Bock Foundation Final Report
2020 Field Season

Clearwater Resource Council

Introduction

CRC and its partners work on a variety of mitigation and landscape restoration efforts in the Clearwater Valley, a landscape of over 270,000 acres. However, much of the recent funding provided has been for specific fuels mitigation projects, and did not allowed us to focus on the issues surrounding old growth retention and recruitment. The 2020 Bock funding enabled us to build upon previously work to being to further the protection of the most vulnerable trees and ecosystem on this landscape. More specifically, CRC partnered with the U.S.F.S. (Seeley Lake Ranger District) to ground truth previously collected remote sensing data to definitively identify high density old growth stands in selected timber units.

Scope of Work

CRC's proposal consisted of three components:

1. USFS relies on satellite imagery to map old growth stands. However, these maps can only serve as a guide and must be ground-truthed for accuracy. The remote sensing data showed growth density -- but young, densely packed stands can be mistaken for old growth stands. CRC hired two former Americorp members with forestry and tree marking experience to ground truth the highest priority lands mapped as potential old growth. The refined maps were then used, and will continue to be used to better protect existing old growth stands.

2. CRC, with support from a GIS expert, mapped the finding from the field work conducted in the fall of 2020.

3. CRC used the findings to author the Westside Bypass letter (see Appendix A).

The overarching goal of the Bock work is to ensure that remaining old growth stands are protected in the future, to the best of our ability, from harvest, catastrophic fire and insects. Given climate change and the increase in the severity of wildfire, such an effort is of critical importance.

Methods

Based on existing GIS remote sensing data, CRC identified those units with the potential to contain a high density of old growth trees. Once potential stands were identified, a field crew went out to ground-truth the stands. Old growth stands tree were defined in the field as those units possessing a minimum of 6-8 trees per acre, with a DBH of 20 inches or greater. Based on this field data, CRC was then able to confirm or reject the GIS-generated stand data. The field crew was also able to expand the number of identified stands to include areas that were not captured by GIS data but possessed the requisite number of old growth trees. Stands were rejected if there were too few large trees to be considered a stand, if the trees were standing dead and or burned/fire-related stands. Along with confirming or rejecting the stands, crews also identified the dominant tree species and stand structure.

Findings

Based on previous remote sensing data, a total of 577 large tree stands greater than five acres in size were potentially identified. In 2020, the CRC crew were able to ground-truth 82 of these stands. The crew confirmed 75 to be existing old growth stands and rejected seven for a remote sensing mapping accuracy of 91.5 percent. The dominant species were Douglas Fir (PSME), Ponderosa Pine (PIPO), Larch (LAOC), Lodgepole Pine (PICO), Subalpine Fir (ABLA), Cottonwood (POBA), and Engleman Spruce (PIEN). The stand structure varied between open and closed, with a majority featuring a mixed stand structure. More detailed findings and maps are presented below.

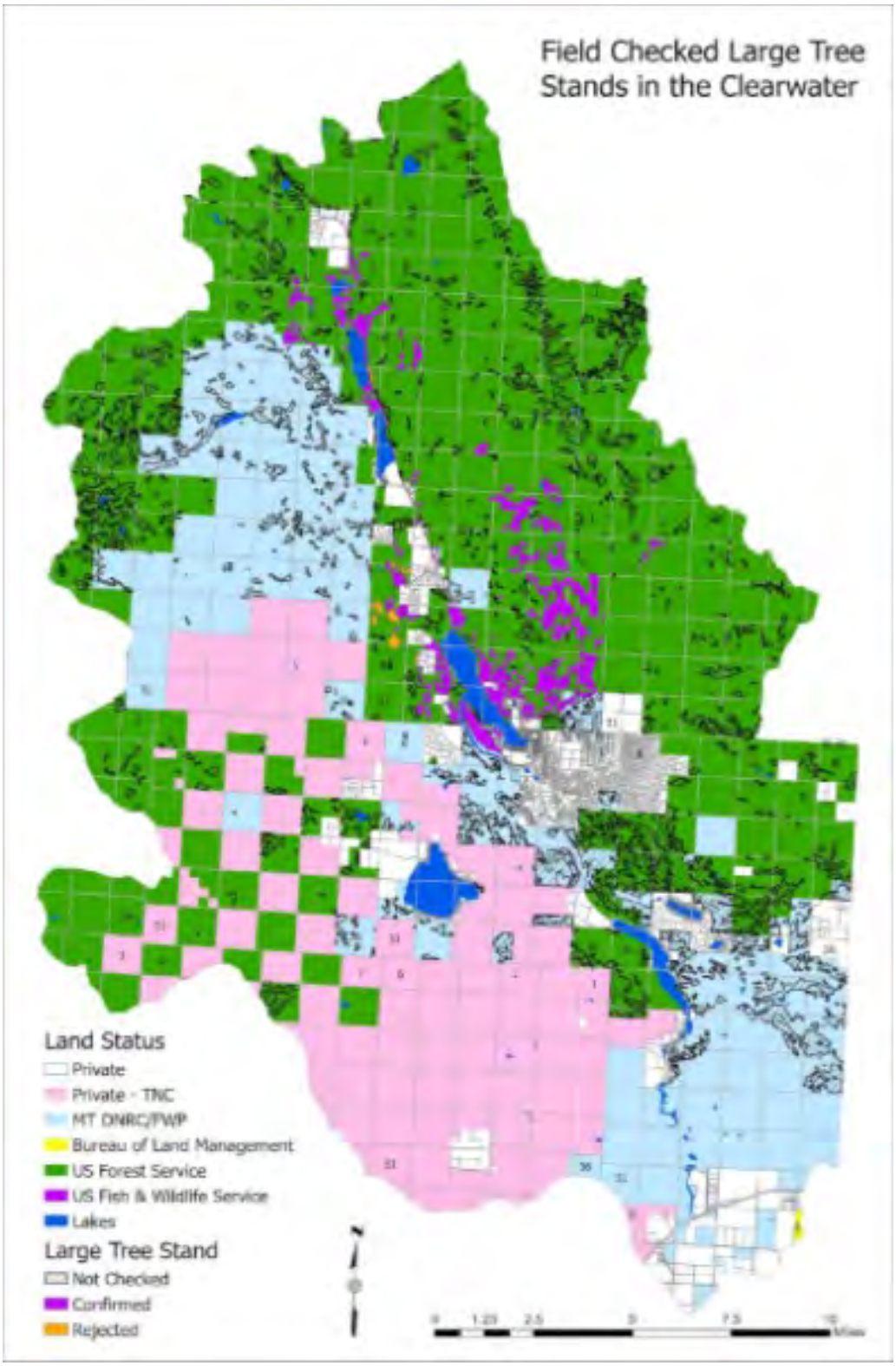

Figure 1. This map shows the Clearwater River watershed with land ownership and GIS-generated large tree stands. Stands that were visited during the 2020 field season and then either confirmed or rejected are depicted, while unconfirmed stands are depicted with black hash marks.

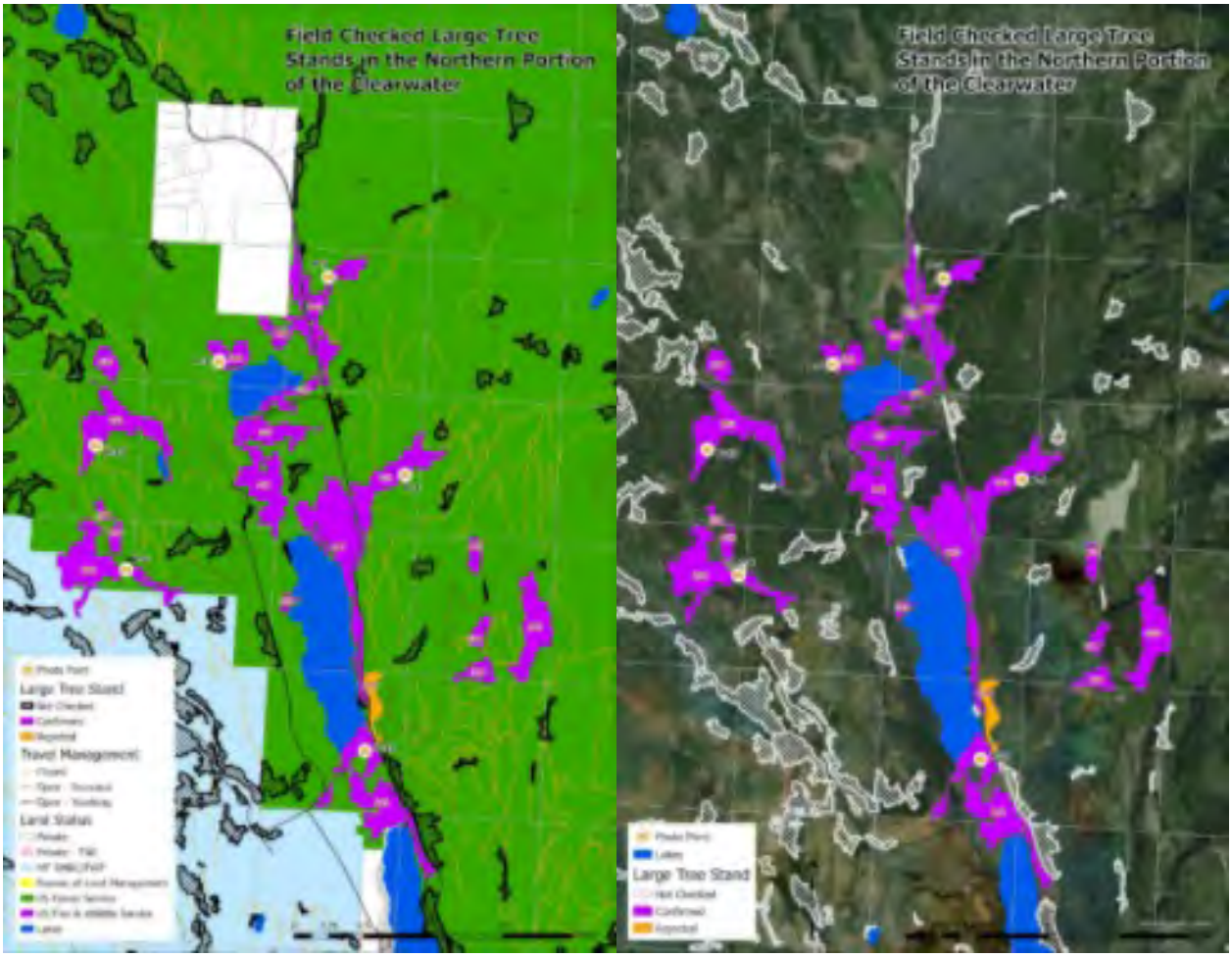

Figure 2. Map of the north end of the Clearwater River watershed showing large tree stands with land ownership and road status on the left and aerial imagery on the right. The crew visited stands with easier access, mainly around the lakes and open roads. Photo points (P-1, P-4, P-6, P-7, P-10, and P-11 (also shown in central map, see Figure 9)) were also taken and shown on the maps. See Figures 3-8 for photos, and Table 1 for stand attributes.

Figure 3. Photo point P-1 in Stand 269 showing a mixed stand of downed Lodgepole, Larch, and Douglas Fir.

Figure 4. Photo point P-4 in Stand 311 showing a mixed stand with dead understory.

Figure 5. Photo point P-6 in Stand 262 showing a mixed stand of Larch and Douglas Fir.

Figure 6. Photo point P-7 in Stand 312 showing a mixed stand of a single cottonwood and Douglas Fir behind.

Figure 7. Photo point P-10 in Stand 263 showing a mixed stand of Douglas Fir.

Figure 8. Photo point P-11 in Stand 242 showing a mixed stand of Larch and Douglas Fir.

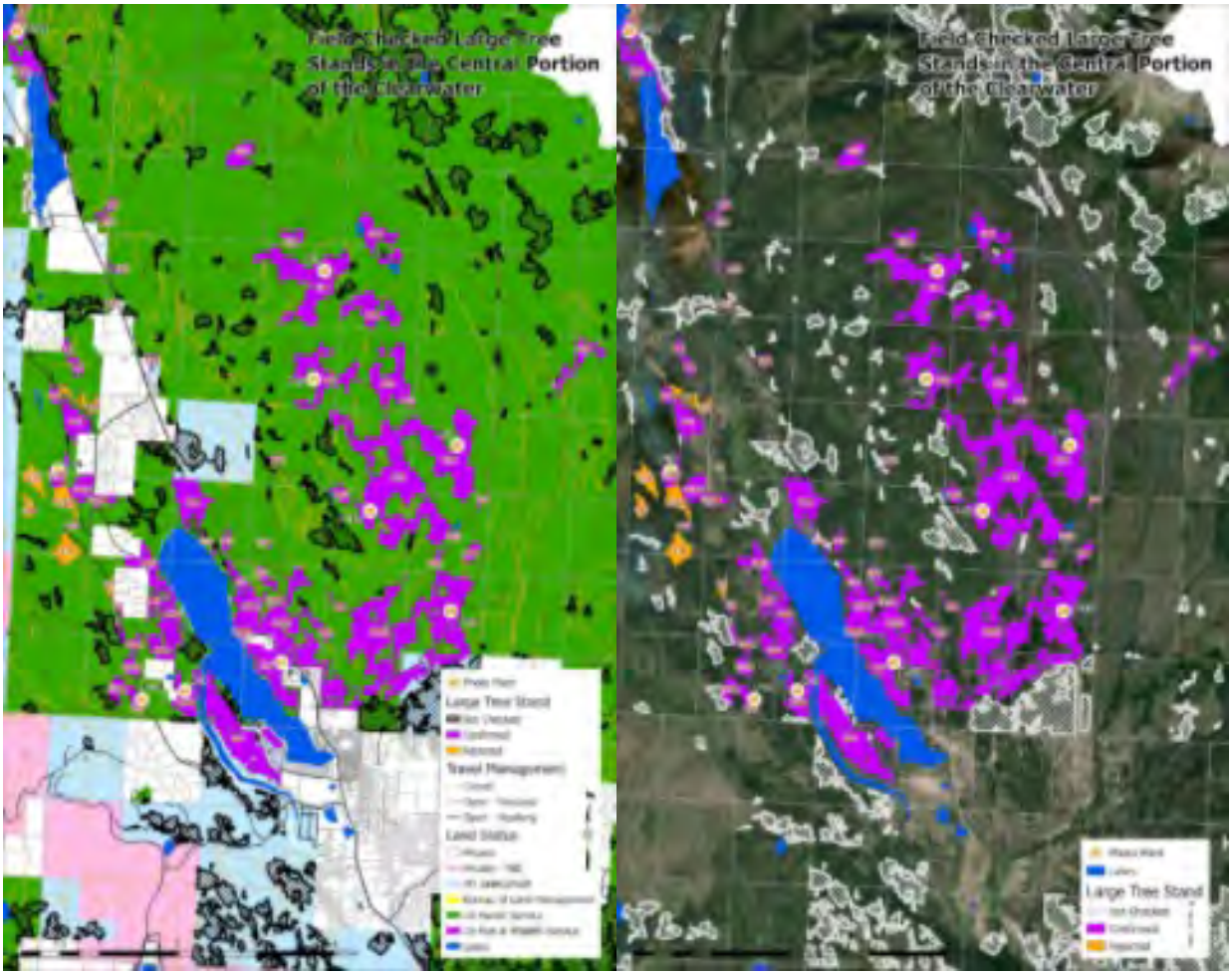

Figure 9. Map of the central part of the Clearwater River watershed showing large tree stands with land ownership and road status on the left and aerial imagery on the right. The crew visited stands with easier access, mainly around the lakes and open roads. Photo points (P-2, P-3, P-5, P-8, P-9, P-11 (also shown in northern map, see Figure 8), P-12, P-13, P-14, and P-15) were also taken and shown on the maps see Figures 10-18 for photos, and Table 1 stand for attributes.

Figure 10. Photo point P-2 in Stand 214 showing a mixed stand of Larch.

Figure 11. Photo point P-3 in Stand 84B showing a mixed stand of Larch and Douglas Fir.

Figure 12. Photo point P-5 in Stand 112D showing closed stand of Larch, Lodgepole Pine, and Douglas Fir.

Figure 13. Photo point P-8 in Stand 194 showing a mixed stand of Larch and Douglas Fir.

Figure 14. Photo point P-9 in Stand 193 showing a closed stand of Larch and Douglas Fir.

Figure 15. Photo point P-12 in Stand 213 showing mixed stand of Douglas Fir.

Figure 16. Photo point P-13 in Stand 189E showing a burned open stand of Larch and Douglas Fir.

Figure 17. Photo point P-14 in Stand 128 showing a closed stand of Larch, Douglas Fir and Lodgepole Pine.

Figure 18. Photo point P-15 in Stand 190 showing an open stand of Larch and Douglas Fir.

Table 1. Attributes of large tree stands visited in 2020 field season.

STAND_ID	AVG. DBH	Acres	Field Check	Structure	Dominate Species
82	20	13.82	Rejected	Closed	PICO
83	20	8.23	Confirmed	Closed	PSME, LAOC, PIEN
84A	20	100.04	Confirmed	Open	LAOC
84B	20	82.11	Confirmed	Mixed	LAOC, PSME, PIEN
84C	20	35.44	Confirmed	Mixed	PIPO, LAOC, PSME
84E	20	78.43	Confirmed	Mixed	LAOC
84F	20	25.34	Confirmed	Mixed	LAOC
110	20	53.16	Rejected	Closed	PICO, LAOC
111	20	7.03	Confirmed	Mixed	LAOC, PSME
112A	20	44.70	Rejected	Closed	PICO, LAOC, PSME
112B	20	21.61	Confirmed	Mixed	LAOC
112C	20	53.46	Confirmed	Closed	LAOC
112D	20	33.42	Confirmed	Closed	LAOC
114	20	69.37	Confirmed	Mixed	LAOC, PICO
115	20	34.00	Rejected	Closed	PICO, LAOC
116	20	19.04	Confirmed	Mixed	LAOC
117	20	9.67	Confirmed	Mixed	LAOC
124	20	21.18	Rejected	Closed	PICO, PSME

125	20	38.60	Rejected	Closed	PICO, PSME
128	20	23.41	Confirmed	Closed	PSME, LAOC, PIPO, PICO, POBA, PEIN
129A	20	19.36	Confirmed	Closed	LAOC, PSME, PIEN
129B	20	24.68	Confirmed	Closed	LAOC, PSME, PIEN
132	20	7.54	Confirmed	Mixed	LAOC
135A	20	27.65	Confirmed	Closed	LAOC, PIPO, PICO
138	20	11.12	Confirmed	Open	LAOC
139	20	8.01	Confirmed	Mixed	LAOC
140	20	15.98	Confirmed	Mixed	LAOC
185	20	7.41	Confirmed	Mixed	LAOC
189A	20	7.38	Confirmed	Mixed	PIPO, LAOC, PSME
189B	20	23.60	Confirmed	Closed	PIPO, PSME
189C	20	90.36	Confirmed	Open	LAOC, PSME
189D	20	315.95	Confirmed	Open	LAOC, PIPO, PSME, PICO, PIEN, ABLA
189E	20	708.83	Confirmed	Open	LAOC, PIPO, PSME, PICO, PIEN, ABLA
190	20	147.01	Confirmed	Open/Mixed	LAOC, PIPO, PSME
191	20	29.43	Confirmed	Mixed	LAOC, PSME
193	20	155.10	Confirmed	Closed	LAOC, PSME, ABLA
194	20	272.45	Confirmed	Mixed	PSME, LAOC, ABLA
201	20	276.10	Confirmed	Open	LAOC, PSME, PIPO, PICO
203	20	11.42	Confirmed	Open	LAOC, PSME
204	20	118.74	Confirmed	Open	LAOC
211	20	7.05	Confirmed	Mixed	LAOC, PSME
212	20	12.20	Confirmed	Burned	LAOC, PSME, PIPO
213	20	545.30	Confirmed	Mixed	LAOC, PSME, PIPO, PICO
214	20	286.92	Confirmed	Mixed	LAOC, PIPO, PSME. PICO
217	20	27.38	Confirmed	Open	LAOC
220	20	133.78	Confirmed	Mixed	LAOC
221	20	21.87	Confirmed	Mixed	LAOC
222	20	115.31	Confirmed	Mixed	LAOC, PICO, PSME
229	20	64.78	Confirmed	Mixed	LAOC, PSME
242	20	122.98	Confirmed	Mixed	LAOC, PSME
253	20	22.67	Confirmed	Open	PSME, LAOC, PIPO
254	20	7.33	Confirmed	Mixed	PSME, LAOC
262	20	103.30	Confirmed	Mixed	PSME, LAOC
263	20	93.18	Confirmed	Mixed	LAOC, PSME, ABLA, PICO, PIEN
269	20	27.57	Confirmed	Mixed	LAOC, PSME, PIEN
275	20	11.90	Confirmed	Mixed	PSME, LAOC

276	20	6.45	Confirmed	Open	PSME
277	20	19.65	Confirmed	Mixed	LAOC, PSME
282	20	16.44	Confirmed	Closed	LAOC, PICO
287	20	54.01	Confirmed	Mixed	LAOC, PSME, ABLA, PIEN
288	20	29.10	Confirmed	Mixed	LAOC, PSME
291	20	11.91	Confirmed	Mixed	PSME, LAOC
293	20	24.13	Confirmed	Mixed	LAOC, PSME, PIPO
295	20	91.29	Confirmed	Mixed	LAOC
296	20	22.78	Rejected	Closed	LAOC, PSME
297	20	138.65	Confirmed	Mixed	LAOC, PSME, ABLA, PIEN
302	20	7.64	Confirmed	Open	LAOC, PIPO
310	20	80.43	Confirmed	Closed	PSME, LAOC
311	20	82.35	Confirmed	Mixed	LAOC, PSME, ALBA, PIEN
312	20	62.65	Confirmed	Mixed	LAOC, PSME, PIPO, ABLA, POBA
316	20	19.51	Confirmed	Open	LAOC
317	20	13.44	Confirmed	Mixed	LAOC
318	20	71.48	Confirmed	Mixed	LAOC
319	20	13.48	Confirmed	Closed	LAOC, PSME
327	20	46.91	Confirmed	Mixed	PSME
328	20	6.45	Confirmed	Closed	LAOC
331	20	23.52	Confirmed	Mixed	LAOC, PSME
382	20	7.73	Confirmed	Open	PIPO, PSME
384	20	23.88	Confirmed	Burned	LAOC, PSME
408	20	13.29	Confirmed	Closed	LAOC, PSME, PICO, ABLA, PIEN
424	20	49.30	Confirmed	Mixed	LAOC, PSME
461	20	12.32	Confirmed	Open	LAOC, PSME, PICO

Conclusion

Several conclusions can be drawn from the work undertaken during the 2020 field season. First, the remote sensing data are a good predictor of the presence of old growth stands, with an accuracy rate of over 90%. However, while the GIS data has predictive value, the GIS data alone is insufficient to fully identify stands. During our field work multiple stands were expanded in size to capture old growth trees that were not represented in the remote sensing data. In other words, the GIS data is predictive but not definitive. Ground-truthing in the field remains necessary**.**

Second, the exact amount of old growth forest left in the Seeley Lake Ranger District has yet to be fully quantified by the Forest Service. However, in the Swan Ranger District, immediately north of Seeley, the Forest Service estimates old growth comprises just 9

percent of the timbered stands. Therefore, maintaining all remaining old growth in the Seeley District is a high priority for the CRC. In order to maintain the existing old growth stands, the possibility to catastrophic wildfire needs to be reduced via a combination of fuels mitigation and subsequently, prescribed burns. Maintaining an open forest stand structure will also increase resiliency in the face of climate change related impacts associated with drought conditions and insects/disease. However, the of 75 stands presented in Table 1, only 15 stands (20 % of the total surveyed) possessed a fully open stand structure. A total of 77% of the stands were either mixed (41%) or closed (36 %) indicating a critical need for fuels mitigation in these areas.

While only 2 stands (3% of the total surveyed) were dead/burned old growth stands, without fuels mitigation efforts, we could lose a majority of such stands to catastrophic wildfire over the next decade. It is hoped that the Landscape Restoration funding recently obtained by CRC and its partners will start to address and better protect some of these old growth stands.

Third, the data obtained via the Bock grant allowed us to comment in a meaningful way on the proposed Westside Bypass project. The data CRC provided led to meaningful changes by the agency to address our concerns. However, as the Forest Service continues under its pre-2020 cut mandate, old growth is increasingly under threat. The proposed Ridx commercial harvest will likely attempt to cut old growth in an effort to "get out the cut." We plan to use the data collected as part of this grant to comment on planned commercial cuts in old growth stands. And with continued support from the Bock Foundation, we hope to collect additional data in 2021 to further support our old growth protection and conservation work.

CRC would like to thank the John C. Bock Foundation for its support.

Appendix A: Westside Bypass Letter

Clearwater Resource Council
PO Box 1471 • Seeley Lake, MT 59868 • (406) 677-0069
www.crcmt.org

November 30, 2020

To: Elizabeth Tichner and Quinn Carver
From: Clearwater Resource Council

RE: Westside Bypass Wildfire Resiliency Project

The Clearwater Resource Council (CRC) is the local organization in Seeley Lake that focuses on the natural resources and their management in the Clearwater Valley. CRC appreciates the opportunity to comment on the proposed Westside Bypass Wildfire Resiliency Project. CRC strongly supports the Westside Bypass project as an important project for the Seeley Lake Ranger District. The project location focuses on a key fuel mitigation need in the Seeley Lake area. During the Jocko Lakes fire in 2007, this area presented some of the biggest challenges in keeping that fire from reaching the community of Seeley Lake. The area is part of the Primary Line of Defense (PLOD) identified in the CWPP and received a small start to this PLOD during the Jocko Lakes fire. The area is adjacent to occupied private lands as well as near to developed Forest Service campgrounds. Thus, the primary objective of fuel mitigation within the project area is well supported.

The project area also includes many stands with very large trees (>20" DBH). Figure 1 displays one such stand. CRC agrees with the objectives of encouraging the long-term enhancement of large larch and ponderosa pine in the project area. This area is well suited to support stands of very large larch along with smaller amounts of ponderosa pine. These species should respond well to thinning, and will be better adapted to future projected climate conditions than other species. Currently, most of the stands supporting large and very large trees are in-grown with high densities of smaller trees, (Figure 1), particularly lodgepole pine and Douglas fir. Should a fire come through this area, it is likely to be stand-replacing, and will kill most or all of the large and very large trees. Such stands need to be thinned not only to meet fuel mitigation objectives, but to help maintain the large and very large trees that are currently at risk from fire.

Figure 1.

Figure 1. Very large larch in Stand 7 with high densities of smaller Douglas fir and lodgepole pine.

We also support the proposed reduction of lodgepole pine in the area. This species would have historically been reduced in occurrence by the more frequent fires that occurred in this area through both natural and anthropogenic ignitions. The high existing densities of this species coupled with the high rates of mortality among mature lodgepole indicate the need to significantly thin this species, especially given the fuel mitigation objective for this area.

CRC supports leaving deciduous species such as aspen in the project area. The substantial wetland network throughout the project area provides prime habitat for aspen which is an important species for increasing diversity in the forest landscape. Encouraging the expansion of aspen is a sound objective.

Douglas fir is identified for the project as an intermediate species in terms of its priority for thinning. We agree with this, as it is well documented that Douglas fir has increased in abundance with changes in forest compositions due to the reduced role that fire has played in northern Rockies' landscapes. In particular, Douglas fir, without the natural thinning of low intensity fires, has increased in understories as it is a more shade-tolerant species than larch or ponderosa pine. Douglas fir is still an important part of the composition of forest stands in the project area. There are many stands in the project area that are currently dominated by Douglas fir (Figure 2). We support reducing the composition of Douglas fir in the project area in favor of larch and ponderosa pine, and in particular removing understory Douglas fir that contribute to ladder fuels that could threaten larger trees should a fire occur in the area. However, there are also a good number of large (15-20" DBH) and very large (>20" DBH) Douglas fir in the project area. For example, stand 15 has large Douglas fir along with a high density of smaller Douglas fir and larch (Figure 2). This stand should be thinned but should maintain any very large Douglas fir and appropriate numbers of large Douglas fir.

Figure 2. Large Douglas fir in Stand 15.

We recommend leaving all very large trees in the project area, including the very large Douglas fir, unless they are a clear hazard to people at a developed site. While some of these trees such as Douglas fir may be at risk from insect and disease, very large Douglas fir that die will produce very large snags that are an important component of a functional forest ecosystem and are needed in the project area. Very large snags eventually are a source of very large coarse woody debris, which is also an important component of

functional ecosystems in the area. There is no good ecological justification for removing very large trees from the project area, and it clearly compromises restoration potentials.

CRC strongly supports providing economic returns from thinning treatments to help pay for project costs and contribute to the local forest products industry. This fuel mitigation and thinning project will provide such economic returns. However, thinning of very large trees should not be part of an objective to generate economic returns. Harvesting very large Douglas fir in an effort to meet timber targets that were produced with no ecological analysis or basis is in direct conflict with objectives of maintaining healthy forest ecosystems.

CRC remains committed to the Westside Bypass Wildfire Resiliency Project. It is the right type of project in the right location to address high priority needs for the community of Seeley Lake. It has identified the correct priorities for project objectives and treatments. We support emphasizing the enhancement of the project area for larch, ponderosa pine, and deciduous trees. We are unclear on the project's plans in terms of harvest of very large and large Douglas fir trees. We are against the harvest of very large trees and suggest that such trees, including Douglas, be left in the project area along with a good number of large Douglas fir trees. CRC appreciates the opportunity to comment and looks forward to seeing this project move forward in a timely manner.

Sincerely,

Caryn Miske,
ED CRC