Maximum entropy model equations for probability of *Pinus banksiana* saplings occurring based on aspect, *P. banksiana* basal area (pb.ba), other species basal area (other.ba), slope, and vegetation type (vegtyp). Forward hinge features are indicated with a dagger (†) proceeding the variable name. For forward hinge features, if variable < the hinge value (value subtracted from the variable), then the feature function is zero, else the feature function is as written. Reverse hinge features are indicated with a double dagger (‡) proceeding the variable name. For reverse hinge features, if variable < the hinge value (value from which variable is subtracted from) then the feature function is as written, else the feature function is zero. Model visualization and interpretation were based on relative output ($saplings_p$).

$$saplings_s = \left(-0.29\left(\frac{aspect - 0}{356.34 - 0}\right)\right) + \left(3.55\left(\frac{pb.ba - -1.89}{41.51 - -1.89}\right)\right) + \left(0.00\left(\frac{other.ba - -0.80}{27.03 - -0.80}\right)\right) + \left(-0.98\left(\frac{slope - 0.00}{44.78 - 0.00}\right)\right) + \left(0.50\left(\frac{vegtyp - 1.00}{37.00 - 1.00}\right)\right) + \left(-1.56\left(\frac{aspect^2 - 0.00}{126979.24 - 0.00}\right)\right) + \left(-1.98\left(\frac{pb.ba^2 - 0.00}{1722.83 - 0.00}\right)\right) + \left(-2.47\left(\frac{other.ba^2 - 0.00}{730.52 - 0.00}\right)\right) + \left(-1.12\left(\frac{slope^2 - 0.00}{2005.27 - 0.00}\right)\right) + \left(0.68\left(\frac{vegtyp^2 - 1.00}{1369.00 - 1.00}\right)\right) + \left(-0.28\left(\frac{aspect{*}pb.ba - -450.55}{9504.97 - -450.55}\right)\right) + \left(2.23\left(\frac{aspect{*}other.ba - -275.25}{5160.65 - -275.25}\right)\right) + \left(0.21\left(\frac{aspect{*}slope - 0.00}{15027.31 - 0.00}\right)\right) + \left(1.33\left(\frac{aspect{*}vegtyp - 0.00}{12131.85 - 0.00}\right)\right) + \left(-1.63\left(\frac{pb.ba{*}other.ba - -29.52}{323.96 - -29.52}\right)\right) + \left(1.60\left(\frac{pb.ba{*}slope - -29.79}{616.62 - -29.79}\right)\right) + \left(0.57\left(\frac{pb.ba{*}vegtyp - -49.15}{986.29 - -49.15}\right)\right) + \left(-2.11\left(\frac{other.ba{*}vegtyp - -24.91}{432.45 - -24.91}\right)\right) + \left(-1.25\left(\frac{2.13 - \ddagger slope}{2.13 - 0.00}\right)\right) + \left(-1.21\left(\frac{\dagger vegtyp - 30.00}{37.00 - 30.00}\right)\right) + \left(-0.49\left(\frac{-0.71 - \ddagger other.ba}{-0.71 - -0.80}\right)\right) + \left(-0.22\left(\frac{50.09 - \ddagger aspect}{50.09 - 0.00}\right)\right) + \left(0.03\left(\frac{0.41 - \ddagger other.ba}{0.41 - -0.80}\right)\right) + \left(-0.20\left(\frac{\dagger aspect - 329.20}{356.34 - 329.20}\right)\right) + \left(1.13\left(\frac{0.86 - \ddagger pb.ba}{0.86 - -1.89}\right)\right) + \left(0.04\left(\frac{0.90 - \ddagger pb.ba}{0.90 - -1.89}\right)\right) + \left(0.01\left(\frac{0.40 - \ddagger other.ba}{0.40 - -0.80}\right)\right) - 2.40$$

$$saplings_p = \frac{\frac{e^{saplings_s}}{84.98} \times e^{5.73}}{1 + \frac{e^{saplings_s}}{84.98} \times e^{5.73}}$$