Table 1. Detection function models

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Detection Fn | nPars | AIC | delta | AICwt | cumltvWt |
| hazard | 3 | 805.14 | 0.00 | 1.0e+00 | 1.00 |
| half-norm | 2 | 826.31 | 21.17 | 2.5e-05 | 1.00 |
| uniform | 1 | 1161.01 | 355.87 | 5.3e-78 | 1.00 |

Table 2. Detection probability models

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Detection Model | nPars | Parameters | AIC | delta | AICwt | cumltvWt |
| det1 | 4 | Search speed | 727.98 | 0.00 | 1.0e+00 | 1.00 |
| det3 | 14 | Observer (individual) | 786.71 | 58.73 | 1.8e-13 | 1.00 |
| det6 | 4 | Start hour | 791.01 | 63.03 | 2.1e-14 | 1.00 |
| det7 | 4 | Roughness | 801.88 | 73.89 | 9.0e-17 | 1.00 |
| det2 | 7 | Observer (teams) | 803.49 | 75.51 | 4.0e-17 | 1.00 |
| det5 | 4 | Wind speed | 806.86 | 78.87 | 7.5e-18 | 1.00 |
| det4 | 4 | Temperature | 806.99 | 79.01 | 7.0e-18 | 1.00 |

Table 3. Covariates

|  |  |  |  |
| --- | --- | --- | --- |
| Condition | Variables | Model | Ecological Justification |
| Null | – | null |  |
| Physical | Latitude | phys1 |  |
|  | Slope | phys2 |  |
|  | Aspect | phys3 |  |
|  | Elevation | phys4 |  |
|  | Roughness | phys5 |  |
|  | % Talus | phys6 |  |
|  | Distance to Road | phys7 |  |
| Environmental | Day of year | env1 |  |
|  | Mean vegetation height (10x10m veg plot) | env2 |  |
|  | % Low shrub cover (10x10m veg plot) | env3 |  |
|  | Dominant vegetation class | env4 |  |
| Temperature | Mean summer temperature | temp1 |  |
|  | Mean winter temperature | temp2 |  |

Table 4. Single Covariate Model Selection

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Category | Model | nPars | Parameters | AIC | delta | AICwt | cumltvWt |
| Temperature | temp1 | 5 | Mean summer temperature (preceding year) | 707.93 | 0.00 | 1.0 | 1.00 |
| Environmental | env4 | 9 | Dominant vegetation class | 721.28 | 13.35 |  | 1.00 |
| Physical | phys1 | 5 | Latitude | 723.11 | 15.17 |  | 1.00 |
| Environmental | env1 | 5 | Day of year | 724.49 | 16.55 |  | 1.00 |
| Physical | phys3 | 5 | Aspect | 725.36 | 17.43 |  | 1.00 |
| Physical | phys4 | 5 | Elevation | 726.92 | 18.99 |  | 1.00 |
| Physical | phys7 | 5 | Distance to Road | 727.23 | 19.29 |  | 1.00 |
| Null | null | 4 | – | 727.98 | 20.05 |  | 1.00 |
| Environmental | env3 | 5 | % Low shrub cover (10x10m veg plot) | 728.90 | 20.97 |  | 1.00 |
| Environmental | env2 | 5 | Mean vegetation height (10x10m veg plot) | 729.37 | 21.44 |  | 1.00 |
| Temperature | temp2 | 5 | Mean winter temperature (preceding year) | 729.39 | 21.49 |  | 1.00 |
| Physical | phys2 | 5 | Slope | 729.42 | 21.97 |  | 1.00 |
| Physical | phys5 | 5 | Roughness | 729.90 | 22.00 |  | 1.00 |
| Physical | phys6 | 5 | % Talus | 729.98 | 22.05 |  | 1.00 |

Table 4. Single Covariate Model Coefficient Estimates

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | nPars | Parameters | Estimate | SE | Lower CI (0.25) | Upper CI (0.975) |
| temp1 | 5 | Mean summer temperature | **-0.344** | **0.075** | **-0.490** | **-0.197** |
| env4 | 9 | Dominant vegetation class |  |  |  |  |
|  |  | dgh (dry graminoid herbaceous) | -0.003 | 0.503 | -0.990 | 0.984 |
|  |  | eds (ericaceous dwarf shrub) | **0.578** | **0.240** | **0.108** | **1.047** |
|  |  | lic (lichen) | **1.237** | **0.449** | **0.358** | **2.116** |
|  |  | ls (low shrub) | 0.628 | 0.439 | -0.233 | 1.488 |
|  |  | ts (tall shrub) | -0.346 | 0.466 | -1.259 | 0.568 |
| phys1 | 5 | Latitude | **-0.223** | **0.087** | **-0.394** | **-0.053** |
| env1 | 5 | Day of year | **-0.158** | **0.068** | **-0.291** | **-0.024** |
| phys3 | 5 | Aspect | **0.160** | **0.075** | **0.014** | **0.306** |
| phys4 | 5 | Elevation | 0.157 | 0.093 | -0.025 | 0.339 |
| phys7 | 5 | Distance to Road | -0.140 | 0.088 | -0.313 | 0.033 |
| null | 4 | – | 3.39 | 0.174 | 3.049 | 3.730 |
| env3 | 5 | % Low shrub cover (10x10m veg plot) | -0.095 | 0.093 | -0.278 | 0.087 |
| env2 | 5 | Mean vegetation height (10x10m veg plot) | 0.055 | 0.070 | -0.082 | 0.193 |
| temp2 | 5 | Mean winter temperature | 0.062 | 0.081 | -0.095 | 0.220 |
| phys2 | 5 | Slope | 0.056 | 0.076 | -0.092 | 0.205 |
| phys5 | 5 | Roughness | -0.026 | 0.090 | -0.202 | 0.151 |
| phys6 | 5 | % Talus | -0.003 | 0.066 | -0.133 | 0.127 |

*Bold text indicates 95% confidence interval does not overlap 0*

Table 5. Final model set

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | nPars | Parameters | AIC | delta | AICwt | cumltvWt |
| temp1 | 5 | Mean summer temperature | 717.25 |  |  |  |
| env4 | 9 | Dominant vegetation class | 721.28 |  |  |  |
| phys1 | 5 | Latitude | 723.11 |  |  |  |
| env1 | 5 | Day of year | 724.49 |  |  |  |
| phys3 | 5 | Aspect | 725.36 |  |  |  |
|  |  | mst + dvc |  |  |  |  |
|  |  | mst + lat |  |  |  |  |
|  |  | mst + doy |  |  |  |  |
|  |  | mst + asp |  |  |  |  |
|  |  | dvc + lat  dvc + doy  dvc + asp  lat + doy  lat + asp  doy + asp |  |  |  |  |
|  |  | mst + dvc + lat |  |  |  |  |
|  |  | mst + dvc + doy |  |  |  |  |
|  |  | mst + dvc + asp |  |  |  |  |
|  |  |  |  |  |  |  |