For example, two legal 640-sections that have touching corners are not contiguous.

that we highlight in the Interference with Land Management section of our comments under II.A and II.B.1,2.

2. Subunits Dominated by Younger Forests.

Page vi of the Revised Recovery Plan states that “Scientific research and monitoring indicate spotted owls generally rely on mature and old-growth forests because these habitats contain the structures and characteristics required for nesting, roosting, and foraging. Although spotted owls can disperse through highly fragmented forested areas.” Here, the Plan indicates that owls can disperse through fragmented landscapes but says nothing on whether owls can nest and forage in such landscapes. Page A-8 of the Plan states that “Spotted owls are able to move successfully through highly fragmented landscapes.” Once again, only the dispersal of owls is noted to be unhindered by fragmented landscapes.

On the contrary, on page III-19 the Plan directs the action agencies to “manage for large contiguous blocks of late-successional habitat.” We find it puzzling that the agency that advises for large blocks of late-successional habitat would designate areas of fragmented habitat including early seral and mid-seral in its Critical Habitat Unit.

The subunits identified on the chart on page 2 of this letter include areas of low quality or capable habitat exceeding 50% of the subunit acreage. Page III-44 of the Revised Recovery Plan provides guidance to the management of functional owl sites. Here the Plan advises that “The priority for site condition is sites currently with >40% in the provincial home range (e.g., 1.3-mile radius) and >50% habitat within the core home range (e.g., 0.5 mile radius).” Page III-42 indicates that this “habitat” refers to “NRF (nesting, roosting, foraging)” habitat, which is also commonly referred to as suitable habitat. In other words, the Plan advises that at least 40% of the home range and 50% of the core area should be comprised of suitable owl habitat. Yet the CHU includes subunits that do not even meet these minimum requirements for owl cores.

Once again, we’ll highlight the important quote from the 1990 Conservation Strategy that read “Habitat that occurs in less fragmented (that is, contiguous) blocks is better than habitat that is more fragmented.” Identifying habitat that is deemed inferior in the context of overall NSO habitat as critical is inconsistent with the intent of the Critical Habitat rule. Such habitat areas should be excluded.

D. Exclusion of the O&C Lands Is Legally Required.

The O&C timberlands have a unique statutory purpose and historical context that justifies an exclusion from critical habitat under the Secretary’s discretionary power set forth in Section 4(b)(2) of the ESA. O&C lands are former railroad grant lands revested in the United States in 1916. *See Oregon & Cal. R.R. Co. v. United States*, 238 U.S. 393 (1915); Chamberlain-Ferris Act of June 9, 1916, 39 Stat. 218; February 26, 1919 (40 Stat. 1179). In 1937, Congress enacted the Oregon & California Railroad and Coos Bay Wagon Road Grant Lands Act (O&C Act). Act of Aug. 28, 1937, 50 Stat. 874; 43 U.S.C. §§ 2601–06. The O&C Act requires the subject lands to be devoted to “permanent forest production,”

specifically mandating “the timber thereon shall be sold, cut, and removed in conformity with the princip[le] of sustained yield....” 43 U.S.C. § 2601. Under the O & C Act 50% of timber sale receipts are provided to the 18 counties in which the O&C lands are located, providing a substantial source of government revenues for these localities. 43 U.S.C. § 2605.

Congress recognized that sustained-yield forestry would result in “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 facil[i]ties.” *Id.* It also recognized the mandatory nature of sustained-yield forestry on the lands when enacting legislation in 1948 to reopen the O&C lands to exploration location, entry, and disposition under the general mining laws. Act of Apr. 8, 1948, 80th Cong., 2d sess., ch. 179, Pub. L. No. 80-477, 62 Stat. 162. The O&C mandate is one to which ESA duties “simply do not attach.” *Am. Forest Res. Council v. Hammond*, 422 F.Supp.3d 184, 191 (D.D.C. 2019), *appeal docketed*, Nos. 20-5008, 20-5009 (D.C. Cir. Jan. 24, 2020). “BLM must ensure that the timber produced on O&C land is sold, cut, and removed in conformity with the principle of sustained yield. These are mandatory directives from Congress.” *Id.* *Hammond* overturned BLM’s resource management plan for unlawfully placing O&C lands into reserves “where the land is not managed for permanent forest production and the timber is not sold, cut, and removed in conformity with the principle of sustained yield.” *Id.* at 191. The Service may not impose reserves through the back door.

Designation of critical habitat unlawfully impairs the BLM’s ability to manage the O&C lands as required by law. As explained above, designation of O&C lands as critical habitat for the spotted owl would impair the BLM’s ability to manage the O&C lands to achieve permanent forest production, would constrain county receipts from timber sales, and would violate the timber production mandate of the Act. Further description on how this designation would impair permanent forest production is included in the Economic Impact-A Forestry Perspective section of our comments under I.B.

E. Dry Forest CHUs Should Be Excluded Because the CHU Designation Has Significant Negative Environmental Effects.

1. Thirteen Dry Forest CHU Subunits Should Be Excluded.

The Revised Recovery Plan explains “the most important range-wide threats to the spotted owl are competition with barred owls, ongoing loss of spotted owl habitat as a result of timber harvest, habitat loss or degradation from stand replacing wildfire and other disturbances, and loss of amount and distribution of spotted owl habitat as a result of past activities and disturbances.” Revised Recovery Plan, p. *vii*. In this section we focus on the threat of loss of habitat from stand replacing wildfire.

Despite the fact that the Recovery Plan identifies loss of habitat from timber harvest and wildfire as equal risks, the data and facts indicate otherwise. Davis et al. (2016)²¹ conducted Northwest Forest Plan monitoring to show trends in northern spotted owl habitat over the first 20 years of implementation from 1994 to 2013. They found a range-wide net decrease of 1.5% in northern spotted owl nesting/roosting habitat on federal lands from 9,089,700 acres in 1993 to 8,954,000 in 2013. Gross losses on federal lands were **473,000 acres from wildfires (-5.2% loss), 116,100 acres from timber harvest (-1.3% loss),** and 59,800 acres from insect and diseases (-0.7% loss). These daunting numbers should compel the U.S. Forest Service and other land management agencies to focus their recovery actions on reducing the agent responsible for the most habitat loss, which is wildfire.

The CHU creates scenarios where land managers forego forest and ecosystem health objectives, including density management and fuels reduction in dry forest ecoregions with high fire hazard risk, in favor of perceived CHU objectives. Page 35 of the Proposed Rule recognizes the problems with the CHU “sending confusing direction to land managers.” We agree, and urge you to consider exclusion of those portions of the CHU where stand replacing fire risk is the most significant threat to the species, and consequently, where land managers’ focus should be on dry forest restoration and hazardous fuels reduction. There are many examples where land management agencies forego forest health objectives in favor of spotted owl habitat maintenance in dry forests ecoregions.

The economic repercussions from maintaining the CHU on dry fire-prone forests go beyond loss of timber value. The costs associated with wildfire suppression are immense. In 2019, the Forest Service and Department of the Interior spent \$1,590,000,000 on wildfire suppression.²² 2019 was a slow fire year, relatively speaking. The 5-year average cost is over \$2 billion! It’s difficult to tease out from this data the costs specific to those forests in the range of the northern spotted owl. Nevertheless, the simple fact is that fire suppression costs are immense and forest land managers can do their part to mitigate the risk of wildfire through density management treatments. Such treatments, like those considered in the Bieber Salt project, are critical to reducing fuels loads in the range of the spotted owl, and close review of forest management projects in dry forests ecoregions indicate that the reduction is often compromised by the CHU.

We have copied a segment of the “Wildfire Hazard Potential (WHP)” map from 2018 below. This map was created by the USDA Forest Service, Fire Modeling Institute.²³ The Institute notes that “areas mapped with higher WHP values represent fuels with a higher

²¹ Davis, R.J., B. Hollen, J. Hobson, J. E. Gower, and D. Keenum. 2016. *Northwest Forest Plan—the first 20 years (1994–2013): status and trends of northern spotted owl populations and habitats*. Gen. Tech. Rep. PNW-GTR-929. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, at 54.

²² National Interagency Fire Center.

https://www.nifc.gov/fireInfo/fireInfo_documents/SuppCosts.pdf.

²³ Dillion, Greg. USDA Forest Service, Fire Modeling Institute, 2018.

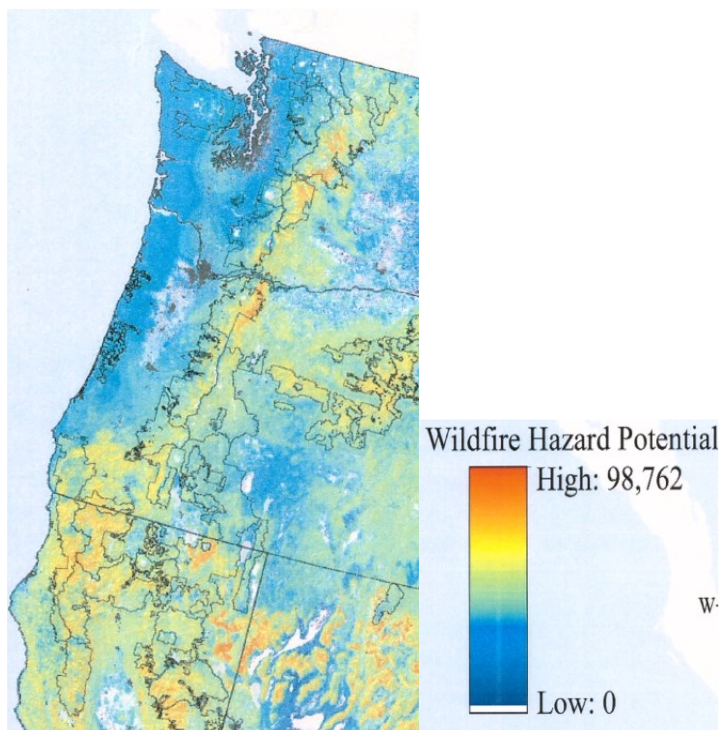
https://www.firelab.org/sites/default/files/images/downloads/whp_2018_continuous_lettersize.jpg.

probability of experiencing torching, crowning, and other forms of extreme fire behavior.” It goes on to state that “on its own, the WHP is not an explicit map of wildfire threat or risk, but when paired with spatial data depicting highly valued resources and assets, it can approximate relative wildfire risk to those resources and assets.” In this context, the resource that we are pairing with the hazard map is the NSO CHU.

Although we were unable to create accurate “overlays” to attach to this document, we did conduct an overlay exercise to determine which CHU Units and Subunits largely overlapped those areas of the WHP map designated as higher values (red and orange). Based on this exercise we have determined that the following Subunits exist largely on forests identified as higher value in the WHP map.

1. East Cascades North (ECN) 3, 4, 5, 7
2. Klamath West (KLW) 4, 7, 8, 9
3. Klamath East (KLE) 4, 6, 7
4. Interior California Coast (ICC) 1, 4

We strongly urge you to consider excluding these Subunits of the CHU, and any others that you determine to overlap an area identified as high or moderately high fire hazard risk. Exclusion would facilitate the implementation of effective density management and fuels reduction treatments on those acres most vulnerable to extreme fire behavior that would contribute to the ongoing high loss of NSO habitat. The benefits include the protection of existing NSO habitat, revenue from the sale of timber products, and potential cost savings from reduced fire suppression costs.



2. Dry Forests In California Must Be Excluded.

a. The Fire Ecology of Northern California.

“For thousands of years, fire has been a major evolutionary force in the Klamath Mountains of northwest California and southwest Oregon, influencing forest structure, species composition, soil properties, wildlife habitat, landscape patterns, watershed hydrology, nutrient cycling and numerous other ecosystem processes (Chang 1996, Agee 1993)” (“Fire Regimes, Fire History and Forest Conditions in the Klamath-Siskiyou Region: An Overview and Synthesis of Knowledge.” Frost and Sweeney, December 2000).

Increases in numbers of human-caused ignitions, large lightning events, a dramatic increase in the density of vegetation particularly on the National Forests, periods of hot dry summers, low spring snowpack and a host of other factors have contributed to major changes in the fire ecology of northern California.

b. Current Condition.

Today nearly the entire range of the Northern Spotted Owl in northern California is in a very high fire hazard severity zone (see Figure 1).

In the past 19 years, over 3 million acres of northern California has burned in wildfires (see Table 1). Table 1 lists the wildfire name, County, and acres burned by year from 2002-2020. Note the lightning incidents of 2008 and 2020 led to nearly 2 million acres burned in those two years alone and the trend is toward very large fires (megafires).

c. Fire Ignitions Are Not Going to Change.

“Lightning and humans are the two sources of fire ignitions that occurred historically and continue to occur in the Klamath Mountains. Lightning strikes are frequent across most of the region during the summer and have a sufficiently high density to ignite numerous fires (LaLande 1980, Cooper 1939, Morris 1934). Agee (1993) reported that the Siskiyou Mountains exhibit the highest patterns of lightning occurrence in the Pacific Northwest, as much as twice the number of lightning ignitions that occur in either the Cascades or Olympic Mountains (Agee & Flewelling 1983). The higher number of lightning ignitions are due to both increased lightning frequency and decreasing summer precipitation patterns characteristic of the Klamath-Siskiyou region.”(Frost and Sweeney).

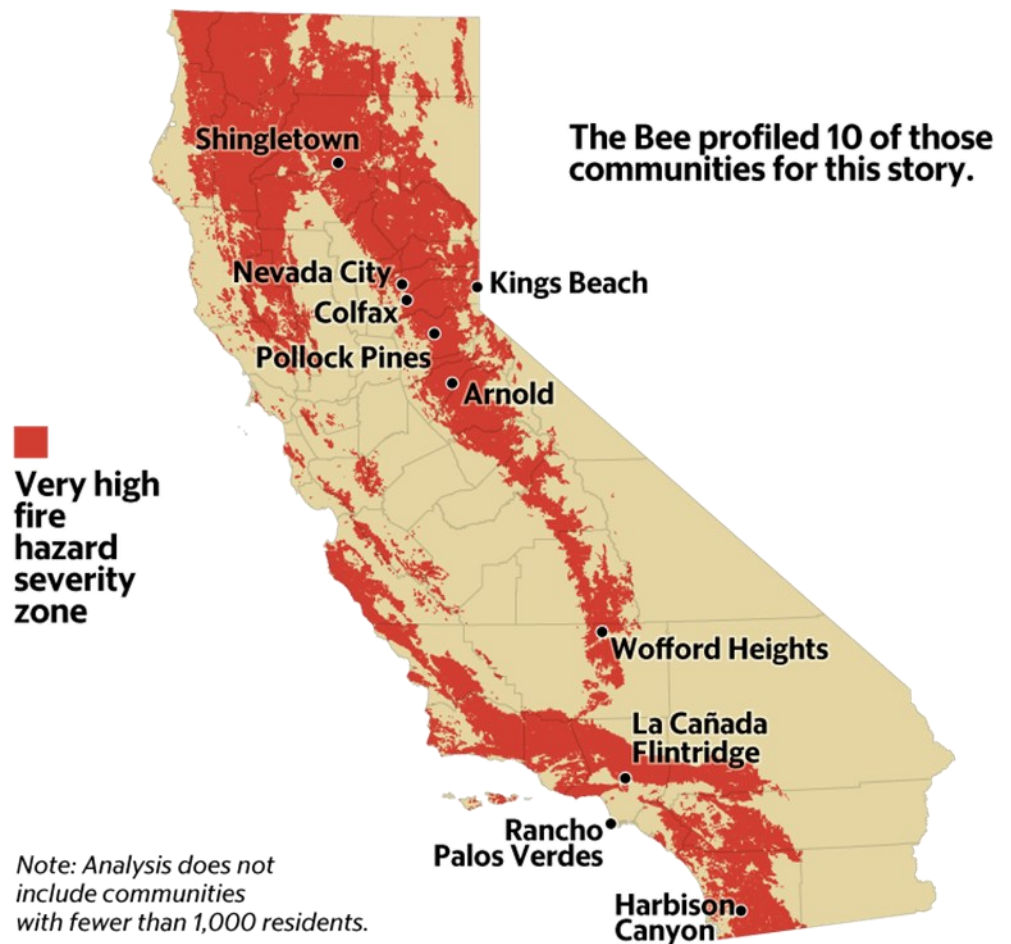
d. Habitat.

Historically, wildlife species could adapt to patchy habitat resulting from lower intensity wildfire. However, with megafires becoming more common, the substantial decline in occupancy at severely burned sites is unlikely to reflect a temporary loss of individuals that will soon be replaced by colonization. Rather, a direct loss of suitable nesting and roosting habitat will likely not be replaced for many decades (“Megafires: an emerging threat to old-forest species.” Jones, et al., August 1, 2016).

e. Conclusion.

Assigning location specific “critical habitat” on the landscape in the fire ecology of northern California is not going to be the best approach to taking an adaptive management approach as the vegetation rapidly changes. Rather constant evaluation of the existing condition as wildfires (particularly megafires) change the landscape is necessary. A rapid increase in the pace and scale of fuels reduction to return the landscape closer to the historic condition in terms of tree density and heterogeneity is needed. Otherwise, land managers will be unable to anticipate low intensity fires becoming the norm as they once were.

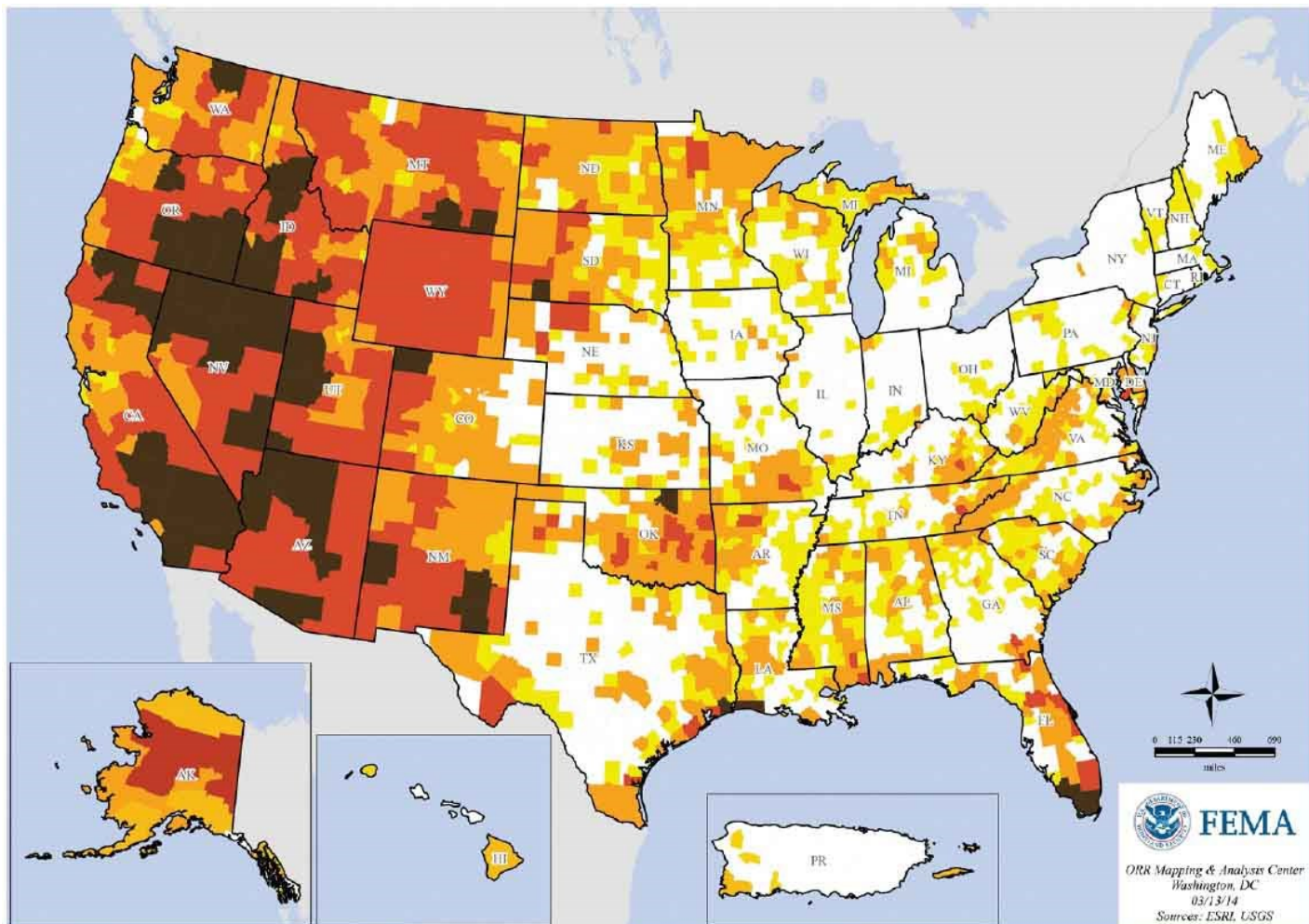
Figure 1. Very High Severity Fire Hazard Severity Zone



Source: CalFire; 2020

Figure 2. Wildfire Activity by County 1994-2013

NOTE: Klamath Mountains – Frequency of Wildfire Greater or Equal to 300 acres over a 20-year period (1994-2013) is 100 to 1300% Percent



Frequency of Wildfires Greater Than or Equal to 300 acres:

BLACK – 101-1,308; Red – 21-100; Tan – 1-20

Source: FEMA (<https://wildfiretoday.com/2017/05/01/wildfire-activity-by-county/>)

Figure 3. Wildfire Locations in California (2018)



Source: <https://www.fire.ca.gov/incidents/2018/>

Table 1 - Years 2000 through 2020 – Wildfire Name, Acreage and County in N. California

Year	Wildfire Name	Counties	Wildfire Acres
2020	July Complex	Modoc, Siskiyou	83,261
	Red Salmon Complex	Humboldt, Siskiyou, Trinity	129,191
	August Complex	Glenn, Mendocino, Lake, Tehama, Trinity	979,386
	Slater/Devil	Siskiyou, Del Norte	163,412
	Fox	Siskiyou	2,188
Total			1,357,438
2019	Tucker	Modoc	14,150
	Lone	Modoc	5,737
	Lime	Siskiyou	1,872
	Middle	Trinity	1,339
Total			23,098
2018	Klamathon	Siskiyou	38,008
	Natchez	Del Norte, Siskiyou	38,134
	Hire	Shasta	46,150
	Hat	Shasta	1,900
	Delta	Shasta	63,311
	Mill Creek I	Humboldt	3,674
	Kerlin	Trinity	1,751
Total			192,928
2017	Salmon-August Complex	Siskiyou	65,888
	Orleans Complex	Siskiyou	27,276
	Young	Siskiyou	2,500
	Eclipse Complex	Siskiyou	78,698
Total			174,362
2016	Pony	Siskiyou	2,860
	Gap	Siskiyou	33,867
Total			36,727
2015	Fork	Shasta	36,503
	Humboldt Lightning	Humboldt	4,883
	Mad River Complex	Humboldt	73,137
Total			114,747
Year	Wildfire Name	Counties	Wildfire Acres
2014	Forks Complex	Siskiyou	37,246

	Corral Complex	Humboldt	12,503
	Clover	Shasta	8,073
Total			57,822
2013	Modoc July Complex	Modoc	2,566
	Bully	Shasta	12,661
	Day	Modoc	13,153
	Lodge Complex	Mendocino	12,535
	Coffee Complex	Trinity	6,178
	KNF Beaver	Siskiyou	32,496
	Little Deer	Siskiyou	5,503
	July Complex	Siskiyou	50,042
	Happy Camp Complex	Siskiyou	134,056
	Boles	Siskiyou	516
Total			269,706
2012	Dale	Shasta	1,083
	Flat	Trinity	1,688
	Lake Complex	Modoc	1,668
	Fork Complex	Siskiyou	23,653
	Barry Point	Modoc	38,394
	Nelson	Modoc	3,661
	Bagley Complex	Shasta	1,000
	Stafford	Trinity	4,407
Total			75,554
2011	Cougar	Modoc	2,000
	Scorpion Complex	Modoc	2,945
	Ruth	Trinity	1,460
Total			6,405
2010			
Total			0
2009	Backbone	Trinity	6,324
	Tennant	Siskiyou	3,225
	Coffin	Trinity	1,300
	Red Rock	Siskiyou	1,364
	Mill Creek #4	Humboldt	2,750
Total			14,963
Year	Wildfire Name	Counties	Wildfire Acres
2008	Abion River Lightning	Mendocino	1,000

	Lime Complex	Trinity	98,715
	Mad Complex	Trinity	3,705
	Hells Half Complex	Trinity	15,146
	South Complex	Humboldt	29,327
	Paradise	Humboldt	1,076
	Blue 2 Complex	Siskiyou	82,186
	Wagers Lightning	Mendocino	3,000
	Jack Smith Lightning	Mendocino	3,000
	Mallo B	Mendocino	4,466
	Squaw 1 Lightning 2	Mendocino	3,000
	Red Mountain 1	Mendocino	7,515
	Gate Lightning	Mendocino	3,000
	Iron Alps Complex	Trinity	105,805
	Platina 4	Trinity	12,980
	Lewiston 8	Trinity	1,311
	Klamath Theater Complex	Siskiyou	192,038
	Orr Springs Rd Ukv 2	Mendocino	3,000
	5-8 Cliff Lightning	Mendocino	1,000
	Hardy	Mendocino	5,581
	Butch Lightning	Mendocino	2,800
	Lost Pipe Lightning	Mendocino	1,200
	Jack Smith Lightning	Mendocino	2,000
	Abion Lightning	Mendocino	3,000
	Horse Lightning	Mendocino	1,000
	Orr Series Lightning	Mendocino	3,000
	Montgomery Flat Lightning	Mendocino	3,000
	Alder Creek Beach	Mendocino	1,000
	Panther	Siskiyou	72,344
	Jack	Siskiyou	6,900
Total			673,095
2007	Elk Complex	Siskiyou	17,684
	China-Back Complex	Siskiyou	2,906
Total			20,590
Year	Wildfire Name	Counties	Wildfire Acres
2006	Hotlum	Siskiyou	3,019

	Happy Complex	Modoc	1,780
	Happy Camp	Siskiyou	3,318
	Uncles Complex	Siskiyou	30,454
	Orleans Complex	Humboldt	15,710
	Hunter	Mendocino	16,296
	Hoy	Siskiyou	1,283
	Bar Complex	Trinity	100,414
	Junction	Trinity	3,126
	Pigeon	Trinity	6,452
	Noble	Mendocino	1,014
Total			182,866
2005	Barrel	Modoc	24,800
Total			24,800
2004	Irongate	Siskiyou	2,400
	Sims	Trinity	4,030
Total			6,430
2003	Canoe	Humboldt	24,882
Total			24,882
2002	Forks	Siskiyou	1,400
	Sour Biscuit	Del Norte	28,772
	Stanza	Siskiyou	2,880
	Pine	Mendocino	1,200
Total			34,252
Source:	En.wikipedia.org/wiki/		
	2020_California_wildfires		
	Simply change the "year"		
	For 2002-2019		
Total	Acres Burned over 19 years		3,097,737
			Or 163,039 acres/year

CONCLUSION

The language of section 4(b)(2) must be read to “ensure that the ESA not be implemented haphazardly, on the basis of speculation or surmise.” *Bennett v. Spear*, 520 U.S. 154, 176 (1997). The statute also directs the government “to avoid needless economic dislocation produced by agency officials zealously but unintelligently pursuing their environmental objectives.” *Id.* at 176–77.

We have outlined several potential exclusions, each of which would provide social, economic, and forest health benefits that far outweigh the marginal or speculative benefits to the northern spotted owl. Areas that are not habitat, low quality habitat, incapable of supporting owls, or located in fire-dependent ecosystems in dire need of expedient restorative management to reduce forest canopy should be strongly considered for exclusion. The science supports the fact that there are negligible benefits of including these areas of non-habitat, low quality habitat with marginal likelihood of supporting owls, and fragmented areas incapable of supporting owls.²⁴ Federal land management agencies clearly view the CHU as an obstacle to attaining their management direction regarding forest health, while providing negligible benefit to the owl, or impairing owl conservation by preventing forest restoration. By contrast, as described herein, the benefits to forest health, economic viability of rural communities, and cost-effective fire suppression realized from these proposed exclusions are very substantial.

With this rulemaking, the Service has the chance to right a historic wrong, to restore vitality to rural Northwest communities, and do what is needed to create a healthy forest landscape where people and wildlife can flourish. We urge you to take the opportunity.

Sincerely,



Travis Joseph
President, AFRC

Starfire Lumber Co.

²⁴ Excluding such areas that are not habitat or are low-quality habitat clearly would not lead to the species’ extinction. While the Service found that unoccupied areas included in the 2012 rule were “essential to the conservation of the species,” “conservation” and “extinction” are different terms with different meanings under the ESA. Section 4(b)(2) is clear that areas that are essential to the conservation of the species may be excluded from designation, so long as the “benefits of such exclusion outweigh the benefits” of inclusion, and excluding the area will not result in the extinction of the species concerned. 16 U.S.C. § 1533(b)(2). There can be no such danger from exclusion of areas where no owls are present. Moreover, as made clear in *Weyerhaeuser*, the ESA prohibits designation of areas that are not habitat, including “younger forests” and areas that are merely “habitat-capable” that were designated in 2012.

Murphy Company
High Cascade, Inc.
WKO Forest Products
Freres Lumber Co.
Washington Contract Loggers Association
Skamania County, Washington
Lewis County, Washington
Klickitat County, Washington

Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl

PREPARED FOR

American Forest Resource Council

PREPARED BY

The Brattle Group

October 13, 2020

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I. Introduction and Summary

The American Forest Resources Council (AFRC) along with three Washington State counties (Klickitat, Lewis, and Skamania) asked the Brattle Group (Brattle) to review and critique the economic impact study that accompanied The United States Fish and Wildlife Service's (FWS) 2012 northern spotted owl (NSO) critical habitat designation (CHD) in light of the FWS's proposed modification to this designation and other developments.¹ Based on our review, we have concluded that the 2012 economic impact study was insufficient to guide critical habitat designation. The study was not an in-depth review of this designation, relied on a set of poorly supported assumptions, and failed to address regional economic impacts and impacts on small businesses. Based on incorrect and/or outdated assumptions and an overly narrow scope of review of the CHD's economic effects, the study concluded that the designation had an equal likelihood of imposing modest costs, zero costs, or even modest benefits. There was, however, ample evidence to suggest that the designation would impose substantial costs in 2012. The economic impacts of the designation are shown to be even more substantial now for several reasons. First, eight years have passed providing actual information regarding the CHD's impact. Second, the final CHD covered more uninhabited land than the proposed CHD studied by IEc and third, IEc's projected timber harvest did not rely on a realistic assumption regarding harvest yield.

The remainder of this report is organized as follows. Section II provides a brief history of the Northern Spotted owl CHD. Section III describes the 2012 economic impact analysis. Section IV presents our critique and provides empirical evidence of the impact of the 2012 CHD. There are also two appendices presenting county level data regarding federal timber land harvests and sawmill and logging establishments.

¹ Among other developments, in *Weyerhaeuser Co. v. U.S. Fish and Wildlife Service*, 129, S. Ct. 361 (2018), the Supreme Court determined that the Endangered Species Act does not authorize the Secretary of Interior to designate an area as critical habitat unless it is habit for the species.

II. Brief History of the U.S. Fish and Wildlife Service Critical Habitat for the Northern Spotted Owl

The Northern Spotted Owl was first listed as a threatened species by the FWS in 1990 under the Endangered Species Act of 1973. Critical habitat was first designated in 1992 on federal land. A series of lawsuits, however, resulted in a court injunction halting Federal timber sales in an area including NSO habitat. This led to the Northwest Forest Plan (NWFP) in 1994 that then served as the primary guide for forest management and endangered species protection. FWS revised the CHD in 2008. This designation was challenged in court, resulting in a voluntary remand in 2009. The 2012 Northern Spotted Owl critical habitat designation replaced this designation.² It covered 9,577,969 million acres across Washington (2,918,067 acres), Oregon (4,557,852) and California (2,102,050 acres). Another 272,016 acres was on state land. No private land was designated.³ These acreages include land currently both inhabited and not inhabited by NSO.

On August 11, 2020, the FWS published a proposed revision that would exclude 204,000 acres across 15 Oregon counties from critical habitat designation.⁴ FWS invited comments concerning, among other issues, “additional areas . . . that should be considered for exclusion under section 4(b)(2) of the Act and any probable economic, national security, or other relevant impacts of excluding those areas.” This prompted AFRC and several Washington counties (Lewis, Klickitat, Skamania) to review the economic impacts of the Northern Spotted Owl critical habitat designation, particularly the economic impacts of designating as critical habitat for the Northern Spotted Owl public lands that are otherwise allocated and managed for timber harvests.

² Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants; Designation of Revised Habitat for the Northern Spotted Owl, Final Rule, 2012

³ The proposed rule, published on March 8, 2012, included 13,962,449 acres including 670,000 acres of state land and 1,269,890 acres of private land.

⁴ Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants; Designation of Revised Habitat for the Northern Spotted Owl, Proposed Rule, August 11, 2020.

III. Review of the 2012 Economic Impact Analysis

The economic impact analysis provided following the publication of the 2012 proposed rule was prepared by Industrial Economics (IEc), a private consulting firm.⁵ IEc quantifies timber harvest impacts and Section 7 consultation costs over a 20-year period following guidelines from the Office of Management and Budget.⁶ IEc also provides qualitative opinions on regional employment impacts for select counties. Their general framework for timber harvest impacts is as follows:

1. Determine the size of unoccupied federal matrix land, where incremental changes to timber harvest is likely. IEc identified 1,389,787 acres of such land, which represents 10% of the total area in the proposed critical habitat.
2. Determine baseline impacts
 - a. Administrative costs: IEc projects the expected additional hours required for Section 7 consultations and multiplies this by hourly rates provided by the Office of Personnel Management, leading to a high and low range of \$185,000-\$316,000.
 - b. Baseline timber harvest: IEc projects future timber harvest volumes absent critical habitat, estimated based on historic numbers and forecasts from BLM and USFS.⁷ Across 1,389,787 acres of federal matrix land, IEc calculated a total baseline harvest volume of 122.8 MMBF.
3. Determine the extent to which different assumptions regarding harvesting behavior for the land under designation would lead to incremental changes in timber harvest

⁵ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012.

⁶ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, paragraph 104.

⁷ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Section 4.4.1.

- a. They specify 3 scenarios: (1) no change in harvesting behavior (i.e. impacts = administrative costs only); (2) 10% increase in timber harvest;⁸ (3) 20% decrease in timber harvest.⁹
4. Quantify incremental changes in harvest using stumpage prices
 - a. IEc used a range of \$100-\$250/MBF, informed by historical BLM and USFS stumpage prices.¹⁰
5. Conduct sensitivity analyses to account for alternatives to the baseline timber harvests suggested by USFS and BLM and higher observed stumpage rates than used in steps 2 and 3 above.¹¹

IEc relied on the proposed designated area, summarized in Table 1, to conduct its analysis.

⁸ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, paragraphs 188-192.

⁹ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, paragraph 194-195.

¹⁰ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibit 4-11. Annual Average Prices from Federal Timber Sales.

¹¹ IEc employed sensitivity analyses in several instances in its study. These analyses are designed to test how a result changes subject to changes in assumptions or data. The reference to three scenarios in step three is the first such analysis. The second sensitivity analysis occurs in step 5 where IEc noted that “several comments submitted during the public comment period provided information to inform certain alternative assumptions concerning the baseline timber harvest projection,” and so they conducted sensitivity analyses to test these assumptions. See Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, para 203, p.4-37. A third sensitivity analysis occurs in Appendix D of the IEc report regarding the impact of discount rates on the impact estimates.

Table 1
Land Ownership within NSO Proposed Critical Habitat
Relied on by IEc in November 2012 Publication

Type	Land Area (Acres)	Percent Total Area (Acres)
US Forest Service	9,524,623	68.20%
Bureau of Land Management	1,483,607	10.60%
National Park Service	998,580	7.20%
Other Federal (DOD)	14,313	0.10%
State	670,671	4.80%
Local (County)	0	0.00%
Private	1,269,890	9.10%
Total	13,961,684	100%

Source: Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibit ES-1.

Importantly, the IEc economic impact analysis conducted an incremental analysis. This form of analysis focuses exclusively on changes in land access that can be directly attributed to the critical habitat designation under review. Impacts from the listing of NSO under the Endangered Species Act or exogenous events or limitations are considered baseline impacts. As a result, the first step in IEc's analysis was to determine which lands would actually be constrained under the 2012 designation. IEc determined that only 10 percent, or 1,389,787 acres of the total 13,961,684 acres designated under the proposed rule were at issue. All of these incremental acres were on U.S. Forest Service (USFS) and Bureau of Land Management (BLM) lands. IEc also determined that only 306,869 acres of the private lands, or 2 percent of the total designation, would have been harvested, but-for the proposed designation.^{12,13}

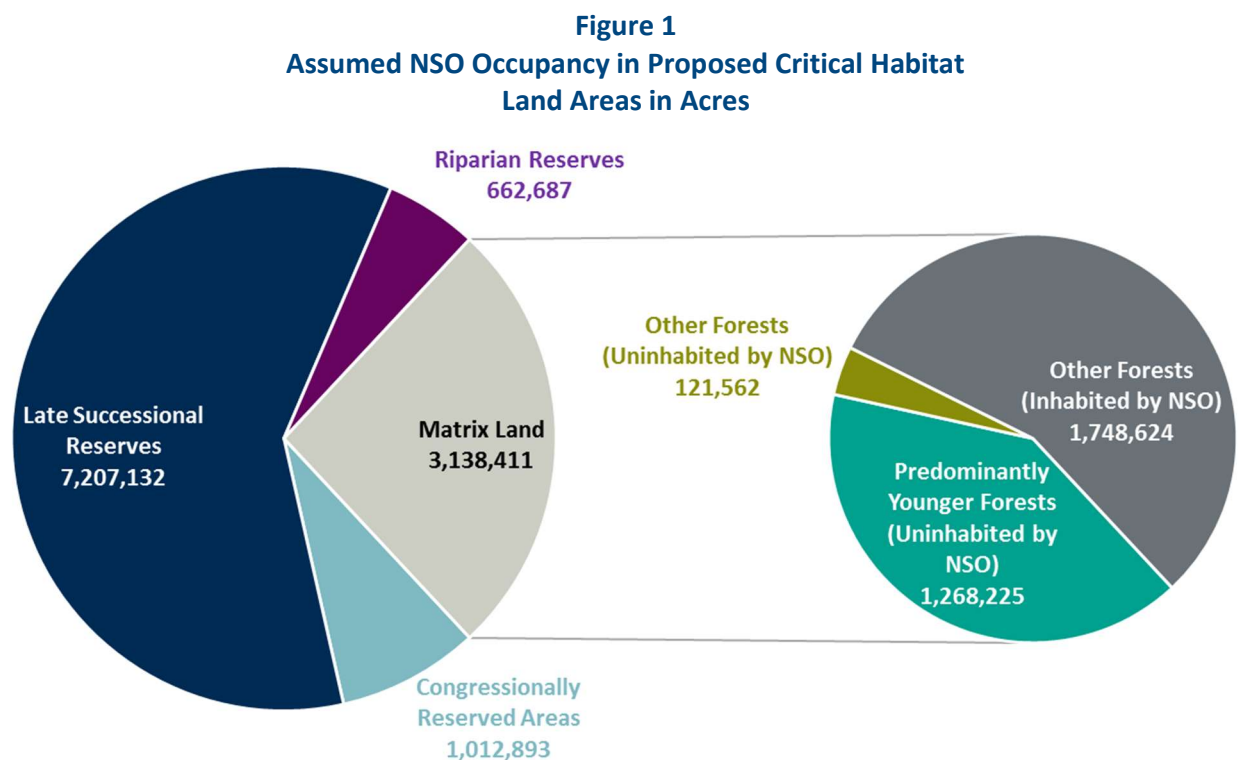
Specifically, IEc defined incremental land as matrix land within the proposed critical habitat designation that is not occupied by NSO, including predominantly younger forests and other forests uninhabited by NSO.¹⁴ Absent data depicting NSO occupancy, IEc used stand complexity

¹² Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibit 5-6 Private Lands Potentially Affected By Critical Habitat Designation

¹³ 306,869 acres / 13,961,684 acres = 2.19%

¹⁴ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, paragraph 157.

as a proxy.¹⁵ As shown in Figure 1 below, IEc identified 3.14 million acres of federal matrix land, of which 1.27 million acres are predominantly younger forests. IEc further assumed that not all of the forestlands with the necessary stand complexity will be inhabited. Relying on an estimate provided by USFS, IEc estimates that 6.5% of forestlands with the necessary stand complexity will not be inhabited. All in all, IEc assumed that 1,389,787 acres of federal matrix land within the proposed critical habitat is not inhabited by NSO.¹⁶ This represents 10% of the total NSO CHD. IEc then quantified the impact of changes in future timber harvest on these acres of land.



Source: Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibits ES-1 and 4-6.

Under the positive impact scenario, following guidance from K. Norman Johnson and Dr. Jerry F. Franklin, IEc concluded an increase in harvest volume of 10% to be reasonable.¹⁷ This leads to an

¹⁵ See Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, paragraph 148. In the report, IEc also labels land with less stand complexity as “predominantly younger forests”. For brevity and ease of comparison, we will be using this nomenclature as well.

¹⁶ Represented in Figure 1 as the emerald and olive sectors in the pie chart on the right ($1,389,787 = 1,268,225 + 121,562$).

¹⁷ Applying K. Norman Johnson and Dr. Jerry F. Franklin’s harvest techniques yield a 66% harvest rate and compared to traditional 60% harvest rate, this is a 10% increase. Industrial Economics Inc., Economic

increased volume of 12.28 MMBF per year,¹⁸ with total annualized gains of \$1-3 million. Under the negative scenario, IEc chose an arbitrary decrease of 20% in harvest volume.¹⁹ This leads to a decreased volume of 24.56 MMBF,²⁰ with total annualized losses of around \$3-6 million.

IEc's results are as follows:

Table 2
Summary of IEc Economic Impact (2012)

EXHIBIT 4-12. ANNUALIZED POTENTIAL INCREMENTAL IMPACTS ON FEDERAL LANDS UNDER THREE SCENARIOS

ANNUALIZED POTENTIAL INCREMENTAL IMPACTS ON FEDERAL LANDS	SCENARIO 1		SCENARIO 2 ^a		SCENARIO 3	
	LOW IMPACT	HIGH IMPACT	LOW IMPACT	HIGH IMPACT	LOW IMPACT	HIGH IMPACT
Potential Change in Timber Harvest Volume (MMBF)	0.0		+12.28		-24.56	
Potential Change in Value of Timber Harvest	\$0	\$0	+\$1,230,000	+\$3,070,000	-\$2,460,000	-\$6,140,000
Administrative Costs	-\$185,000	-\$316,000	-\$185,000	-\$316,000	-\$185,000	-\$316,000
TOTAL	-\$185,000	-\$316,000	+\$912,000	+\$2,880,000	-\$2,640,000	-\$6,460,000
Notes: ^a Under Scenario 2, to illustrate a full range of potential outcomes, the low impact "total" is the low impact change to timber harvest net the high impact administrative costs, representing a worst case scenario; conversely, the high impact "total" is the high impact change to timber harvest net the low impact administrative costs, representing a best case scenario. All dollar estimates are rounded to three significant digits and may not sum due to rounding.						

Source: Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibits ES-1 and 4-6.

IEc then calculated a sensitivity analysis for each scenario, again under guidance from USFS and BLM. USFS stated that that the projections they provided IEc for Region 6 were too low and that they were targeting a 20% increase in yield.²¹ BLM stated that the 6.5% adjustment was too low and proposed a 26.6% adjustment.²² The results of conducting the sensitivity analysis are shown in

Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, paragraphs 188-192.

¹⁸ 122.8 MMBF * 10% = 12.28 MBF

¹⁹ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, paragraph 194-195.

²⁰ 122.8 MMBF * -20% = 24.56 MMBF

²¹ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, paragraph 204b. Throughout the report will refer to this additional modifications to IEc' analysis as the USFS adjustment factor.

²² Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, paragraph 204a Throughout the report will refer to this additional modifications to IEc' analysis as the BLM adjustment factor.

Table 3. These two scenarios combined led to an increase of 150 MMBF in the baseline harvest. Across IEC's different scenarios, the sensitivity analysis led to potential annualized losses of up to \$8 million. It is not clear why IEC did not include the range indicated by the sensitivity analysis in their main conclusions. There is no basis to not give these outcomes a similar likelihood. IEC's overall treatment of uncertainty was called into question in an academic study that critically reviewed CHD economic impact studies including IEC's NSO CHD 2012 study.²³ The study pointed out that the range of uncertainty, from negative to positive impacts, presented as the study conclusion does not help decision makers. As discussed below, the introduction of additional sensitivity analysis in the report only further limits the usefulness of the study by failing to acknowledge a more reasonable upper bound.

²³. See A.J Plantinga, et. al., "Critical Habitat for threatened and Endangered Species, How Should Economic Costs be Evaluated," *Journal of Environmental Management* 134 (2014) 127-135.

Table 3
Summary of IEC Sensitivity Analyses

EXHIBIT 4-15. SENSITIVITY ANALYSIS OF ANNUALIZED POTENTIAL INCREMENTAL IMPACTS ON
FEDERAL LANDS UNDER THREE SCENARIOS

ANNUALIZED POTENTIAL INCREMENTAL IMPACTS ON FEDERAL LANDS	SCENARIO 1		SCENARIO 2		SCENARIO 3	
	LOW IMPACT	HIGH IMPACT	LOW IMPACT	HIGH IMPACT	LOW IMPACT	HIGH IMPACT
1) Sensitivity: BLM Projection						
Baseline Timber Harvest Projection (MMBF)	144.64					
Potential Change in Timber Harvest Volume (MMBF)	0.0		+14.46		-28.93	
Potential Change in Value of Timber Harvest	\$0	\$0	+\$1,450,000	+\$3,620,000	-\$2,890,000	-\$7,230,000
Administrative Costs	-\$185,000	-\$316,000	-\$185,000	-\$316,000	-\$185,000	-\$316,000
TOTAL	-\$185,000	-\$316,000	+\$1,130,000	+\$3,430,000	-\$3,080,000	-\$7,550,000
2) Sensitivity: USFS Projection						
Baseline Timber Harvest Projection (MMBF)	128.94					
Potential Change in Timber Harvest Volume (MMBF)	0.0		+12.89		-25.79	
Potential Change in Value of Timber Harvest	\$0	\$0	+\$1,290,000	+\$3,220,000	-\$2,580,000	-\$6,450,000
Administrative Costs	-\$185,000	-\$316,000	-\$185,000	-\$316,000	-\$185,000	-\$316,000
TOTAL	-\$185,000	-\$316,000	+\$973,000	+\$3,040,000	-\$2,760,000	-\$6,760,000
3) Sensitivity: BLM and USFS Projection Combined						
Baseline Timber Harvest Projection (MMBF)	150.79					
Potential Change in Timber Harvest Volume (MMBF)	0.0		+15.08		-30.16	
Potential Change in Value of Timber Harvest	\$0	\$0	+\$1,510,000	+\$3,770,000	-\$3,020,000	-\$7,540,000
Administrative Costs	-\$185,000	-\$316,000	-\$185,000	-\$316,000	-\$185,000	-\$316,000
TOTAL	-\$185,000	-\$316,000	+\$1,190,000	+\$3,580,000	-\$3,200,000	-\$7,860,000
Notes: All dollar estimates are rounded to three significant digits and may not sum due to rounding.						

Source: Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibit 4-15.

For regional economic impacts, IEC identified which counties contained land that could experience potential incremental effects.²⁴ By analyzing harvest trends, timber employment trends, and county timber revenue sharing payments,²⁵ IEC identified Del Norte and Trinity Counties of California, Douglas and Klamath Counties of Oregon, and Skamania County of Washington as

²⁴ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibit 6-1.

²⁵ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibits 6-2, 6-3, and 6-4.

counties that could experience potential incremental effects. IEc did not quantify these effects, but offered a qualitative opinion on the effects.²⁶ IEc made no attempt to calculate the indirect employment effects associated with timber harvesting, nor did it directly address impacts on small businesses.

As noted above, the only other costs IEc considered were increased government expenditures related to Section 7 consultations of \$185,000-\$316,000. We have not critically reviewed these estimates. The magnitude of these costs, however, is not likely to have a material effect on overall economic impacts.

IV. Critiques of IEc's 2012 Economic Impact Analysis

IEc's economic impact analyses understated potential impacts for several reasons. First, it failed to emphasize the uncertainty regarding the amount of timberland that would be excluded for harvest because of the inclusion of uninhabited lands. Second, it failed to account for the potential harvest production from these lands, especially if sustainable harvesting methods were employed. Third, it assumed that the downward trends in production and employment experienced by the forest industries prior to 2012 would continue. This diminished the incremental impact of the designation. Fourth, it did not include a complete regional economic analysis accounting for direct and indirect economic impacts associated with forgone timber harvests.

Since IEc conducted their economic impact analysis in November 2012, some of the relevant data has been updated. For example, the critical habitat map they relied on does not reflect the final ruling in December 2012. We base our analysis on the final critical habitat designation, and also made the following improvements on IEc's analysis:

- Updated and improved price and yield values
- Incorporated a BLM-suggested adjustment factor on matrix land occupancy
- Incorporated discount rates into high/low estimates
- More accurate assumptions on harvesting behavior on CHD land

Finally, the proposed rule did not undergo more rigorous review by the Office of Management and Budget (OMB) because, according to the IEc analysis, the \$100 million impact threshold under Executive Order 12866 was not met. The threshold represents a screen for further federal review.

²⁶ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibit 6-6

However, it is not a test of economic efficiency. The latter would require a benefit-cost test also directed by Executive Order 12866.

The rest of this section presents details of our estimate of economic impacts. Section A goes through updated timber harvest loss, Section B includes indirect and induced regional economic impacts, as well as impacts on small businesses.

A. Updated Loss of Timber Harvest

1. Updated Land Area

Our analysis relies on the final critical habitat designation published on December 4, 2012.²⁷ Compared to the proposed critical habitat designation used by IEc, the final designation includes 31% less land overall. Interestingly, predominantly younger forests within federal matrix land increased by 27%.²⁸ Because of this, our economic impacts consider potential harvest across a greater area. Table 6 shows that updating the CHD increases the uninhabited land estimate from 1.3 million acres to 1.7 million acres. Table 4 and Table 5 below show ownership distribution within the final designation, and land allocation among federal lands in the final designation.

Table 4
Land Ownership within NSO Critical Habitat

Type	Acres in Proposed Designation	Acres in Final Designation
US Forest Service	9,524,623	7,957,304
Bureau of Land Management	1,483,607	1,328,471
National Park Service	998,580	0
Other Federal (DOD)	14,313	0
State	670,671	270,883
Local (County)	0	20,684
Private	1,269,890	0
Total	13,961,684	9,577,342

Sources and Notes:

Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibit 1-1.

Environmental Conservation Online System,
<https://ecos.fws.gov/ecp/report/table/critical-habitat.html>.

GIS files from IEc, Sutihab_Subunit_Dissolve.shp and related files.

²⁷ Environmental Conservation Online System, <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>.

²⁸ We rely on 2012 GIS files from IEc to determine land areas with sufficient stand complexity for NSO.

Table 5
Land Use Allocations
NSO Critical Habitat Designation Federal Lands

Land Allocation	Acres in Proposed Designation	Acres in Final Designation
Reserved Land		
Congressionally Reserved Areas	1,012,893	0
Late Successional Reserves	7,207,132	5,685,958
Riparian Reserves	662,687	618,344
Matrix		
Predominantly Younger Forests	1,268,225	1,607,312
Other Forests	1,870,186	1,374,160
Total	12,021,123	9,285,775

Sources and Notes:

Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibit 1-1.

Environmental Conservation Online System, <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>.

GIS files from IEC, Sutihab_Subunit_Dissolve.shp and related files, Riparian Reserves_2012_9_6.shp and related files.

Estimation of uninhabited lands is subject to sensitivity analysis done by IEC because the amount of land they calculated was considered low by USFS and BLM. IEC relied on a USFS-provided adjustment factor of 6.5% for all land, even though IEC acknowledged that BLM represented that the adjustment factor could be as high as 26.6%.²⁹ By treating these adjustments as a sensitivity analysis, IEC consequently gave the results less weight. In our updated analysis, we create low and high cases based on the expressed uncertainty. Our low case scenario uses the 6.5% adjustment term for all land, and our high case scenario uses a 26.6% adjustment term for BLM land. Overall, our high case scenario results in a 3% increase in total estimated uninhabited land.³⁰ Our two scenarios are shown alongside IEC's analysis in Table 6 below.

²⁹ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, paragraph 204a

³⁰ $(1,747,525 - 1,696,632) / 1,696,632 = 3\%$

Table 6
Uninhabited Land Estimation

Matrix Land Allocation	IEc Analysis	Updated Analysis (Low Case)	Updated Analysis (High Case)
USFS			
Predominantly Younger Forests	1,056,072	1,298,222	1,298,222
Other Forests	1,572,959	1,120,961	1,120,961
Occupancy Adjustment Term	6.50%	6.50%	6.50%
Estimated Uninhabited Land	1,158,314	1,371,084	1,371,084
BLM			
Predominantly Younger Forests	212,153	309,090	309,090
Other Forests	297,227	253,199	253,199
Occupancy Adjustment Term	6.50%	6.50%	26.60%
Estimated Uninhabited Land	231,473	325,548	376,441
Total Estimated Uninhabited Land	1,389,787	1,696,632	1,747,525

Sources and Notes:

Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibit 4-2.

Environmental Conservation Online System, <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>.

GIS files from IEc, Sutihab_Subunit_Dissolve.shp and related files, Riparian Reserves_2012_9_6.shp and related files.

2. Revised Timber Harvest Potential and Stumpage Price Assumptions

In this section, we discuss changes in assumptions from IEc regarding both harvest yield and stumpage price. Our review of USFS comments on the IEc analysis found that the yield (MBF/acre) IEc relied on was too low. As mentioned in Section III, we disagree with their treatment of expressed uncertainty in USFS yield, and have included the increase in USFS yield in our high case scenario. For stumpage values, IEc arbitrarily chose \$100/MBF and \$250/MBF across all land, ignoring the fact that, according to their own exhibit, there was only one instance where prices were close to \$250/MBF (BLM in 2000).³¹ Further, in all but two of the ten years of data IEc displayed, USFS prices were lower than BLM prices. Using \$100-\$250/MBF for both USFS and BLM is not reflective of current conditions, and variation between agencies owning the land.

³¹ Industrial Economics Inc., Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl, Final Report, November 20, 2012, Exhibit 4-11.

In subsections below, we lay out the data we have relied on to create an updated analysis.

a. Yield (MBF/Acre)

BLM publishes timber sales results for Western Oregon districts.³² By analyzing sales in 2018-2020, we find that average yield is 33 MBF/Acre for harvested land in moist forests and 15 MBF/Acre for harvested land in dry forests. Lacking access to corresponding sales data for California BLM districts, we apply average yield for dry forests for these lands.

Since yield data is not readily available for USFS lands near the NSO CHD, we assume similar yield levels between USFS and BLM land. Oregon USFS forests are assigned the yield of the closest BLM district. Washington USFS forestlands are assumed to have the average yield for moist forests, and California USFS forestlands have average yield for dry forests.

Assuming that only 2% of harvestable forestland will be harvested each year under a system of sustainable timber management,³³ overall yield is 0.57 MBF per harvestable acre for USFS land and 0.43 for BLM land under our high case scenario.³⁴

b. Stumpage Price (\$/MBF)

BLM timber sales results also show bid prices and corresponding volume for each sale, which we use to calculate average stumpage prices by district. As with yield values, we apply the average stumpage prices for dry forests to California BLM lands.

For USFS, we use Sold and Cut Reports to inform stumpage prices in each forest.³⁵ We assume that the predominant product in Oregon and Washington is Douglas fir sawtimber, and that in California is sawtimber of all tree species.

³² Bureau of Land Management Western Oregon Districts Timber Sale Plans and Timber Sale Results, <https://www.blm.gov/or/resources/forests/index.php>.

³³ This reflects an assumed rotation age of 100 years. Each year, 1% of the land would be regeneration harvested, and 1% of the land thinned. Two sources support our assumed rotation age: (1) BLM's final RMP, where they suggested that a rotation age of 100 years would be attained in 100 years; (2) The Willamette National Forest's Land and Resource Management Plan, which assumed rotation ages ranging from 80-100 years based on site condition. See U.S. Department of the Interior, Bureau of Land Management. 2015. *Proposed Resource Management Plan/Final Environmental Impact Statement*. Pg. 317; and U.S. Department of Agriculture, Forest Service. 1990. *Land and Resource Management Plan for the Willamette National Forest*. Pg. IV44.

³⁴ Note that these numbers represent MBF per harvestable acre, which differs from the MBF per harvested acre numbers discussed above.

³⁵ U.S. Forest Service Cut and Sold Reports, Regions 5 and 6, (2019), <https://www.fs.fed.us/forestmanagement/products/cut-sold/index.shtml>.

Table 7 reflects the updated yield and stumpage price data as described above, comparable to IEc's data, as we convert prices to 2012 dollars. Overall, our data shows much higher yield potential and lower stumpage prices.

Table 7
Updated Annual Timber Harvest Potential (High Case)

	IEc (2012)		Updated Analysis (2019)	
	USFS	BLM	USFS	BLM
Total \$	\$21,000,521	\$9,699,905	\$65,301,055	\$31,167,871
Total MBF	84,002	38,800	787,869	163,285
Total Acres	1,158,314	231,473	1,371,084	376,441
\$/MBF	\$250	\$250	\$83	\$191
MBF/Acre	0.07	0.17	0.57	0.43

Sources and Notes:

U.S. Forest Service Cut and Sold Reports, Regions 5 and 6, (2019), <https://www.fs.fed.us/forestmanagement/products/cut-sold/index.shtml>.

Bureau of Land Management Western Oregon Districts Timber Sale Plans and Timber Sale Results, <https://www.blm.gov/or/resources/forests/index.php>.

All values in 2012 dollars.

3. Incremental Change in Timber Harvest

Based on harvest and yield potential, assumed changes in harvesting behavior on CHD land determines total harvest loss. From the values shown in Table 7, IEc applies a +10% or -20% change in harvesting behavior, resulting in the benefit of \$3.1 million or loss of \$6.1 million shown in Table 2.³⁶ Contrary to IEc, we assume a -80% change in harvesting behavior, resulting in \$66-\$77 million loss in timber harvest.³⁷ Full results from our timber harvest loss analysis is in Table 8 in the next section.

Our 80% assumption on incremental change in timber harvest is informed by discussions with the American Forest Resource Council and comments by USFS and BLM regarding IEc's assumptions filed in 2012. USFS's review of the IEc analysis concluded that "a more specific analysis of the subunit data may yield estimates [of harvest loss] that are of orders of magnitude higher than 63 BF/acre (used by IEc), which would result in a commensurate increase in the final economic

³⁶ $(\$21,000,521 + \$9,699,905) \times 10\% = \$3,070,443$. $(\$21,000,521 + \$9,699,905) \times -20\% = -\$6,140,085$. Minor differences due to rounding.

³⁷ From Total \$ in Table 7, $(\$65,301,055 + \$31,167,871) \times -80\% = -\$77,175,141$. Numbers for low case scenario are not shown in the table, but the corresponding calculation is: $(\$55,829,239 + \$27,198,913) \times -80\% = -\$66,422,522$.

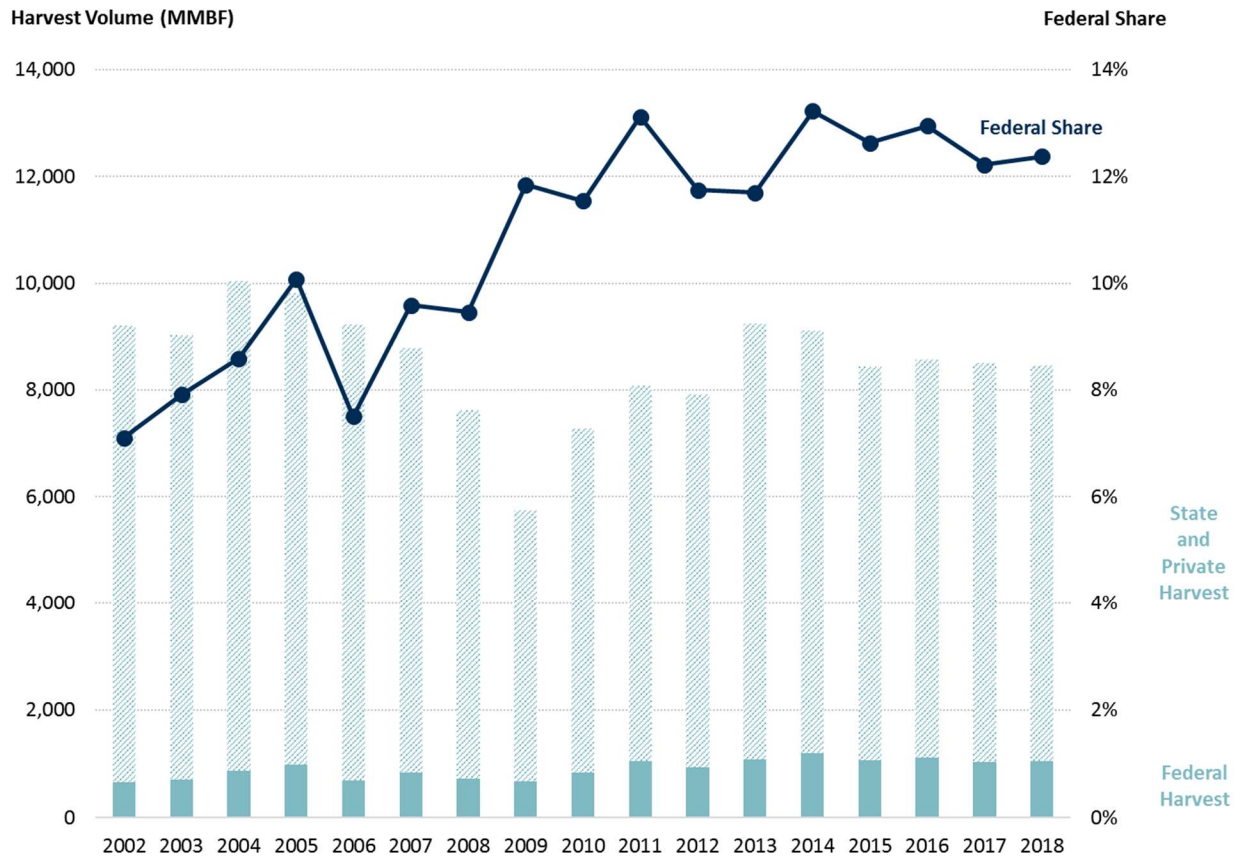
impact”.³⁸ IEc did not consider that much higher yields per acre could be reached using sustainable forestry management methods. Therefore, we assume that 80% of the potential harvest from the proposed designation lands will be prevented as a result of CHD. We also do not find evidence that harvesting activities will increase as a result of CHD, and thus do not consider the positive impact scenario IEc put forth. Indeed, USFS comments give no support for a potential gain.

We have also considered whether the increased harvest that would result from exemption of these lands is realistic. Although we cannot model the timber markets that influence the demand for timber in the Pacific Northwest, it seems reasonable to assume the additional timber production that has been lost would have been purchased. Our estimation of the maximum production increase is 951,154 MBF, which represents only 12 percent of region’s annual harvest in 2012 and only 11 percent in 2018. In addition, this production may have successfully competed against production from private or state-owned lands. Moreover, as shown in Figure 2, since 2012, the share of the region’s annual harvest from federal lands has flattened relative to modest annual growth between 2002 and 2012, suggesting that increased harvest from federal lands would not be unreasonable. Between 2002 and 2012, the federal timberland harvest grew at annual rate of 3.64 percent. In contrast, since 2012 through 2018, the federal harvest grew by an annual rate of only 1.98 percent. Had the historic growth rate continued, the annual harvest would have increased by 107,000 MBF. This does not account, however, for additional growth that might have occurred absent designation because of greater access and higher yield forest management practices. Further, since federal timberlands constitute over 50 percent of forest lands in California and Oregon and about 44 percent of timberlands in Washington, unless they are generally less attractive in terms of attributes such as age, density, species, access, one would expect that federal timber harvest would be a higher share of the region’s total. It is also worth noting that forest fires in the Pacific Northwest have and are likely to reduce the supply of available timber, making the designated land timber resources more valuable.

Finally, the actual impact of the NSO CHD becomes more apparent at the county level. As shown in Appendix A, 12 counties among 18 counties where federal timber lands had been harvested prior to 2012 saw timber harvest from these lands fall considerably post-2012, another 3 saw some increase initially, but then experienced substantial declines, 3 others showed overall growth. Although the latter counties have experienced some increase in federal land harvest post-2020, this is likely on federal timberlands outside the NSO CHD.

³⁸ Letter from Leslie A.C. Weldon, Deputy Chief, National Forest System to Public Comments Processing, Division of Policy and Directives Management, U.S. Fish and Wildlife Service, July 6, 2012, p.3. The USFS letter also explains that IEc’s analysis of the CHD’s impact on harvest projections suffered from incorrectly assuming that regeneration harvest activities could not occur on Forest Service lands excluded from designation. USFS called for “including an analysis of the economic impacts of potential future regeneration harvest activities.”

Figure 2
Timber Harvest by Ownership (2002-2018)



Sources and Notes:

From Bureau of Business and Economic Research, University of Montana.

Values represent Timber Harvest in California, Oregon, and Washington.

4. Updated Results

Using the data updates and improvements described above, we present updated timber harvest losses in Table 8 below. Overall, our results show losses of between \$66 and \$77 million on an annualized basis and between \$753 million and \$1.18 billion over 20 years on a net present value (NPV) basis.

Table 8
Updated Timber Harvest Loss

	Low Case [A]	High Case [B]
First-Year Value [1]	\$66,422,522	\$77,175,140
NPV [2]	\$752,938,825	\$1,182,616,344

Sources and Notes:

All values in 2012 dollars.

[A]: Discounted at 7%; Uses occupancy adjustment term of 6.5%.

[B]: Discounted at 3%; Uses occupancy adjustment term of 6.5% for USFS, and 26.6% for BLM. For USFS Region 6, volume was increased by 20%.

[1]: First-year undiscounted losses.

[2]: The net present value of the damages over a 20 year period.

B. Economic Consequences of Lost Timber Sales

In this section, we consider the economic impacts with respect to employment and value added (GDP) associated with the harvest losses that could accompany the NSO CHD.

1. Direct, Indirect, and Induced Regional Economic Impacts

To estimate the full scale of local economic impact, the Regional Input-Output Multiplier System (“RIMS”), a regional tool developed by the Bureau of Economic Analysis (“BEA”), was used.

RIMS helps economists, government officials, and investors analyze economic impacts of an activity on a region. An activity often has ripple effects on the economy through interconnected industries and the spending of its workers. For example, increased production in the forestry and logging industry could lead to an increased demand for various inputs (e.g. energy costs), and increased output for downstream products (e.g. paper, wood, and furniture). Increased activity in these various industries could lead to increased direct and indirect employment, which will result in increased spending on food, entertainment and housing, among other things. In aggregate, this would help the local economy. The size of these effects would depend on how much activity happens locally, and how many workers are based locally.

In the event that uninhabited land is excluded from the CHD, the forest and logging industry would benefit from increased timber harvest. Using RIMS multipliers for California, Oregon, Washington, and the tri-county region of Lewis, Klickitat, and Skamania, we quantify the local impacts of increased timber harvest shown in Table 8. Table 9 shows the annualized local timber

harvest impact for our high case scenario. Over 70% of the timber harvest impact is in Oregon, and the \$55 million in additional timber harvest in Oregon would generate \$70 million in local GDP and \$46 million in local worker earnings. Additional timber harvest could also support 921 jobs (part-time and full-time) in Oregon, both directly and indirectly. Across California, Oregon, and Washington, increased timber harvest results in \$97 million in GDP, \$65 million in worker earnings, and 1,251 jobs annually.

Table 9
RIMS Estimates for Local Economic Impacts
Using High Case Estimates for Timber Harvest

	Output (\$ thousands)	Earnings (\$ thousands)	Employment (jobs)	Value-Added, or GDP (\$ thousands)
California				
Timber Harvest Impact (\$ thousands)	\$8,921			
Multipliers	2.16	0.82	16.06	1.21
Total Statewide Impact	\$19,264	\$7,270	143	\$10,806
Oregon				
Timber Harvest Impact (\$ thousands)	\$55,208			
Multipliers	2.24	0.84	16.67	1.27
Total Statewide Impact	\$123,903	\$46,375	921	\$70,015
Washington				
Timber Harvest Impact (\$ thousands)	\$13,047			
Multipliers	2.25	0.84	14.34	1.26
Total Statewide Impact	\$29,303	\$11,010	187	\$16,400
Lewis, Skamania, Klickitat				
Timber Harvest Impact (\$ thousands)	\$9,328			
Multipliers	1.63	0.48	11.54	1.03
Total Regional Impact	\$15,250	\$4,481	108	\$9,607

Table 10 below shows two alternative methods of estimating job impacts. The first alternative method relies on estimates from the BLM Proposed RMP/Final EIS. BLM estimates that 1,491 jobs³⁹

³⁹ Bureau of Land Management, Proposed RMP/Final EIS, Chapter 3 – AE&EC – Socioeconomics, https://www.blm.gov/or/plans/rmpswesternoregon/files/prmp/RMPWO_V2_Chapter_3_Socioeconomics.pdf, Table 3-181.

would be supported in timber-related industries⁴⁰ for \$32 million in timber harvest value.⁴¹ This equates an average of 46.80 jobs created per million dollars in timber harvest value, leading to 3-4 times the employment impact of RIMS. The second alternative method leads to lower employment impacts: Ferris (2017) claimed that the protection of NSO in the 1990s led to a decline in labor demand. Specifically, her results show that for every one percent increase in NSO CHD, there is a corresponding 0.09 percent decrease in timber employment.⁴² Applying that marginal impact on local 2018 employment in agriculture, forestry, fishing, and hunting, this method estimates that the total employment impact across all three states as 981, which is 22% less than employment impacts estimated by RIMS.

⁴⁰ Includes Forestry, Logging & Support Activities; Wood Products Manufacturing; and Paper Manufacturing. See Bureau of Land Management, Proposed RMP/Final EIS, Chapter 3 – AE&EC – Socioeconomics, https://www.blm.gov/or/plans/rmpswesternoregon/files/prmp/RMPWO_V2_Chapter_3_Socioeconomics.pdf, Table 3-181.

⁴¹ \$114.8 per MBF for 277.5 MMBF. See Bureau of Land Management, Proposed RMP/Final EIS, Chapter 3 – AE&EC – Socioeconomics, https://www.blm.gov/or/plans/rmpswesternoregon/files/prmp/RMPWO_V2_Chapter_3_Socioeconomics.pdf, Table 3-163.

⁴² Ann E. Ferris, “Environmental Regulation and Labor Demand: The Northern Spotted Owl”, National Center for Environmental Economics, Working Paper 17-05, September, 2017, p. 11.

Table 10
Job Impact Comparison
RIMS and Alternative Methods
Using High Case Estimates for Timber Harvest

		California	Oregon	Washington	Lewis, Skamania, Klickitat
RIMS					
Timber Harvest Impact (\$ thousands)	[A]	\$8,921	\$55,208	\$13,047	\$9,328
Employment Multiplier (per \$ million)	[B]	16.06	16.67	14.34	11.54
Total Employment Impact	[C]	143	921	187	108
BLM PRMP					
Timber Harvest Impact (\$ thousands)	[D]	\$8,921	\$55,208	\$13,047	\$9,328
Timber-Related Industries Employment Impact (per \$ million)	[E]	46.80	46.80	46.80	46.80
Total Employment Impact	[F]	418	2,584	611	437
Ferris (2017)					
% Decrease in Critical Habitat Acres	[G]	-22%	-21%	-11%	-13%
Marginal Increase in Employment	[H]	0.09	0.09	0.09	0.09
Total Workers in Forestry and Related Industries	[I]	29,041	13,599	14,497	1,284
Total Employment Impact	[J]	581	259	141	15

Sources and Notes:

[A]: Brattle analysis.

[B]: Regional Input-Output Modeling System (RIMS II), Regional Product Division, Bureau of Economic Analysis.

[C]: [A] x [B].

[D]: Brattle analysis.

[E]: Bureau of Land Management, Proposed RMP/Final EIS, Chapter 3 – AE&EC – Socioeconomics, https://www.blm.gov/or/plans/rmpswesternoregon/files/prmp/RMPWO_V2_Chapter_3_Socioeconomics.pdf, Tables 3-163 and 3-181.

[F]: [D] x [E].

[G]: Brattle analysis.

[H]: Ann E. Ferris, “Environmental Regulation and Labor Demand: The Northern Spotted Owl”, National Center for Environmental Economics, Working Paper 17-05, September, 2017, p. 11.

[I]: U.S. Census Bureau.

[J]: -[G] x [H] x [I].

RIMS and alternative estimates for employment impacts show that timber harvest at issue lead to substantial local economic impacts. Across California, Oregon, and Washington, we estimate a GDP impact of \$97 million annually. Depending on the estimation method chosen, employment impacts vary between 981 to 3,612 jobs per year.

2. Impacts on Small Businesses

The IEC study, as noted by comments submitted by the Small Business Administration (SBA), pays scant attention to the impact of the NSO CHD on small businesses, despite the fact that the timber industry is comprised of both large and small scale sawmills and numerous supporting goods and service providers, many if not most of which meet the SBA’s size standard for small business

designation.⁴³ A review of sawmill and logging establishments in potentially affected counties in the region using the Department of Commerce's annual County Business Patterns indicates the virtually all establishments are considered small businesses under the SBA definition of under 500 employees.⁴⁴ See Appendix B. In addition, the number of mills has fallen further since 2012. For example, the number of sawmills in Klickitat County, Washington has fallen from three (including 2 with less than 4 employees) in 2012 to one sawmill in 2018, according the U.S. Department of Commerce's County Business Patterns. Logging businesses in Klickitat County with less than 500 employees (the SBA threshold for designation) fell from 21 in 2012 to only 10 in 2018. The number of sawmills in Lewis County Washington has remained the same since 2012, although there are no longer any sawmills employing between 20 and 49. Skamania County, Washington sawmill data is unavailable, but the number of logging operations has remained stable since 2012.

The IEc study seems to imply that, because the trend in the timber sectors of the economy in the Pacific Northwest had been in decline since the 1990s, incremental impacts from the 2012 designation would be very modest. That is, the downturn would have continued regardless of the designation. This implication, however, fails to anticipate that the trend would come to an end. Indeed, by 2002, harvest volume from the region had begun to recover. A second decline occurred during the Great Recession. By 2009, however, despite the Great Recession, the region saw another recovery followed by relatively flat production through 2019. Harvest volume in 2018 and 2019 was the highest reported since 1997. Even with this improvement, however, the incremental impacts of the 2012 NSO CHD were negative.

At least one mill that met SBA thresholds is known to have closed, and a second has reduced production because of lack of access to federal timber post-2012. These mills had been located to take advantage of proximate federal timberlands and could not compete following NSO CHD because obtaining logs became too expensive given increased transportation costs.⁴⁵ Lack of access has likely discouraged new mill investment near federal timber resources.

⁴³ Letter from Winslow Sergeant, Chief Counsel for Advocacy and Janis C. Reyes Assistant Chief Counsel, Small Business Administration to Daniel Ashe, Director U.S. Fish and Wildlife Service, July 5, 2012.

⁴⁴ United States Census Bureau County Business Pattern Data Tables, <https://www.census.gov/programs-surveys/cbp/data/tables.html>

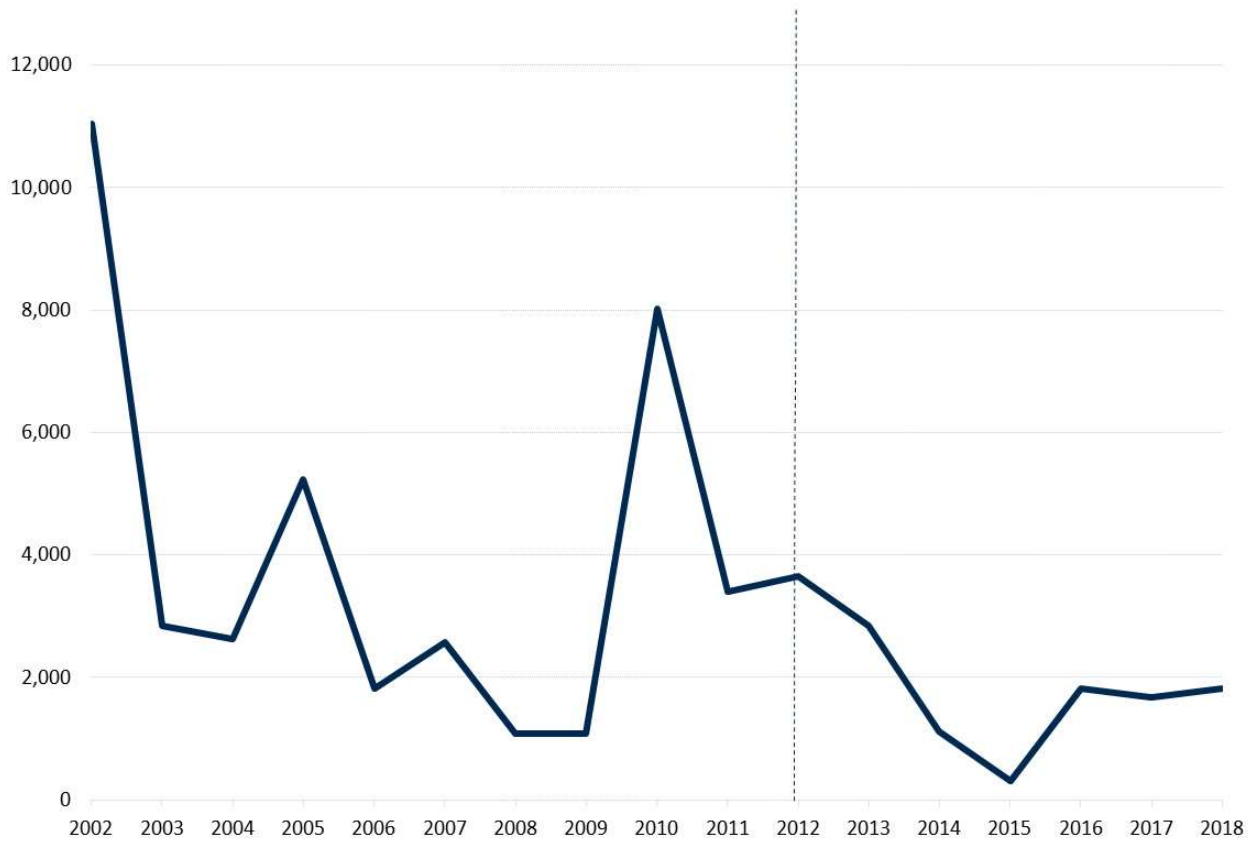
⁴⁵ Interviews with AFRC member companies completed between September 26 and October 5, 2020.

Appendix A – County Federal Harvest by Year

This appendix contains charts showing the change in federal harvest (MBF) in specific counties with substantial federal forest lands. In total, there are 12 counties that have shown a harvest reduction since 2012, with an average annual loss of 252 MBF per year for California counties, 2,865 MBF per year for Oregon Counties, and 822 MBF per year for Washington. This data was collected from Bureau of Business and Economic Research, University of Montana. The vertical dotted line on each graph represents designation year. All values are in MBF.

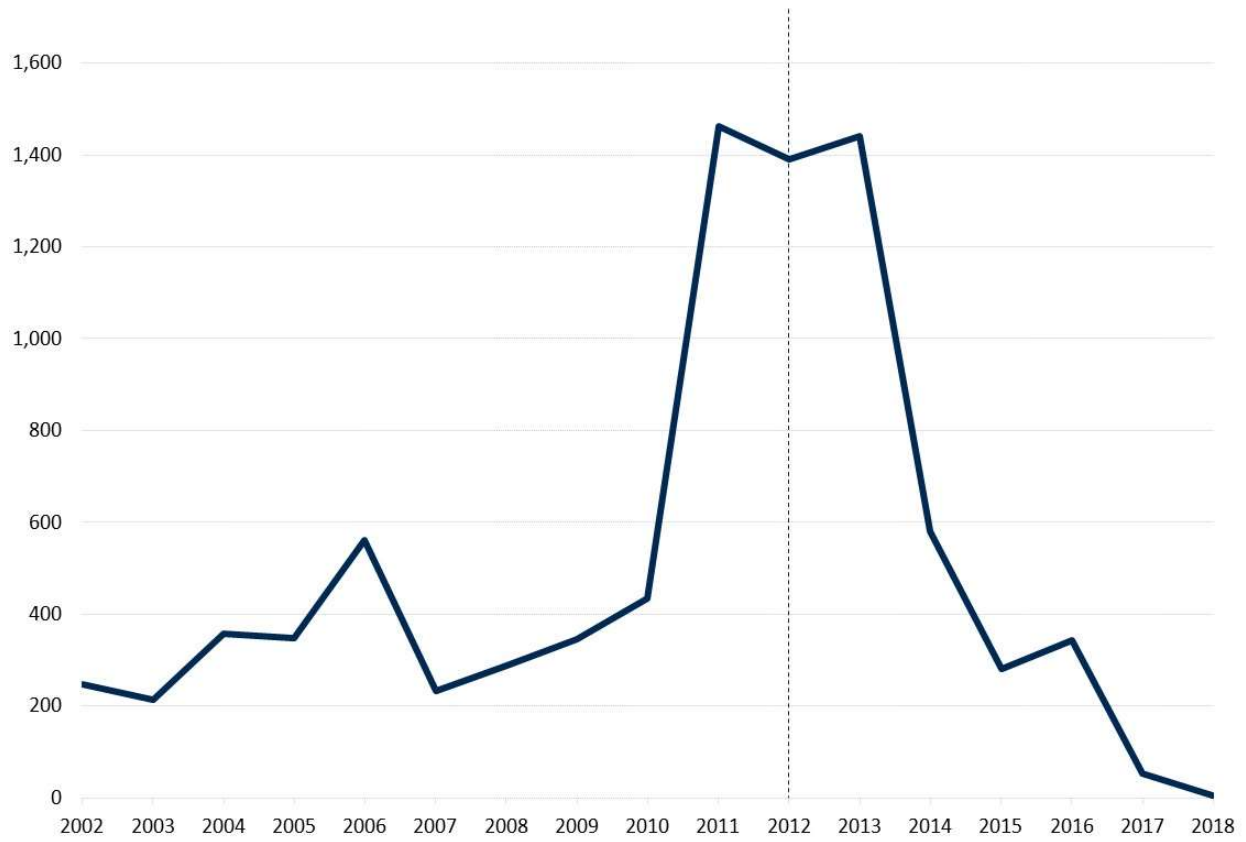
California

Calaveras County Federal Harvest



Source: Bureau of Business and Economic Research, University of Montana

Del Norte County Federal Harvest



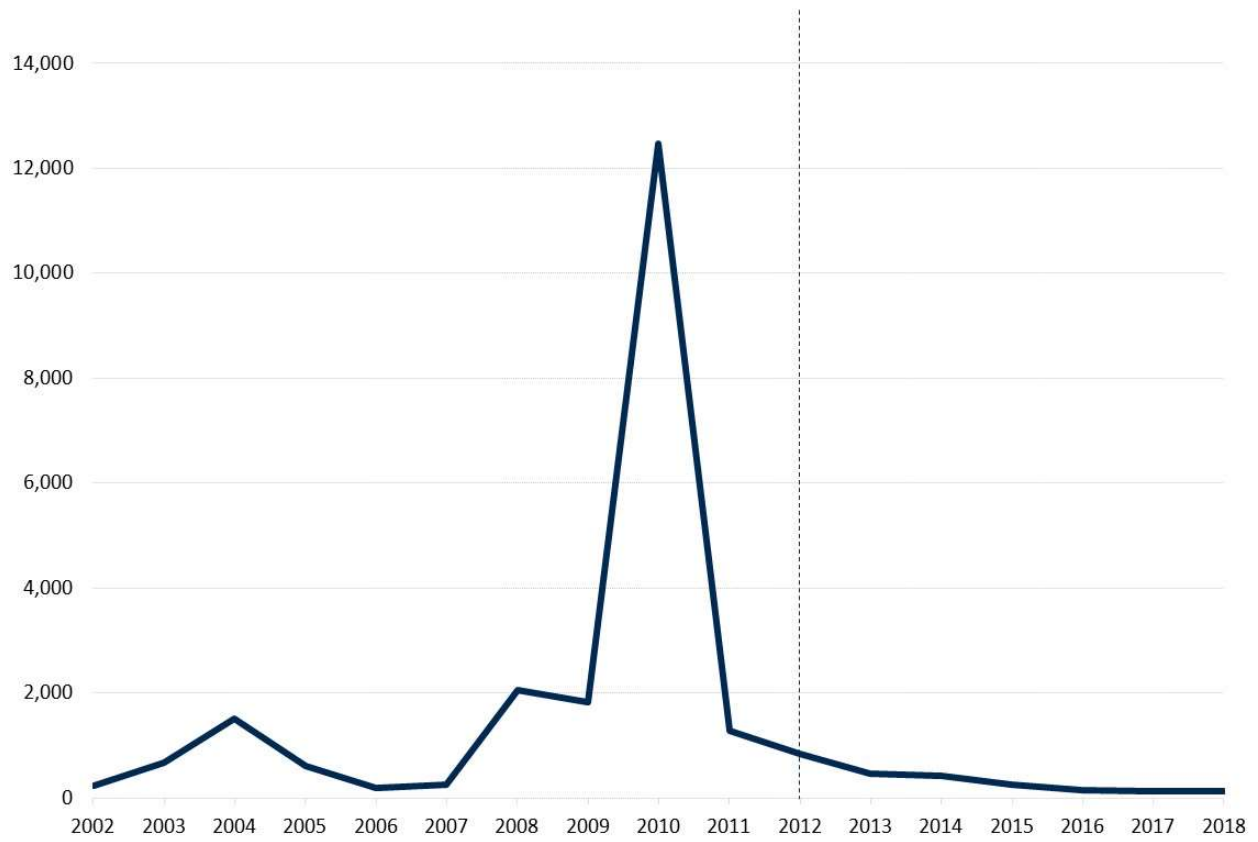
Source: Bureau of Business and Economic Research, University of Montana

Mono County Federal Harvest



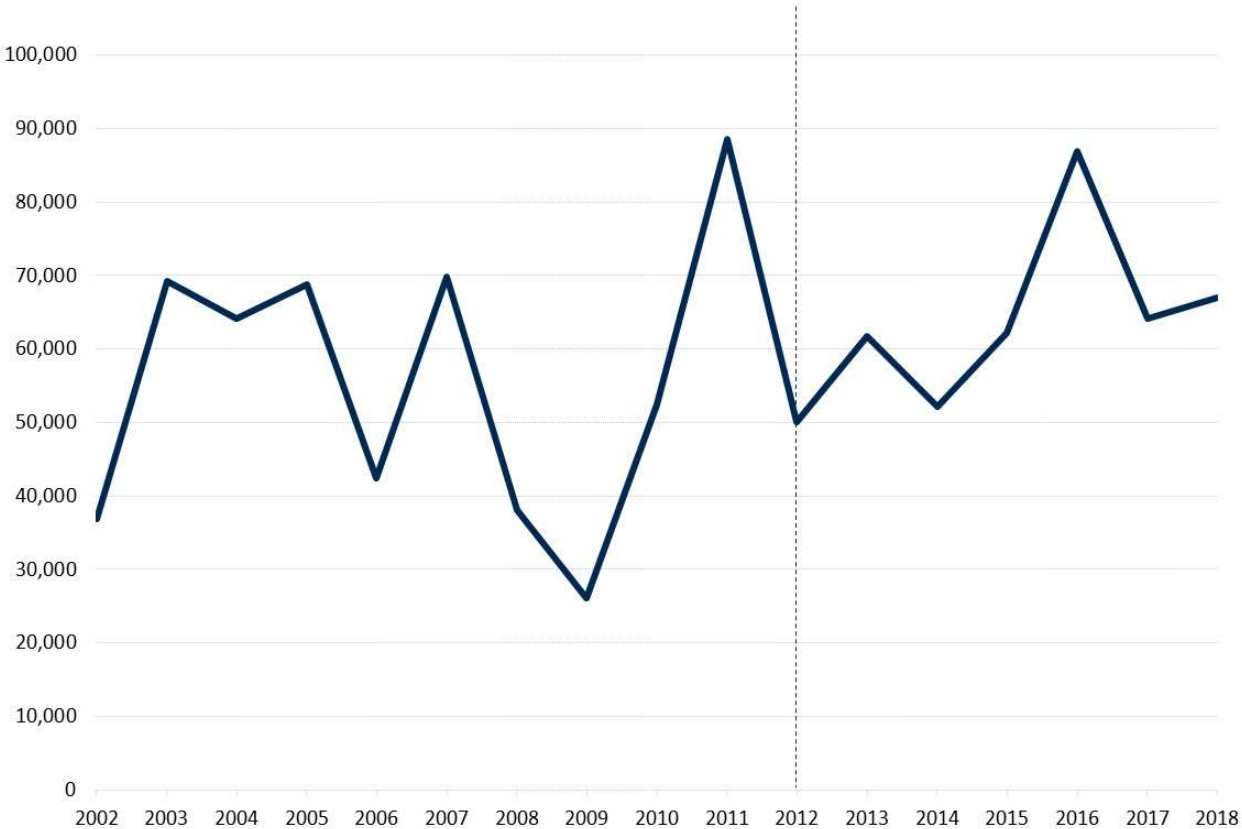
Source: Bureau of Business and Economic Research, University of Montana

Riverside County Federal Harvest



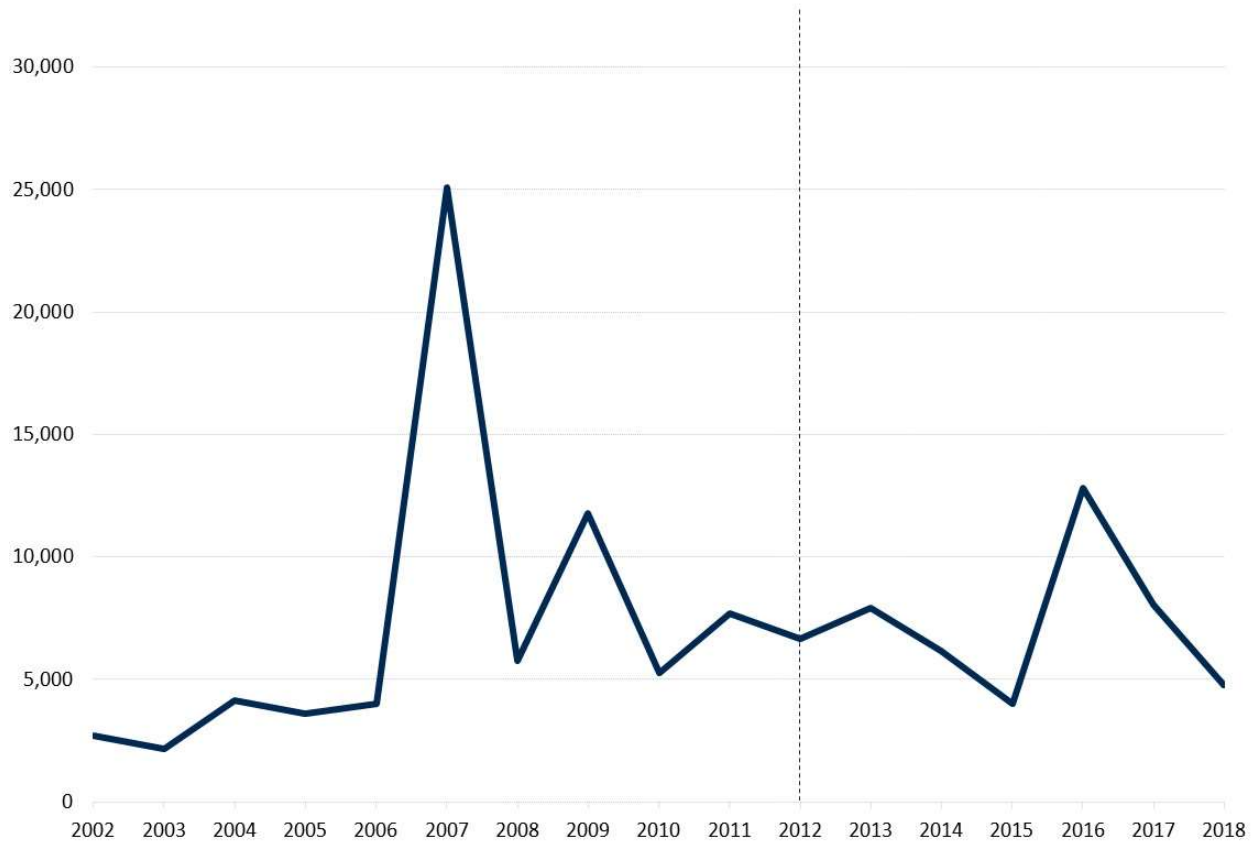
Source: Bureau of Business and Economic Research, University of Montana

Siskiyou County Federal Harvest



Source: Bureau of Business and Economic Research, University of Montana

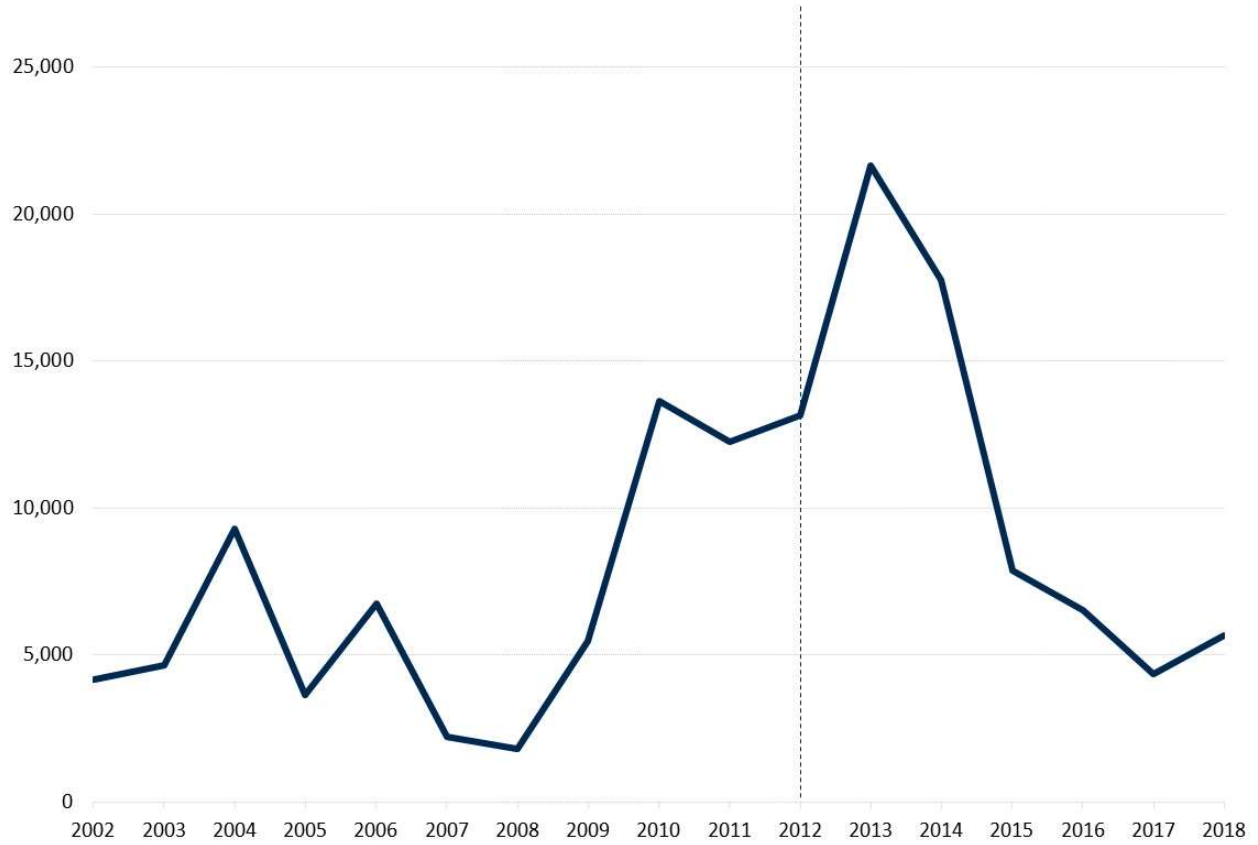
Trinity County Federal Harvest



Source: Bureau of Business and Economic Research, University of Montana

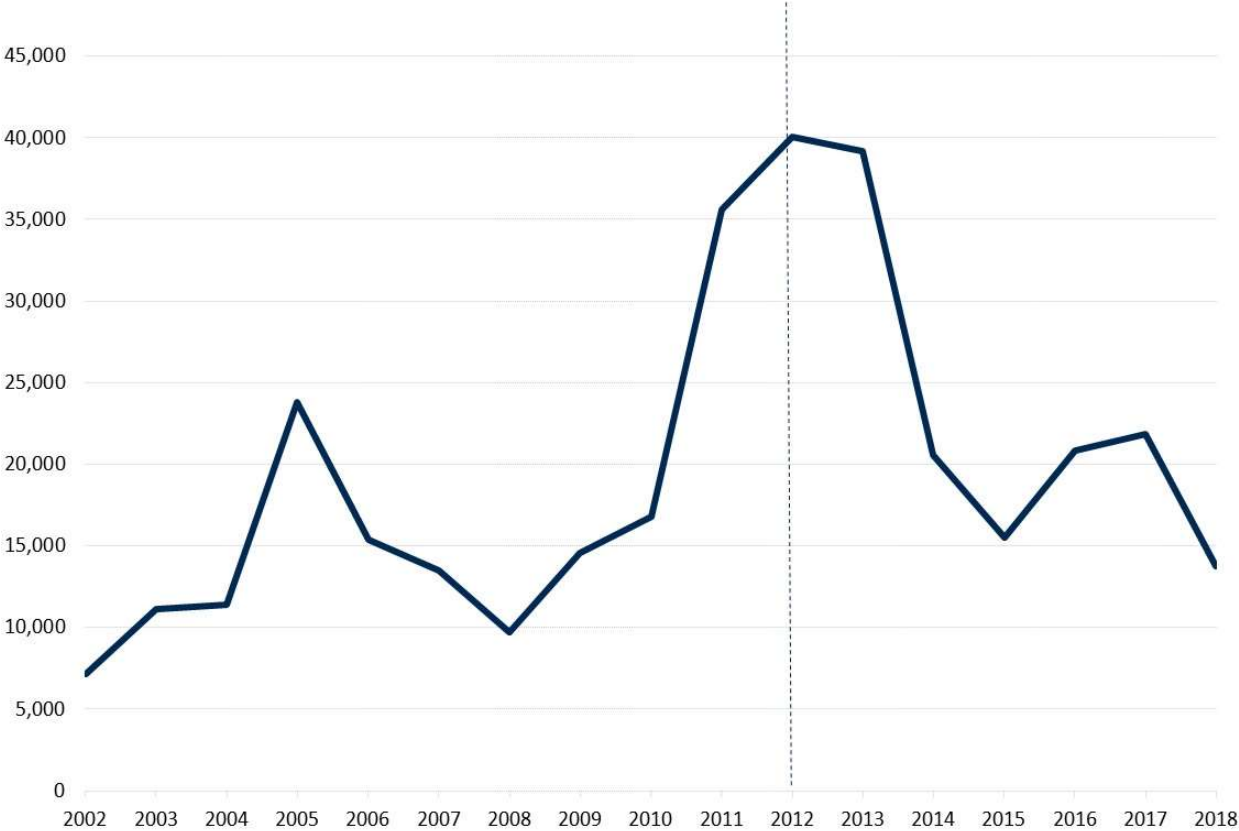
Oregon

Benton County Federal Harvest



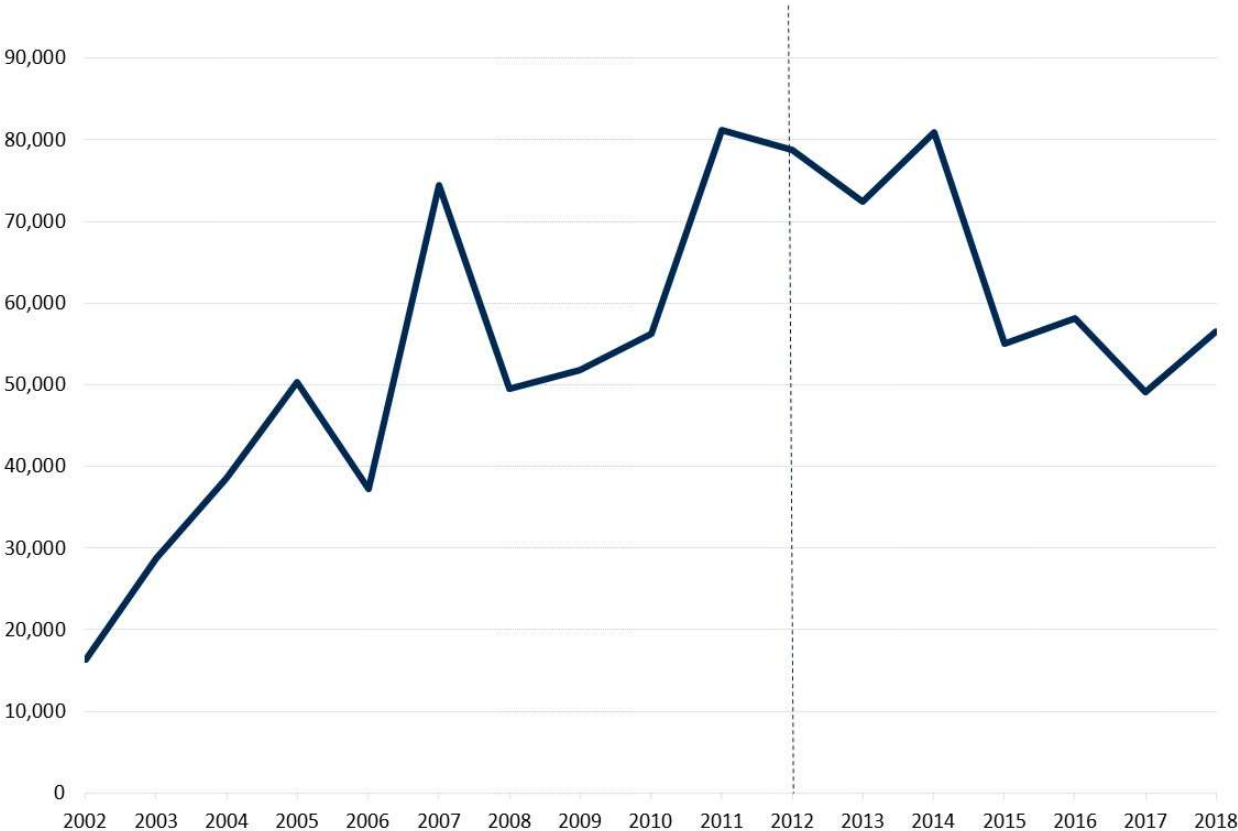
Source: Bureau of Business and Economic Research, University of Montana

Clackamas County Federal Harvest



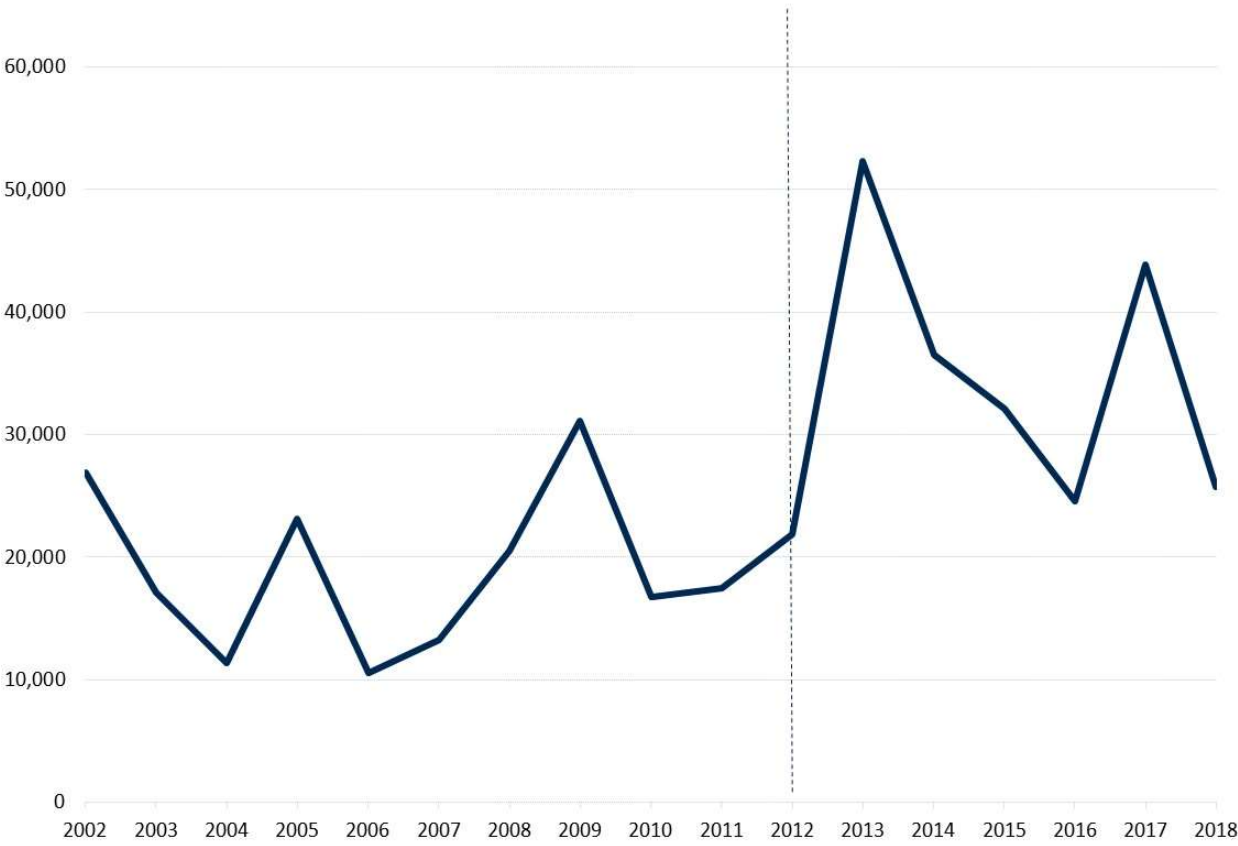
Source: Bureau of Business and Economic Research

Douglas County Federal Harvest



Source: Bureau of Business and Economic Research, University of Montana

Jackson County Federal Harvest



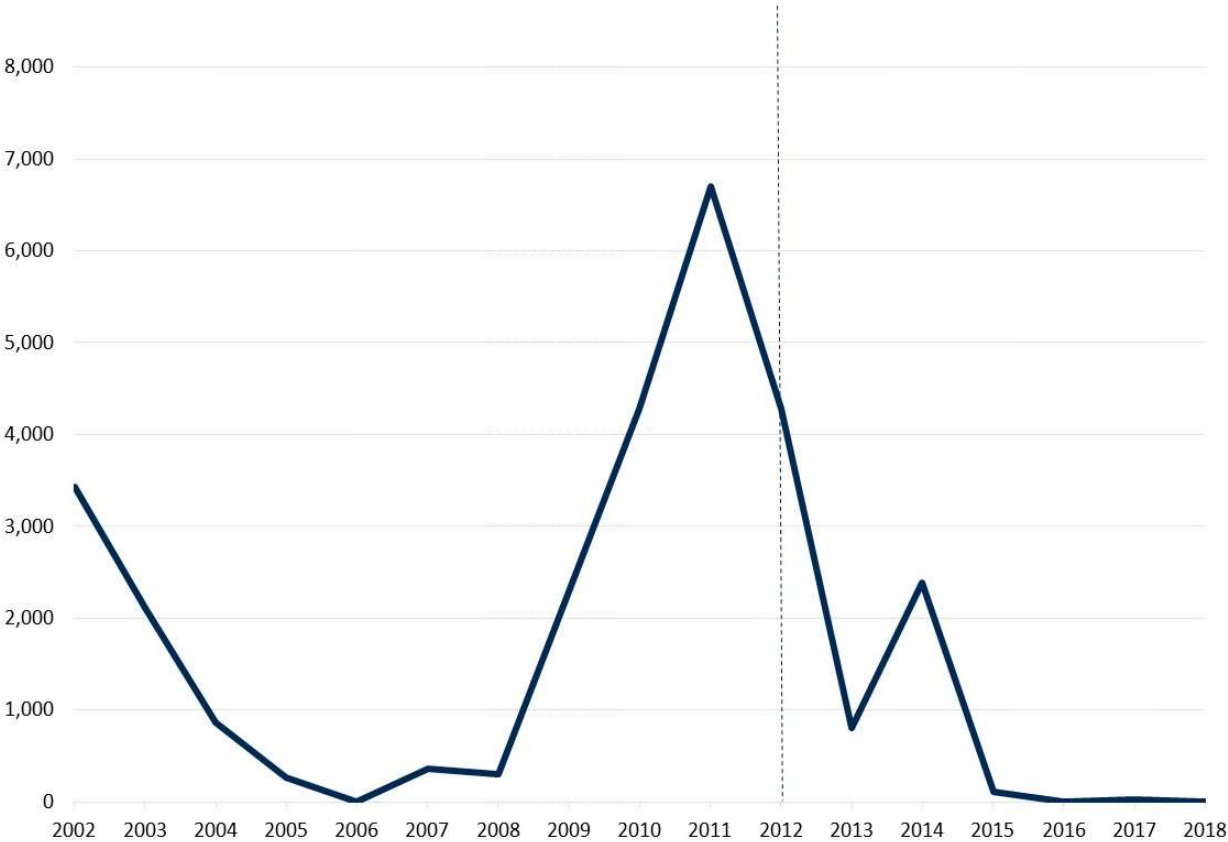
Source: Bureau of Business and Economic Research, University of Montana

Klamath County Federal Harvest



Source: Bureau of Business and Economic Research, University of Montana

Morrow County Federal Harvest



Source: Bureau of Business and Economic Research, University of Montana

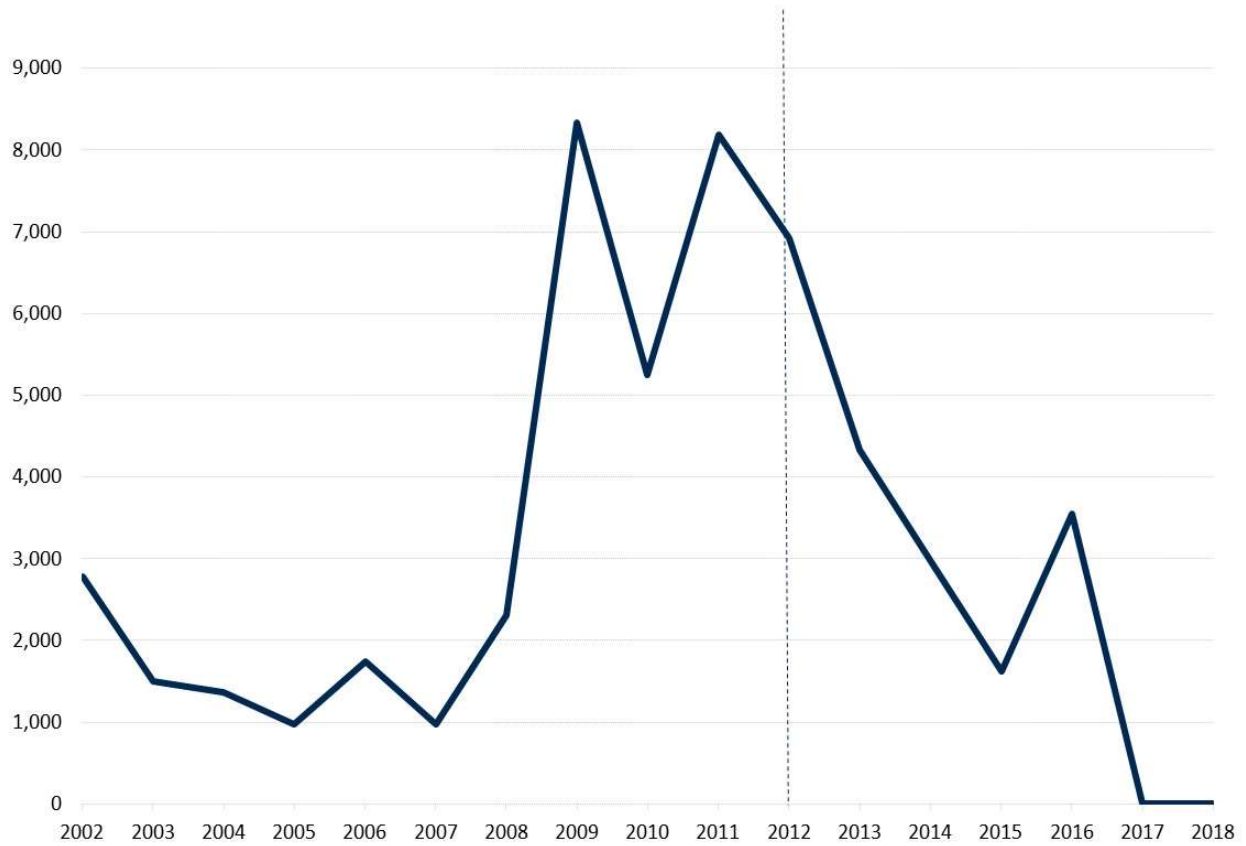
Lane County Federal Harvest



Source: Bureau of Business and Economic Research, University of Montana

Washington

Kittitas County Federal Harvest



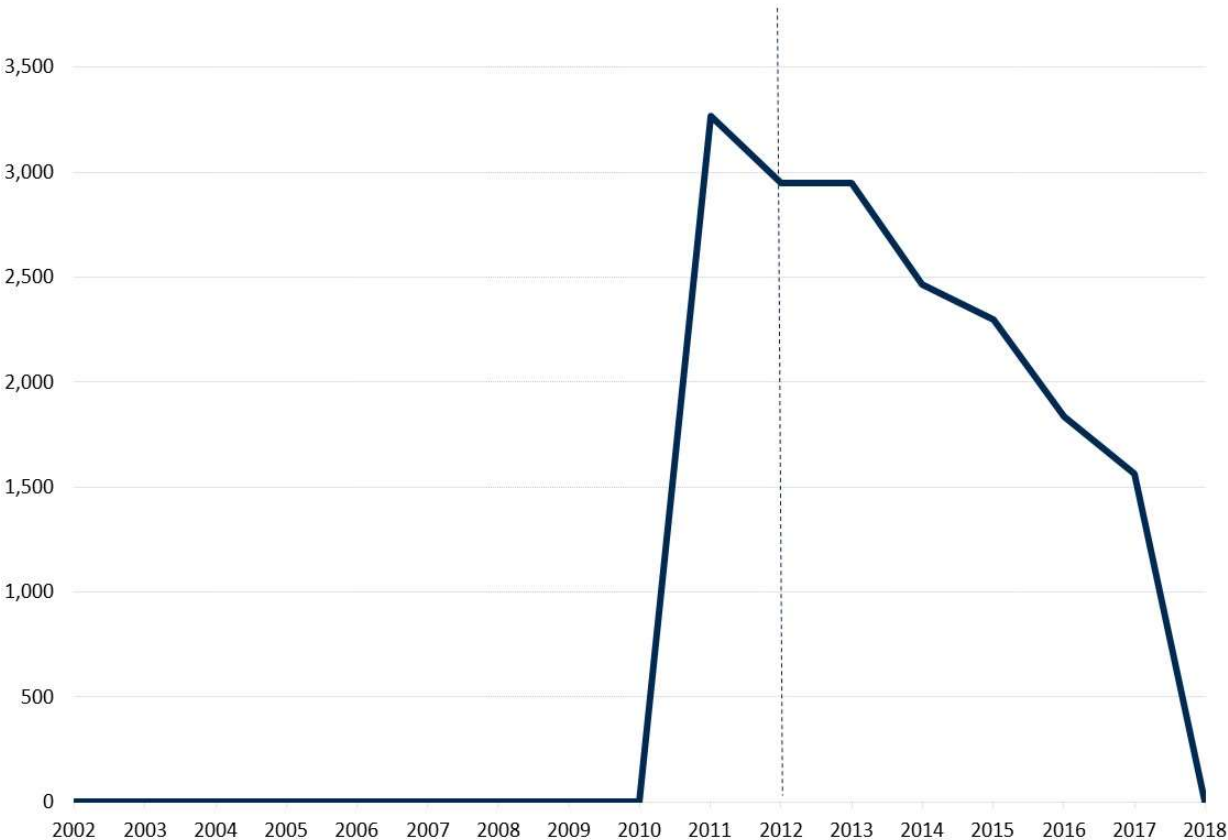
Source: Bureau of Business and Economic Research, University of Montana

Kitsap County Federal Harvest



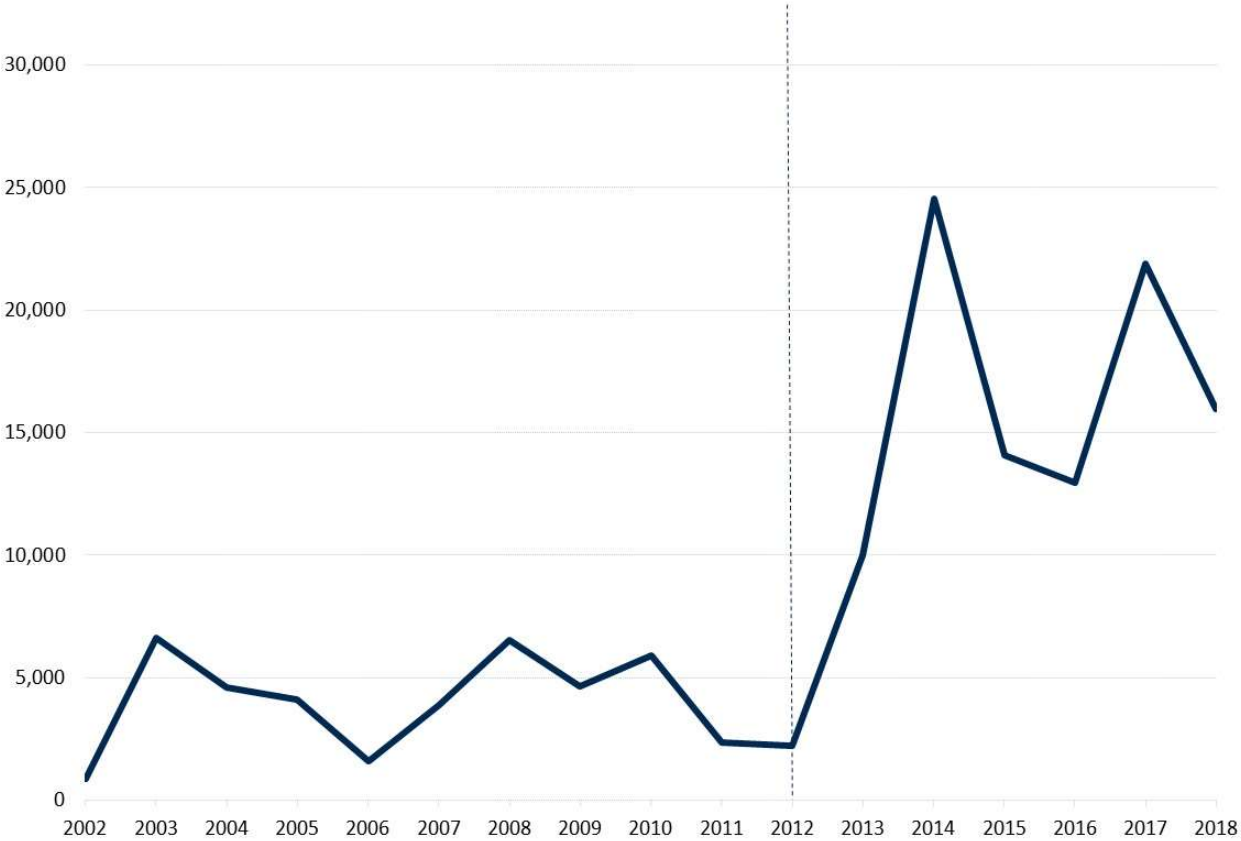
Source: Bureau of Business and Economic Research, University of Montana

Klickitat County Federal Harvest



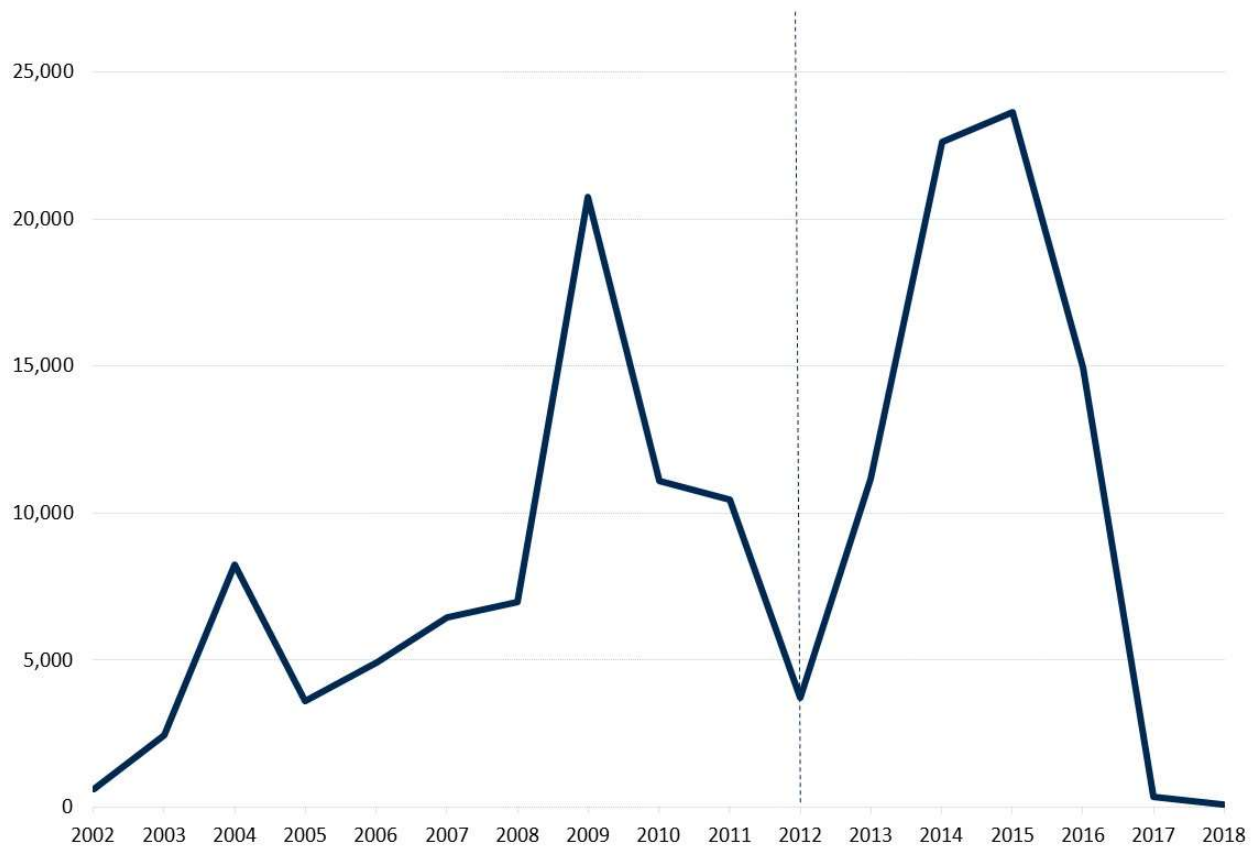
Source: Bureau of Business and Economic Research, University of Montana

Lewis County Federal Harvest



Source: Bureau of Business and Economic Research, University of Montana

Skamania County Federal Harvest



Source: Bureau of Business and Economic Research, University of Montana

Appendix B – Sawmill Establishments

This appendix contains tables that show the number of sawmills in the counties with substantial federal timberlands by employment size. This data was gathered from the Census Bureau using the County Business Patterns survey. The tables are sorted alphabetically by state and counties respectively. There are several counties that appear in Appendix A that do not appear here, because the data is not available.

California

Siskiyou County Sawmill Employment

Year	Establishments	Number of Employees					
		1 to 4	5 to 9	10 to 19	20 to 49	50 to 99	100 to 250
2018	3	-	-	-	-	0	0
2017	3	-	-	-	-	0	0
2016	2	0	0	1	1	0	0
2015	2	0	0	1	1	0	0
2014	2	0	0	1	1	0	0
2013	2	0	0	1	1	0	0
2012	2	0	0	1	1	0	0
2011	2	0	0	1	1	0	0
2010	1	0	0	1	0	0	0
2009	1	0	0	1	0	0	0
2008	1	0	0	1	0	0	0
2007	2	1	0	1	0	0	0
2006	1	0	0	0	1	0	0
2005	1	0	0	0	1	0	0
2004	1	0	0	0	1	0	0
2003	2	0	0	1	0	0	1
2002	-	-	-	-	-	-	-
2001	3	1	0	1	0	1	0
2000	2	0	0	0	1	1	0
1999	3	1	0	0	1	0	1
1998	3	0	0	0	2	0	1
1997	3	1	0	0	0	0	2
1996	3	1	0	0	0	0	2
1995	4	1	1	0	0	0	2
1994	6	2	0	1	0	1	2
1993	5	0	0	1	1	1	2

Source: Census Bureau - County Business Patterns

* Data from 2002 was missing

Trinity County Sawmill Employment

Year	Establishments	Number of Employees	
		50 to 99	100 to 249
2018	-	-	-
2017	-	-	-
2016	1	0	1
2015	1	0	1
2014	1	0	1
2013	1	0	1
2012	1	0	1
2011	1	1	0
2010	1	1	0
2009	1	0	1
2008	1	0	1
2007	1	0	1
2006	1	0	1
2005	1	0	1
2004	1	0	1
2003	1	0	1
2002	-	-	-
2001	1	0	1
2000	1	0	1
1999	1	0	1
1998	1	0	1
1997	1	0	1
1996	2	0	2
1995	2	0	2
1994	2	0	2
1993	2	0	2

Source: Census Bureau - County Business Patterns

* Data from 2002 was missing

* Data for 2018 & 2017 are either missing or 0

Oregon

Douglas County Sawmill Employment

Year	Establishment	Number of Employees							
		1 to 4	5 to 9	10 to 19	20 to 49	50 to 99	100 to 249	250 to 499	500 to 999
2018	11	-	-	-	-	3	3	-	-
2017	11	-	-	-	-	3	-	-	-
2016	10	2	0	0	2	3	2	1	0
2015	10	2	0	0	2	3	2	1	0
2014	9	2	1	0	0	3	2	1	0
2013	9	1	0	0	1	4	2	1	0
2012	11	1	1	0	2	4	2	1	0
2011	10	2	0	0	1	4	2	1	0
2010	11	2	0	1	1	3	3	1	0
2009	11	1	0	2	1	3	4	0	0
2008	12	2	0	0	3	1	6	0	0
2007	14	2	0	0	3	2	5	2	0
2006	14	2	0	0	2	3	5	2	0
2005	13	2	0	0	1	2	6	2	0
2004	14	2	0	0	1	3	7	1	0
2003	14	1	1	0	1	3	7	1	0
2002	-	-	-	-	-	-	-	-	-
2001	18	5	2	0	2	3	4	2	0
2000	19	6	1	1	2	3	5	1	0
1999	18	6	1	0	1	4	4	1	1
1998	19	5	3	0	2	4	3	1	1
1997	24	4	2	3	1	9	2	2	1
1996	22	6	3	2	2	5	3	1	0
1995	22	6	3	2	3	3	4	1	0
1994	23	6	1	3	4	3	5	1	0
1993	25	9	2	2	3	2	6	1	0

Source: Census Bureau - County Business Patterns

* Data from 2002 was missing

* Data for 2018 & 2017 are either missing or 0

Jackson County Sawmill Employment

Year	Establishment	Number of Employees					
		1 to 4	5 to 9	10 to 19	20 to 49	50 to 99	100 to 249
2018	3	-	-	-	-	-	-
2017	4	-	-	-	-	-	-
2016	5	1	1	3	0	0	0
2015	3	1	1	0	1	0	0
2014	4	2	1	1	0	0	0
2013	-	-	-	-	-	-	-
2012	5	4	0	1	0	0	0
2011	3	1	0	2	0	0	0
2010	3	1	1	0	1	0	0
2009	3	1	1	0	1	0	0
2008	5	2	1	0	2	0	0
2007	4	2	1	0	0	1	0
2006	4	2	1	0	0	1	0
2005	3	1	1	0	0	1	0
2004	2	0	1	0	0	1	0
2003	2	0	1	0	0	1	0
2002	-	-	-	-	-	-	-
2001	5	3	1	0	0	1	0
2000	5	2	1	0	0	2	0
1999	6	3	0	1	1	1	0
1998	5	1	0	0	2	2	0
1997	10	5	0	0	2	2	1
1996	9	3	0	0	2	2	2
1995	11	4	0	0	1	4	2
1994	13	4	0	1	1	4	3
1993	13	5	0	0	1	4	3

Source: Census Bureau - County Business Patterns

* Data from 2002 was missing

* Data from 2013 was missing for Jackson County

Lane County Sawmill Employment

Year	Establishment	Number of Employees						
		1 to 4	5 to 9	10 to 19	20 to 49	50 to 99	100 to 249	250 to 499
2018	23	7	-	3	-	3	5	-
2017	23	4	3	4	3	6	-	-
2016	19	5	2	1	1	4	5	1
2015	21	6	3	1	1	5	4	1
2014	22	7	0	3	2	4	4	2
2013	20	5	1	3	2	4	3	2
2012	21	6	1	3	2	4	3	2
2011	20	6	1	3	2	4	2	2
2010	20	4	0	5	4	2	4	1
2009	17	4	0	4	2	2	5	0
2008	18	3	2	3	1	4	3	2
2007	18	4	1	2	2	3	5	1
2006	19	2	1	4	1	5	5	1
2005	20	5	0	3	2	4	4	2
2004	17	3	0	3	1	6	2	2
2003	18	3	0	4	0	7	2	2
2002	-	-	-	-	-	-	-	-
2001	20	6	0	3	1	5	3	2
2000	19	4	1	3	1	5	3	2
1999	20	4	1	4	1	5	3	2
1998	20	5	1	2	2	5	3	2
1997	29	5	3	5	3	7	5	1
1996	29	7	6	2	4	5	4	1
1995	30	8	4	4	3	5	5	1
1994	36	12	4	5	3	6	5	1
1993	33	7	7	3	4	6	6	0

Source: Census Bureau - County Business Patterns

* Data from 2002 was missing

* Data for 2018 & 2017 are either missing or 0

Washington

Klickitat County Sawmill Employment

Year	Establishments	Employees			
		1 to 4	20 to 49	100 to 250	250 to 499
2018	3	-	-	-	-
2017	3	-	-	-	-
2016	3	2	0	0	1
2015	3	1	0	1	1
2014	2	1	1	0	0
2013	2	1	1	0	0
2012	3	2	0	0	1
2011	2	1	0	0	1
2010	1	1	0	0	0
2009	2	1	0	1	0
2008	2	1	0	0	1
2007	2	1	0	0	1
2006	2	1	0	0	1
2005	2	1	0	0	1
2004	1	0	0	0	1
2003	1	0	0	1	0
2002	-	-	-	-	-
2001	1	0	0	0	1
2000	1	0	0	0	1
1999	1	0	0	0	1
1998	1	0	0	0	1
1997	1	0	0	0	1
1996	-	-	-	-	-
1995	-	-	-	-	-
1994	-	-	-	-	-
1993	-	-	-	-	-

Source: Census Bureau - County Business Patterns

* Data from 2002 was missing

* Data for 2018 & 2017 are either missing or 0

Lewis County Sawmill Employment

Year	Establishments	Employees						
		1 to 4	5 to 9	10 to 19	20 to 49	50 to 99	100 to 249	250 to 499
2018	7	-	-	-	-	-	4	-
2017	6	-	-	-	-	-	4	-
2016	6	1	1	0	0	0	4	0
2015	7	1	1	0	0	1	4	0
2014	6	0	1	0	0	0	5	0
2013	7	1	1	0	0	0	5	0
2012	7	1	1	0	0	0	5	0
2011	9	1	1	0	1	0	6	0
2010	10	1	1	0	1	0	7	0
2009	10	0	2	0	2	0	6	0
2008	10	2	1	1	0	0	6	0
2007	11	2	1	2	0	1	5	0
2006	9	1	2	0	1	0	5	0
2005	9	1	2	0	1	0	5	0
2004	10	3	1	0	1	0	5	0
2003	10	3	1	1	0	0	5	0
2002	-	-	-	-	-	-	-	-
2001	10	1	2	2	0	0	5	0
2000	10	2	1	1	0	0	6	0
1999	12	3	1	1	0	1	5	1
1998	11	1	3	0	0	1	6	0
1997	12	3	1	1	0	1	5	1
1996	14	4	1	2	1	0	5	1
1995	15	5	1	1	1	2	4	1
1994	14	4	3	0	0	2	4	1
1993	16	6	2	1	1	1	5	0

Source: Census Bureau - County Business Patterns

* Data from 2002 was missing

* Data for 2018 & 2017 are either missing or 0

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