**Appendix S1.** iLand parameters from Braziunas et al. (in prep) used to explore effects of changing fire regimes and postfire warming/drying on tree regeneration of and Douglas-fir (DF), non-serotinous lodgepole pine (LP-NS), and serotinous lodgepole pine (LP-S) stands in Yellowstone National Park, Wyoming, USA. Extensive model documentation is available at (<http://iland.boku.ac.at/iLand+Hub>) including further description of species parameters, model structure, and model implementation.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter name** | **Units** | **Sources** | **LP-NS** | **LP-S** | **DF** |
| *Growth* |  |  |  |  |  |
| Specific leaf area | m2 kg-1 | 1-5 | 4.6 | 4.6 | 5.8 |
| Leaf turnover | yr-1 | 6-7 | 0.33 | 0.33 | 0.20 |
| Root turnover | yr-1 | 3 | 0.33 | 0.33 | 0.33 |
| Height to diameter low a | dim | 6, 8-13 | 38.51 | 38.51 | 44.37 |
| Height to diameter low b | dim | 6, 8-13 | -0.126 | -0.126 | -0.131 |
| Height to diameter high a | dim | 6, 8-13 | 287.99 | 287.99 | 439.47 |
| Height to diameter high b | dim | 6, 8-13 | -0.288 | -0.288 | -0.476 |
| Wood density | kg m-3 | 6 | 380 | 380 | 450 |
| Form factor | dim[0,1] | 14-18 | 0.470 | 0.470 | 0.453 |
| *Biomass* |  |  |  |  |  |
| Stem wood biomass a |  | 19-25 | 0.1401 | 0.1401 | 0.04510 |
| Stem wood biomass b |  | 19-25 | 2.136 | 2.136 | 2.634 |
| Stem foliage biomass a |  | 19, 22, 24-25, 26 | 0.02723 | 0.02723 | 0.3021 |
| Stem foliage biomass b |  | 19, 22, 24-25, 26 | 1.882 | 1.882 | 1.308 |
| Root biomass a |  | 10, 27 | 0.021 | 0.021 | 0.02002 |
| Root biomass b |  | 10, 27 | 2.281 | 2.281 | 2.450 |
| Branch biomass a |  | 19, 22, 24-25, 26 | 0.01903 | 0.01903 | 0.2624 |
| Branch biomass b |  | 19, 22, 24-25, 26 | 2.120 | 2.120 | 1.546 |
| *Mortality* |  |  |  |  |  |
| Probability of survival | dim[0,1] | 28 | 0.10 | 0.10 | 0.20 |
| Probability of stress- induced death | dim | Braziunas et al. in prep | 1.0 | 1.0 | 1.0 |
| *Aging* |  |  |  |  |  |
| Max age | years | 29-32 | 500 | 500 | 400 |
| Max height | m | 29, 32-33 | 41 | 41 | 57 |
| Aging a | dim | 34; Braziunas et al. in prep | 0.50 | 0.50 | 0.60 |
| Aging b | dim | 34; Braziunas et al. in prep | 2.50 | 2.50 | 4.50 |
| *Environmental response* |  |  |  |  |  |
| VPD growth response | dim | 3 | -0.65 | -0.65 | -0.65 |
| Min temperature | °C | 3, 35-39 | -6.0 | -6.0 | -6.0 |
| Optimum temperature | °C | 3, 35-39 | 17.0 | 17.0 | 17.0 |
| Nitrogen class | dim[1,3] | 40-41 | 1.0 | 1.0 | 1.5 |
| Phenology | int[0,2] | 33 | 0 | 0 | 0 |
| Max canopy conductance | m s-1 | 3 | 0.017 | 0.017 | 0.017 |
| Min soil water potential | MPa | 29, 42-43 | -2.0 | -2.0 | -2.40 |
| Light response | dim[1,5] | 29 | 2.0 | 2.0 | 2.5 |
| Fine root to foliage ratio | dim[0,1] | 3t | 0.75 | 0.75 | 0.75 |
| *Seed production* |  |  |  |  |  |
| Cone bearing age | years | 29, 33, 44-45 | 15 | 15 | 55 |
| Seed year interval | years | 31, 33, 44; 46-51 | 1 | 1 | 5 |
| Non- seed year fraction | dim[0,1] | 31, 33, 44; 46-51 | 0 | 0 | 0.24 |
| Seed mass | mg | 33, 35, 44, | 4.1 | 4.1 | 11.31 |
| Germination rate | dim[0,1] | 49, 52- 56 | 0.36 | 0.36 | 0.30 |
| Fecundity | sdlings m-2 | 56-57 | 115.9 | 115.9 | 43.9 |
| Seed kernel a | m | 33, 58-62 | 6 | 6 | 30 |
| Seed kernel b | m | 33, 58-62 | 160 | 160 | 200 |
| Seed kernel c | dim[0,1] | 3 | 0.05 | 0.05 | 0.2 |
| *Establishment* |  |  |  |  |  |
| Min temperature | °C | 63 | -85 | -85 | -37 |
| Chill requirement | days | 63 | 63 | 63 | 56 |
| Min growing degree days | degree days | 63 | 186 | 186 | 340 |
| Max growing degree days | degree days | 63 | 3374 | 3374 | 3261 |
| Growing degree days base temperature | °C | 63 | 2.9 | 2.9 | 3.4 |
| Growing degree days bud burst | degree days | 63 | 116 | 116 | 255 |
| Frost free days | days | 63 | 80 | 80 | 100 |
| Frost tolerance | dim[0,1] | 63 | 0.9 | 0.9 | 0.5 |
| Min soil water potential | MPa | 63 | -2.3 | -2.3 | -7 |
| *Sapling growth* |  |  |  |  |  |
| Sapling growth a | dim | 6,8-13, 64-73 | 0.05 | 0.05 | 0.036 |
| Sapling growth b | m | 6,8-13, 64-73 | 24 | 24 | 47 |
| Max number of years under stress | years | Braziunas et al. in prep | 2 | 2 | 3 |
| Sapling stress | dim[0,1] | 66 | 0.2 | 0.2 | 0.05 |
| Height to diameter ratio | dim | 6, 8, 11, 13 | 72 | 72 | 88 |
| Reineke’s R | saplings ha-1 | 6, 8, 11, 13, 66 | 14.33 | 550 | 500 |
| Reference ratio | dim[0,1] | Braziunas et al. in prep | 0.457 | 0.457 | 0.451 |
| *Serotiny* |  |  |  |  |  |
| Serotiny formula | dim[0,1] | 8 |  | x,20,0,80,1 |  |
| Serotiny fecundity |  | 8 |  | 30 |  |

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