Appendix 1. Pearson product correlation coefficients for concentrations of 19 individual terpenoids and total terpenoid concentration with DBH (diameter at 1.4 m), relative age (estimated by age at 1.4 m), and mean BAI/BA (basal area increment/basal area) for five years prior to sampling for *Pinus albicaulis* at three sites by category. (Mean DBH, relative ages and BAI presented in Table 5).

 DBH Age BAI/BA

**Poverty Flat, ID - Survivors Older (N=19) Younger (N=26) Older Younger Older Younger**

a-terpinene 0.027 -0.124 0.112 0.113 -0.197 0.057

b-caryophellene 0.403 0.355 0.133 -0.380 -0.095 0.421

a-bisabolol -0.028 -0.028 0.112 -0.044 -0.152 -0.015

a-pinene 0.021 -0.266 0.011 -0.344 0.026 0.339

b-myrcene -0.225 0.215 -0.001 0.137 0.033 -0.034

b-pinene -0.225 0.223 -0.002 0.127 0.011 -0.034

camphene -0.275 0.108 0.194 -0.063 0.131 0.408

d-limonene -0.166 -0.147 0.001 0.088 -0.043 0.094

g-terpinene -0.121 0.049 0.023 0.243 0.013 0.193

g-carene 0.031 -0.136 0.185 0.084 -0.212 0.049

geraniol 0.239 -0.155 -0.167 -0.047 -0.145 -0.073

guiacol -0.096 0.019 0.158 -0.237 -0.060 0.149

a-humulene -0.101 0.061 0.044 0.088 0.174 0.238

isopolegol 0.409 0.162 0.243 -0.201 -0.012 0.125

linalool -0.234 -0.023 0.218 -0.412 -0.007 0.561

nerolidol -0.138 0.008 0.413 0.230 -0.047 -0.168

ocimene -.0.222 -0.216 0.055 0.213 -0.081 -0.133

p-cymene 0.326 -0.131 0.008 -0.083 -0.124 0.166

terpinolene 0.501 0.102 0.388 -0.047 -0.145 0.301

Total monoterpenes -0.214 0.038 0.152 0.026 0.041 0.300

**Poverty Flat, ID - Generals (N=36)**

a-terpinene 0.276 -0.055 0.063

b-caryophellene -0.145 -0.212 -0.039

a-bisabolol -0.106 -0.094 -0.019

a-pinene 0.101 0.113 -0.061

b-myrcene -0.151 0.087 -0.106

b-pinene -0.043 0.028 -0.105

camphene -0.041 -0.167 0.044

d-limonene 0.038 -0.097 0.037

g-terpinene -0.114 -0.130 0.108

g-carene 0.244 -0.046 0.065

geraniol 0.140 0.108 -0.272

guiacol -0.263 0.110 0.209

a-humulene -0.106 -0.096 0.169

isopolegol -0.039 -0.176 0.094

linalool -0.073 -0.029 0.092

nerolidol -0.101 -0.268 0.009

ocimene 0.029 -0.099 0.027

p-cymene -0.113 -0.119 -0.004

terpinolene -0.172 -0.208 0.338

Total monoterpenes 0.044 -0.121 0.033

**Vipond Park, MT – Survivors Older (N=24) Younger (N=15)**

a-terpinene -0.051 0.220 -0.154 0.276 0.126 -0.323

b-caryophellene -0.197 0.179 0.298 0.091 0.103 -0.024

a-bisabolol 0.247 0.444 -0.077 -0.358 -0.054 -0.211

a-pinene -0.191 -0.327 -0.142 0.213 -0.201 0.194

b-myrcene 0.393 -0.156 -0.338 0.231 -0.127 -0.227

b-pinene 0.113 -0.437 0.422 0.244 -0.063 0.219

camphene 0.139 0.374 -0.219 0.030 -0.094 -0.221

d-limonene 0.150 -0.285 -0.027 0.549 -0.033 0.098

g-terpinene -0.191 -0.041 0.164 -0.105 -0.185 -0.054

g-carene -0.242 -0.308 -0.048 -0.257 0.196 0.261

geraniol 0.007 0.065 -0.012 0.208 -0.152 -0.052

guiacol 0.021 -0.430 -0.246 0.243 -0.032 0.286

a-humulene 0.117 -0.246 -0.168 0.364 -0.218 0.167

isopolegol -0.047 -0.232 -0.289 -0.350 0.010 0.362

linalool -0.285 -0.310 -0.004 -0.170 0.062 0.264

nerolidol 0.406 -0.513 -0.168 0.366 0.019 0.274

ocimene -0.426 -0.098 0.155 -0.045 -0.216 -0.112

p-cymene 0.179 -0.365 -0.285 0.043 -0.070 0.381

terpinolene -0.121 -0.002 -0.216 -0.420 -0.115 0.105

Total monoterpenes -0.062 -0.182 -0.226 0.162 0.124 -0.367

**Vipond Park, MT - Generals (N=26)**

a-terpinene 0.006 -0.054 0.202

b-caryophellene 0.187 0.153 -0.275

a-bisabolol 0.355 0.074 0.085

a-pinene -0.097 -0.362 -0.235

b-myrcene -0.388 0.103 0.085

b-pinene -0.063 0.279 -0.326

camphene -0.092 -0.023 0.113

d-limonene -0.119 -0.015 0.165

g-terpinene 0.113 0.055 -0.066

g-carene 0.071 -0.229 0.167

geraniol -0.299 0.018 -0.215

guiacol 0.180 0.099 -0.081

a-humulene 0.064 -0.215 0.355

isopolegol -0.043 0.240 -0.151

linalool 0.097 0.240 -0.216

nerolidol 0.112 -0.031 0.043

ocimene 0.160 0.071 -0.031

p-cymene 0.139 0.138 -0.119

terpinolene 0.356 -0.094 0.224

Total monoterpenes -0.620 -0.376 0.325

**Lacy Creek, MT - Living trees (N=21)**

a-terpinene -0.261 -0.272 0.348

b-caryophellene 0.103 0.162 -0.309

a-bisabolol -0.079 0.181 -0.186

a-pinene -0.215 0.240 -0.233

b-myrcene -0.057 0.229 -0.107

b-pinene 0.078 0.253 -0.170

camphene -0.232 0.459 -0.344

d-limonene -0.316 0.036 0.253

g-terpinene -0.239 -0.303 0.742

g-carene -0.258 -0.256 0.344

geraniol -0.022 -0.015 0.017

guiacol -0.212 0.150 -0.092

a-humulene -0.120 0.072 0.067

isopolegol -0.071 -0.265 0.301

linalool -0.024 -0.069 -0.190

nerolidol 0.163 -0.042 0.194

ocimene -0.222 0.037 0.092

p-cymene 0.246 -0.181 0.202

terpinolene 0.036 0.078 -0.113

Total monoterpenes -0.287 0.322 -0.159