**Data Availability and Retrieval**

**1. Public access to data used in this manuscript prior to publication**

The primary dataset used in this manuscript is publicly available from the United States Forest Service Forest Inventory and Analysis program. International users may freely access this database from the following repository:

https://apps.fs.usda.gov/fia/datamart/datamart.html

1. **PostgreSQL queries of the USDA Forest Service Forest Inventory and Analysis Database**

Instructions for querying the FIA Database in PostgreSQL may be found in the following document: <https://apps.fs.usda.gov/fia/datamart/images/InstallingPostgreSQL.pdf>. Based on this document, users may query databases for the states of Arizona, New Mexico, Nevada, Utah, Colorado, Wyoming, Montana, and Idaho. Data housed in relational database tables may be combined into a flattened data query using the following SQL script:

SELECT fs\_fiadb.PLOT.statecd, fs\_fiadb.plot.plot\_status\_cd, fs\_fiadb.PLOT.LAT, fs\_fiadb.PLOT.LON, fs\_fiadb.PLOT.ELEV, fs\_fiadb.PLOT.ECOSUBCD, fs\_fiadb.PLOT.measyear, fs\_fiadb.PLOT.remper, fs\_fiadb.PLOT.kindcd, fs\_fiadb.PLOT.CN, fs\_fiadb.PLOT.INVYR, fs\_fiadb.PLOT.COUNTYCD, fs\_fiadb.PLOT.PLOT, fs\_fiadb.PLOT.GROW\_TYP\_CD, fs\_fiadb.PLOT.P2PANEL, fs\_fiadb.PLOT.QA\_STATUS,

fs\_fiadb.COND.cond\_status\_cd, fs\_fiadb.cond.SITECLCD, fs\_fiadb.cond.aspect, fs\_fiadb.cond.slope, fs\_fiadb.COND.physclcd, fs\_fiadb.COND.FORTYPCD, fs\_fiadb.COND.CONDID, fs\_fiadb.COND.condprop\_unadj, fs\_fiadb.COND.DSTRBCD1, fs\_fiadb.COND.trtcd1, fs\_fiadb.COND.TRTYR1, fs\_fiadb.COND.TRTCD2, fs\_fiadb.COND.TRTYR2, fs\_fiadb.COND.TRTCD3, fs\_fiadb.COND.TRTYR3, fs\_fiadb.COND.DSTRBCD2, fs\_fiadb.COND.DSTRBYR1, fs\_fiadb.COND.SICOND, fs\_fiadb.COND.SIBASE, fs\_fiadb.COND.SISP, fs\_fiadb.COND.STDAGE, fs\_fiadb.COND.SDIPCT\_RMRS, fs\_fiadb.COND.SDIMAX\_RMRS, fs\_fiadb.COND.DSTRBCD3, fs\_fiadb.COND.RESERVCD\_5,

 fs\_fiadb.TREE.STATUSCD, fs\_fiadb.tree.prev\_status\_cd, fs\_fiadb.TREE.DIA, fs\_fiadb.tree.mortcd, fs\_fiadb.tree.prevdia, fs\_fiadb.TREE.growcfgs, fs\_fiadb.tree.growcfal, fs\_fiadb.TREE.CR, fs\_fiadb.TREE.CCLCD, fs\_fiadb.TREE.STATUSCD, fs\_fiadb.TREE.DAMAGE\_AGENT\_CD1, fs\_fiadb.TREE.DAMAGE\_AGENT\_CD2, fs\_fiadb.TREE.DAMAGE\_AGENT\_CD3, fs\_fiadb.TREE.AGENTCD, fs\_fiadb.TREE.TPA\_UNADJ, fs\_fiadb.TREE.DMG\_AGENT1\_CD\_PNWRS, fs\_fiadb.TREE.SUBP, fs\_fiadb.TREE.SPCD, fs\_fiadb.TREE.TOTAGE, fs\_fiadb.TREE.TREE, fs\_fiadb.TREE.HT, fs\_fiadb.TREE.VOLCFNET, fs\_fiadb.TREE.mortcfal, fs\_fiadb.tree.mortcfgs,fs\_fiadb.tree.fmortcfal,fs\_fiadb.tree.fmortcfgs, fs\_fiadb.TREE.CARBON\_AG, fs\_fiadb.TREE.DRYBIO\_WDLD\_SPP, fs\_fiadb.TREE.DRYBIO\_BOLE, fs\_fiadb.TREE.DRYBIO\_SAPLING, fs\_fiadb.TREE.SPCD ,

fs\_fiadb.REF\_FOREST\_TYPE.MEANING, fs\_fiadb.REF\_SPECIES.COMMON\_NAME

FROM fs\_fiadb.PLOT INNER JOIN (fs\_fiadb.SUBPLOT INNER JOIN (((fs\_fiadb.COND INNER JOIN fs\_fiadb.TREE ON (fs\_fiadb.COND.CONDID = fs\_fiadb.TREE.CONDID) AND (fs\_fiadb.COND.PLT\_CN = fs\_fiadb.TREE.PLT\_CN)) INNER JOIN fs\_fiadb.REF\_SPECIES ON fs\_fiadb.TREE.SPCD = fs\_fiadb.REF\_SPECIES.SPCD) INNER JOIN fs\_fiadb.REF\_FOREST\_TYPE ON fs\_fiadb.COND.FORTYPCD = fs\_fiadb.REF\_FOREST\_TYPE.VALUE) ON (fs\_fiadb.SUBPLOT.PLT\_CN = fs\_fiadb.TREE.PLT\_CN) AND (fs\_fiadb.SUBPLOT.SUBP = fs\_fiadb.TREE.SUBP)) ON (fs\_fiadb.PLOT.CN = fs\_fiadb.TREE.PLT\_CN) AND (fs\_fiadb.PLOT.CN = fs\_fiadb.COND.PLT\_CN)

WHERE (fs\_fiadb.plot.plot\_status\_cd=1 AND fs\_fiadb.cond.condprop\_unadj=1 AND fs\_fiadb.COND.cond\_status\_cd=1 AND fs\_fiadb.cond.trtcd1=0)

1. The SELECT statement in the SQL script above selects variables from the PLOT, COND, TREE, REF\_FOREST\_TYPE, and REF\_SPECIES\_NAME tables from the database. The FROM statement specifies how these relational database tables should be joined to form a flattened data query. The WHERE statement applies basic filtering criteria (selecting live trees only from forested FIA plots located within individual stands with no history of recent treatment). Please note that although the SUBPLOT table is specified, currently no fields are selected from this table. Instead, the TREE.subp field is used in analysis as a random effect/measurement stratum. Subsequent data filtering and manipulation were performed in the R statistical environment.
2. The PRISM gridded climate (monthly vapor maximum and minimum vapor pressure deficit and total monthly precipitation) data used in this study are publicly available via: <https://prism.oregonstate.edu/recent/>. For data equivalent to roughly ~4 km spatial resolution, these are free of charge.
3. The Terraclim dataset was queried for monthly records of climatic water deficit, available via <http://thredds.northwestknowledge.net:8080/thredds/ncss/grid/agg_terraclimate_aet_1958_CurrentYear_GLOBE.nc/dataset.html>. As with PRISM, these recent historical data are freely available for the study area at 4km resolution, but extending from 1958 to the current year.
4. Literature Cited

Forest Inventory and Analysis Database, St. Paul, MN: U.S. Department of Agriculture, Forest Service, Northern Research Station. <https://apps.fs.usda.gov/fia/datamart/datamart.html>. Accessed May 10, 2021.

PRISM Climate Group, Oregon State University, <http://www.prism.oregonstate.edu/recent/>. Accessed May 10, 2021