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Authors

Halpern, Charles B.; Urgenson, Lauren S.

Nine data files are described in this document. They include individual-, plot-, or treatment-scale response data and post-harvest (year 1) covariate data used in modeling responses to treatments. Definitions, units, and codes are provided for each variable.

1. Regen_density.csv. Plot-scale values of density (number/ha) of regenerating trees (stems ≥ 10 cm tall but < 5 cm dbh). Data include total density and density by seral group (early and late seral) in the pre-treatment (Pre = 1994-1996), initial post-treatment (Post = 1998 or 1999), and final sample (Final = 2016). Data represent plots in the harvested areas of experimental units only (A_h and D). Post-treatment (Post) values were used as plot-scale covariates of early- and late-seral regeneration responses. Pre-treatment (Pre) values are included for reference.

<u>Variable name</u>	<u>Definition, units, and codes</u>
Sample_date	Sample date relative to harvest. Codes: Pre (pre-treatment = 1994-1996), Post (post-treatment = 1998 or 1999), and Final (2016).
Site_#	Site (experimental block) number. Codes: 1 = Watson Falls, 4 = Dog Prairie, 5 = Butte, 6 = Little White Salmon, 7 = Paradise Hills.
Site_code	Site (experimental block) code. Codes: BU = Butte, DP = Dog Prairie, LW = Little White Salmon, PH = Paradise Hills, WF = Watson Falls.
Trt_#	Treatment number. Codes: 3 = 40% dispersed retention, 4 = 40% aggregated retention, 5 = 15% dispersed retention, 6 = 15% aggregated retention.
Trt_code	Treatment code. Codes: 15A = 15% aggregated retention, 15D = 15% dispersed retention, 40A = 40% aggregated retention, 40D = 40% dispersed retention.
Level	Level of retention. Codes: 15 = 15% of original basal area, 40 = 40% of original basal area.
Pattern	Spatial pattern of overstory retention. Codes: A = aggregated (1-ha circular forest aggregates), D = dispersed (trees uniformly dispersed across the harvest unit).
Plot	Plot ID. Unique code for the plot, consisting of the letter "P" (plot), site number, treatment number, and alphanumeric corresponding to the row and column on the 40 x 40 m grid (e.g., A1, B2, etc.).
Tot_regen	Total density of regeneration (≥ 10 cm tall, < 5 cm dbh; number/ha).
ES_regen	Density of early-seral regeneration (conifers ≥ 10 cm tall, < 5 cm dbh; number/ha).
LS_regen	Density of late-seral regeneration (conifers ≥ 10 cm tall, < 5 cm dbh; number/ha).
HW_regen	Density of hardwood regeneration (hardwoods ≥ 10 cm tall, < 5 cm dbh; number/ha).

2. Ingrowth_density.csv. Plot-scale values of final density (number/ha) of ingrowth stems (trees attaining 5 cm dbh during the study period). Data include total density and density by seral group (early and late seral) at the final sample. Data represent plots in the harvested areas of experimental units only (A_h and D).

<u>Variable name</u>	<u>Definition, units, and codes</u>
Site_#	Site (experimental block) number. Codes: 1 = Watson Falls, 4 = Dog Prairie, 5 = Butte, 6 = Little White Salmon, 7 = Paradise Hills.
Site_code	Site (experimental block) code. Codes: BU = Butte, DP = Dog Prairie, LW = Little White Salmon, PH = Paradise Hills, WF = Watson Falls.
Trt_#	Treatment number. Codes: 3 = 40% dispersed retention, 4 = 40% aggregated retention, 5 = 15% dispersed retention, 6 = 15% aggregated retention.
Trt_code	Treatment code. Codes: 15A = 15% aggregated retention, 15D = 15% dispersed retention, 40A = 40% aggregated retention, 40D = 40% dispersed retention.
Level	Level of retention. Codes: 15 = 15% of original basal area, 40 = 40% of original basal area.
Pattern	Spatial pattern of overstory retention. Codes: A = aggregated (1-ha circular forest aggregates), D = dispersed (trees uniformly dispersed across the harvest unit).
Plot	Plot ID. Unique code for the plot, consisting of the letter “P” (plot), site number, treatment number, and alphanumeric corresponding to the row and column on the 40 x 40 m grid (e.g., A1, B2, etc.).
Tot_ingrowth	Total density of surviving ingrowth (conifers and hardwoods attaining 5 cm dbh during the study period; number/ha).
ES_ingrowth	Density of surviving early-seral ingrowth (conifers attaining 5 cm dbh during the study period; number/ha).
LS_ingrowth	Density of surviving late-seral ingrowth (conifers attaining 5 cm dbh during the study period; number/ha).
HW_ingrowth	Density of surviving hardwood ingrowth (hardwoods attaining 5 cm dbh during the study period; number/ha).

3. CV_density_matrix.csv. Plot-scale values of density (number/ha) for early- and late-seral regeneration (≥ 10 cm tall, < 5 cm dbh) and ingrowth (trees attaining 5 cm dbh during the study period). Data include post-harvest (1998/1999) and final (2016) densities. Data were used to compute variation (CV) in regeneration and ingrowth density within harvest units, as well as multivariate dispersion of plots (for details, see Methods). Data represent plots in the harvested areas of experimental units only (A_h and D).

<u>Variable name</u>	<u>Definition, units, and codes</u>
Sample_date	Sample date relative to harvest. Codes: Post (post-treatment = 1998 or 1999) or Final (2016).
Site_#	Site (experimental block) number. Codes: 1 = Watson Falls, 4 = Dog Prairie, 5 = Butte, 6 = Little White Salmon, 7 = Paradise Hills.
Site_code	Site (experimental block) code. Codes: BU = Butte, DP = Dog Prairie, LW = Little White Salmon, PH = Paradise Hills, WF = Watson Falls.
Trt_#	Treatment number. Codes: 3 = 40% dispersed retention, 4 = 40% aggregated retention, 5 = 15% dispersed retention, 6 = 15% aggregated retention.
Trt_code	Treatment code. Codes: 15A = 15% aggregated retention, 15D = 15% dispersed retention, 40A = 40% aggregated retention, 40D = 40% dispersed retention.
Level	Level of retention. Codes: 15 = 15% of original basal area, 40 = 40% of original basal area.
Pattern	Spatial pattern of overstory retention. Codes: A = aggregated (1-ha circular forest aggregates), D = dispersed (trees uniformly dispersed across the harvest unit).
ES_regen	Density of early-seral regeneration (conifers ≥ 10 cm tall, < 5 cm dbh; number/ha).
LS_regen	Density of late-seral regeneration (conifers ≥ 10 cm tall, < 5 cm dbh; number/ha).
ES_ingrowth	Density of surviving early-seral ingrowth (conifers attaining 5 cm dbh during the study period; number/ha).
LS_ingrowth	Density of surviving late-seral ingrowth (conifers attaining 5 cm dbh during the study period; number/ha).

4. Ingrowth_growth.csv. Annualized growth rates (basal area increment; cm²/yr) of individual ingrowth stems that survived to final sampling (2016). Data do not include stems tagged as ingrowth in 2016 (final sample date). Data represent plots in the harvested areas of experimental units only (A_h and D).

<u>Variable name</u>	<u>Definition, units, and codes</u>
Site_#	Site (experimental block) number. Codes: 1 = Watson Falls, 4 = Dog Prairie, 5 = Butte, 6 = Little White Salmon, 7 = Paradise Hills.
Site_code	Site (experimental block) code. Codes: BU = Butte, DP = Dog Prairie, LW = Little White Salmon, PH = Paradise Hills, WF = Watson Falls.
Trt_#	Treatment number. Codes: 3 = 40% dispersed retention, 4 = 40% aggregated retention, 5 = 15% dispersed retention, 6 = 15% aggregated retention.
Trt_code	Treatment code. Codes: 15A = 15% aggregated retention, 15D = 15% dispersed retention, 40A = 40% aggregated retention, 40D = 40% dispersed retention.
Level	Level of retention. Codes: 15 = 15% of original basal area, 40 = 40% of original basal area.
Pattern	Spatial pattern of overstory retention. Codes: A = aggregated (1-ha circular forest aggregates), D = dispersed (trees uniformly dispersed across the harvest unit).
Plot	Plot ID. Unique code for the plot, consisting of the letter “P” (plot), site number, treatment number, and alphanumeric corresponding to the row and column on the 40 x 40 m grid (e.g., A1, B2, etc.).
TreeID	Unique tree ID, consisting of the plot ID (see above) and unique tag #.
Species	Species code: ABAM = <i>Abies amabilis</i> , ABCO = <i>Abies concolor</i> , ABGR = <i>Abies grandis</i> , Abla2 = <i>Abies lasiocarpa</i> , ABPR = <i>Abies procera</i> , ACMA = <i>Acer macrophyllum</i> , CACH = <i>Castanopsis (Chrysopsis) chrysophylla</i> , CADE3 = <i>Calocedrus decurrens</i> , CONU = <i>Cornus nuttallii</i> , PICO = <i>Pinus contorta</i> , PIEN = <i>Picea engelmannii</i> , PIMO = <i>Pinus monticola</i> , PIPO = <i>Pinus ponderosa</i> , PSME = <i>Pseudotsuga menziesii</i> , TABR = <i>Taxus brevifolia</i> , THPL = <i>Thuja plicata</i> , TSHE = <i>Tsuga heterophylla</i> , TSME = <i>Tsuga mertensiana</i> .
Seral_status	Seral status of conifers; otherwise hardwood. Codes: ES = early-seral, LS = late-seral, and HW = hardwood.
BAI	Annualized growth rate (basal area increment, BAI; cm ² /yr).

5. Retained-tree_growth.csv. Annualized growth rates (basal area increment; cm²/yr) of individual retained trees that survived to final sampling (2016). Data represent plots in the dispersed-retention units (D) and retained forest aggregates (A_p) only.

<u>Variable name</u>	<u>Definition, units, and codes</u>
Site_#	Site (experimental block) number. Codes: 1 = Watson Falls, 4 = Dog Prairie, 5 = Butte, 6 = Little White Salmon, 7 = Paradise Hills.
Site_code	Site (experimental block) code. Codes: BU = Butte, DP = Dog Prairie, LW = Little White Salmon, PH = Paradise Hills, WF = Watson Falls.
Trt_#	Treatment number. Codes: 3 = 40% dispersed retention, 4 = 40% aggregated retention, 5 = 15% dispersed retention, 6 = 15% aggregated retention.
Trt_code	Treatment code. Codes: 15A = 15% aggregated retention, 15D = 15% dispersed retention, 40A = 40% aggregated retention, 40D = 40% dispersed retention.
Level	Level of retention. Codes: 15 = 15% of original basal area, 40 = 40% of original basal area.
Pattern	Spatial pattern of overstory retention. Codes: A = aggregated (1-ha circular forest aggregates), D = dispersed (trees uniformly dispersed across the harvest unit).
Plot	Plot ID. Unique code for the plot, consisting of the letter “P” (plot), site number, treatment number, and alphanumeric corresponding to the row and column on the 40 x 40 m grid (e.g., A1, B2, etc.).
Plot_type	Plot type. Codes: 0 = unharvested plot (aggregate, A _p) or 1 = harvested plot (dispersed retention, D).
TreeID	Unique tree ID, consisting of the plot ID (see above) plus unique tag #.
Species	Species code: ABAM = <i>Abies amabilis</i> , ABCO = <i>Abies concolor</i> , ABGR = <i>Abies grandis</i> , Abies = <i>Abies</i> species, Abla2 = <i>Abies lasiocarpa</i> , Abmas = <i>Abies magnifica</i> var. <i>shastensis</i> , ABPR = <i>Abies procera</i> , ACMA = <i>Acer macrophyllum</i> , ALRU = <i>Alnus rubra</i> , CACH = <i>Castanopsis (Chrysopsis) chrysophylla</i> , CADE3 = <i>Calocedrus decurrens</i> , CHNO = <i>Chamaecyparis (Callitropsis) nootkatensis</i> , CONU = <i>Cornus nuttallii</i> , PICO = <i>Pinus contorta</i> , PIEN = <i>Picea engelmannii</i> , PIMO = <i>Pinus monticola</i> , PIPO = <i>Pinus ponderosa</i> , PRUNU = <i>Prunus</i> species, PSME = <i>Pseudotsuga menziesii</i> , TABR = <i>Taxus brevifolia</i> , THPL = <i>Thuja plicata</i> , TSHE = <i>Tsuga heterophylla</i> , TSME = <i>Tsuga mertensiana</i> .
Seral_status	Seral status of conifers; otherwise hardwood. Codes: ES = early seral, LS = late seral, and HW = hardwood.
Dbh_post	Diameter at breast height (cm) in the post-harvest year (1998 or 1999); used to classify retained trees by size class (small: <25 cm dbh; large: ≥25 cm dbh).
BAI	Annualized growth rate (basal area increment, BAI; cm ² /yr).

6. Retained-tree_survival.csv. Records of individual retained trees used to assess survival over the study period (1998-2016). Data represent plots in the dispersed-retention units (D) and retained forest aggregates (A_p) only.

<u>Variable name</u>	<u>Definition, units, and codes</u>
Site_#	Site (experimental block) number. Codes: 1 = Watson Falls, 4 = Dog Prairie, 5 = Butte, 6 = Little White Salmon, 7 = Paradise Hills.
Site_code	Site (experimental block) code. Codes: BU = Butte, DP = Dog Prairie, LW = Little White Salmon, PH = Paradise Hills, WF = Watson Falls.
Trt_#	Treatment number. Codes: 3 = 40% dispersed retention, 4 = 40% aggregated retention, 5 = 15% dispersed retention, 6 = 15% aggregated retention.
Trt_code	Treatment code. Codes: 15A = 15% aggregated retention, 15D = 15% dispersed retention, 40A = 40% aggregated retention, 40D = 40% dispersed retention.
Level	Level of retention. Codes: 15 = 15% of original basal area, 40 = 40% of original basal area.
Pattern	Spatial pattern of overstory retention. Codes: A = aggregated (1-ha circular forest aggregates), D = dispersed (trees uniformly dispersed across the harvest unit).
Plot	Plot ID. Unique code for the plot, consisting of the letter “P” (plot), site number, treatment number, and alphanumeric corresponding to the row and column on the 40 x 40 m grid (e.g., A1, B2, etc.).
Plot_type	Plot type. Codes: 0 = unharvested plot (aggregate, A _p) or 1 = harvested plot (dispersed retention, D).
TreeID	Tree ID. Unique tree ID, consisting of the plot ID (see above) plus unique tag #.
Year	Year of sampling. 1998 and 1999 are initial post-harvest sampling years (trees tagged and measured); 1999-2001 are years of mortality assessments; 2003, 2009, and 2016 are years of growth and mortality assessments.
Species	Tree species code. Codes: Blank = no trees present in the plot, ABAM = <i>Abies amabilis</i> , ABCO = <i>Abies concolor</i> , ABGR = <i>Abies grandis</i> , Abies = <i>Abies</i> species, Abia2 = <i>Abies lasiocarpa</i> , Abmas = <i>Abies magnifica</i> var. <i>shastensis</i> , ABPR = <i>Abies procera</i> , ACMA = <i>Acer macrophyllum</i> , ALRU = <i>Alnus rubra</i> , CACH = <i>Castanopsis (Chrysopsis) chrysophylla</i> , CADE3 = <i>Calocedrus decurrens</i> , CHNO = <i>Chamaecyparis (Callitropsis) nootkatensis</i> , CONU = <i>Cornus nuttallii</i> , PICO = <i>Pinus contorta</i> , PIEN = <i>Picea engelmannii</i> , PIMO = <i>Pinus monticola</i> , PIPO = <i>Pinus ponderosa</i> , PRUNU = <i>Prunus</i> species, PSME = <i>Pseudotsuga menziesii</i> , TABR = <i>Taxus brevifolia</i> , THPL = <i>Thuja plicata</i> , TSHE = <i>Tsuga heterophylla</i> , TSME = <i>Tsuga mertensiana</i> .
Seral_status	Seral status of conifers; otherwise hardwood. Codes: ES = early seral, LS = late seral, and HW = hardwood.
Dbh	Diameter at breast height (cm). M = missing.
Status	Tree status. Codes: 0 = initial post-harvest sample (date of tagging = 1998 or 1999), 1 = alive, 6 = dead.

7. Productivity.csv. Annualized rates of productivity (growth on per hectare basis; $\text{m}^2/\text{ha}/\text{year}$) of surviving ingrowth stems (trees attaining 5 cm dbh prior to 2016) and surviving retained trees.

<u>Variable name</u>	<u>Definition, units, and codes</u>
Site_#	Site (experimental block) number. Codes: 1 = Watson Falls, 4 = Dog Prairie, 5 = Butte, 6 = Little White Salmon, 7 = Paradise Hills.
Site_code	Site (experimental block) code. Codes: BU = Butte, DP = Dog Prairie, LW = Little White Salmon, PH = Paradise Hills, WF = Watson Falls.
Trt_#	Treatment number. Codes: 3 = 40% dispersed retention, 4 = 40% aggregated retention, 5 = 15% dispersed retention, 6 = 15% aggregated retention.
Trt_code	Treatment code. Codes: 15A = 15% aggregated retention, 15D = 15% dispersed retention, 40A = 40% aggregated retention, 40D = 40% dispersed retention.
Level	Level of retention. Codes: 15 = 15% of original basal area, 40 = 40% of original basal area.
Pattern	Spatial pattern of overstory retention. Codes: A = aggregated (1-ha circular forest aggregates), D = dispersed (trees uniformly dispersed across the harvest unit).
Ingr_BAI_ha	Ingrowth productivity ($\text{m}^2/\text{ha}/\text{year}$) in the harvest area. Computed as annualized total basal area increment of surviving ingrowth per hectare in the harvested area (A_h or D). Does not include ingrowth tagged in 2016 (last measurement year).
Ingr_BAI_hu	Ingrowth productivity ($\text{m}^2/\text{ha}/\text{year}$) for the harvest unit as a whole. Computed as annualized total basal area increment of surviving ingrowth per hectare for the harvest unit as a whole (A or D), thus adjusting for the area in aggregates (where ingrowth was not assessed). Does not include ingrowth tagged in 2016 (last measurement year).
Retained_BAI_ra	Retained-tree productivity ($\text{m}^2/\text{ha}/\text{year}$) in areas with retained trees. Computed as annualized total basal area increment of surviving retained trees per hectare in areas with retained trees (A_p or D).
Retained_BAI_hu	Retained-tree productivity ($\text{m}^2/\text{ha}/\text{year}$) for the harvest unit as a whole. Computed as annualized total basal area increment of surviving retained trees per hectare for the harvest unit as a whole (A or D), thus adjusting for the area without retained trees in aggregated-retention treatments.

8. Plot-scale_overstory_covariates.csv. Plot-scale covariates used in modeling retained-tree growth and survival. Data represent plots in the dispersed-retention units (D) and retained forest aggregates (A_p) only.

<u>Variable name</u>	<u>Definition, units, and codes</u>
Site_#	Site (experimental block) number. Codes: 1 = Watson Falls, 4 = Dog Prairie, 5 = Butte, 6 = Little White Salmon, 7 = Paradise Hills.
Site_code	Site (experimental block) code. Codes: BU = Butte, DP = Dog Prairie, LW = Little White Salmon, PH = Paradise Hills, WF = Watson Falls.
Trt_#	Treatment number. Codes: 3 = 40% dispersed retention, 4 = 40% aggregated retention, 5 = 15% dispersed retention, 6 = 15% aggregated retention.
Trt_code	Treatment code. Codes: 15A = 15% aggregated retention, 15D = 15% dispersed retention, 40A = 40% aggregated retention, 40D = 40% dispersed retention.
Level	Level of retention. Codes: 15 = 15% of original basal area, 40 = 40% of original basal area.
Pattern	Spatial pattern of overstory retention. Codes: A = aggregated (1-ha circular forest aggregates), D = dispersed (trees uniformly dispersed across the harvest unit).
Plot	Plot ID. Unique code for the plot, consisting of the letter “P” (plot), site number, treatment number, and alphanumeric corresponding to the row and column on the 40 x 40 m grid (e.g., A1, B2, etc.).
Plot_type	Plot type. Codes: 0 = unharvested plot (aggregate, A _p) or 1 = harvested plot (dispersed retention, D).
Total_Os_density	Post-harvest (year 1) total density of overstory trees (number/ha).
Total_Os_BA	Post-harvest (year 1) total basal area of overstory trees (m ² /ha).

9. Trt-scale_overstory_covariates.csv. Treatment-scale overstory covariates used in modeling early- and late-seral regeneration responses.

<u>Variable name</u>	<u>Definition, units, and codes</u>
Site_#	Site (experimental block) number. Codes: 1 = Watson Falls, 4 = Dog Prairie, 5 = Butte, 6 = Little White Salmon, 7 = Paradise Hills.
Site_code	Site (experimental block) code. Codes: BU = Butte, DP = Dog Prairie, LW = Little White Salmon, PH = Paradise Hills, WF = Watson Falls.
Trt_#	Treatment number. Codes: 3 = 40% dispersed retention, 4 = 40% aggregated retention, 5 = 15% dispersed retention, 6 = 15% aggregated retention.
Trt_code	Treatment code. Codes: 15A = 15% aggregated retention, 15D = 15% dispersed retention, 40A = 40% aggregated retention, 40D = 40% dispersed retention.
Level	Level of retention. Codes: 15 = 15% of original basal area, 40 = 40% of original basal area.
Pattern	Spatial pattern of overstory retention. Codes: A = aggregated (1-ha circular forest aggregates), D = dispersed (trees uniformly dispersed across the harvest unit).
ES_Os_density	Post-harvest (year 1) density of early-seral overstory trees (number/ha).
ES_Os_BA	Post-harvest (year 1) basal area of early-seral overstory trees (m ² /ha).
LS_Os_density	Post-harvest (year 1) density of late-seral overstory trees (number/ha).
LS_Os_BA	Post-harvest (year 1) basal area of late-seral overstory trees (m ² /ha).