## Model 2b Tukey's HSD - All species

| **Tukey's Multiple Comparisons - All species** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Species** | **Null** | **Estimate** | **SE** | **Statistic** | **Adjusted p-value1** |  |
| **Bombina variegata - Alytes obstetricans** | **0.000** | **1.555** | **0.192** | **8.119** | **0.000** | **\*\*\*** |
| Bufo bufo - Alytes obstetricans | 0.000 | 0.327 | 0.173 | 1.893 | 0.596 |  |
| Bufo spinosus - Alytes obstetricans | 0.000 | 0.050 | 0.194 | 0.255 | 1.000 |  |
| Ichthyosaura alpestris - Alytes obstetricans | 0.000 | 0.414 | 0.159 | 2.609 | 0.165 |  |
| **Lissotriton helveticus - Alytes obstetricans** | **0.000** | **0.625** | **0.163** | **3.837** | **0.003** | **\*\*** |
| Lissotriton vulgaris - Alytes obstetricans | 0.000 | 0.301 | 0.172 | 1.746 | 0.700 |  |
| Pelobates cultripes - Alytes obstetricans | 0.000 | 0.572 | 0.210 | 2.720 | 0.126 |  |
| **Pelophylax sp. - Alytes obstetricans** | **0.000** | **0.636** | **0.154** | **4.124** | **0.001** | **\*\*** |
| Rana temporaria - Alytes obstetricans | 0.000 | -0.886 | 0.198 | -4.485 | 1.000 |  |
| **Salamandra salamandra - Alytes obstetricans** | **0.000** | **0.921** | **0.160** | **5.762** | **0.000** | **\*\*\*** |
| Triturus cristatus - Alytes obstetricans | 0.000 | 0.257 | 0.195 | 1.315 | 0.923 |  |
| **Triturus marmoratus - Alytes obstetricans** | **0.000** | **1.919** | **0.133** | **14.424** | **0.000** | **\*\*\*** |
| Bufo bufo - Bombina variegata | 0.000 | -1.228 | 0.130 | -9.440 | 1.000 |  |
| Bufo spinosus - Bombina variegata | 0.000 | -1.506 | 0.204 | -7.389 | 1.000 |  |
| Ichthyosaura alpestris - Bombina variegata | 0.000 | -1.141 | 0.111 | -10.271 | 1.000 |  |
| Lissotriton helveticus - Bombina variegata | 0.000 | -0.930 | 0.116 | -8.012 | 1.000 |  |
| Lissotriton vulgaris - Bombina variegata | 0.000 | -1.254 | 0.104 | -12.074 | 1.000 |  |
| Pelobates cultripes - Bombina variegata | 0.000 | -0.983 | 0.219 | -4.485 | 1.000 |  |
| Pelophylax sp. - Bombina variegata | 0.000 | -0.919 | 0.165 | -5.566 | 1.000 |  |
| Rana temporaria - Bombina variegata | 0.000 | -2.441 | 0.163 | -14.985 | 1.000 |  |
| Salamandra salamandra - Bombina variegata | 0.000 | -0.634 | 0.120 | -5.263 | 1.000 |  |
| Triturus cristatus - Bombina variegata | 0.000 | -1.298 | 0.149 | -8.712 | 1.000 |  |
| Triturus marmoratus - Bombina variegata | 0.000 | 0.364 | 0.147 | 2.479 | 0.220 |  |
| Bufo spinosus - Bufo bufo | 0.000 | -0.277 | 0.186 | -1.490 | 1.000 |  |
| Ichthyosaura alpestris - Bufo bufo | 0.000 | 0.087 | 0.080 | 1.093 | 0.974 |  |
| **Lissotriton helveticus - Bufo bufo** | **0.000** | **0.298** | **0.083** | **3.585** | **0.009** | **\*\*** |
| Lissotriton vulgaris - Bufo bufo | 0.000 | -0.026 | 0.101 | -0.259 | 1.000 |  |
| Pelobates cultripes - Bufo bufo | 0.000 | 0.245 | 0.203 | 1.206 | 0.953 |  |
| Pelophylax sp. - Bufo bufo | 0.000 | 0.309 | 0.143 | 2.160 | 0.406 |  |
| Rana temporaria - Bufo bufo | 0.000 | -1.213 | 0.137 | -8.841 | 1.000 |  |
| **Salamandra salamandra - Bufo bufo** | **0.000** | **0.594** | **0.081** | **7.345** | **0.000** | **\*\*\*** |
| Triturus cristatus - Bufo bufo | 0.000 | -0.070 | 0.137 | -0.513 | 1.000 |  |
| **Triturus marmoratus - Bufo bufo** | **0.000** | **1.592** | **0.121** | **13.126** | **0.000** | **\*\*\*** |
| Ichthyosaura alpestris - Bufo spinosus | 0.000 | 0.364 | 0.173 | 2.104 | 0.445 |  |
| **Lissotriton helveticus - Bufo spinosus** | **0.000** | **0.575** | **0.177** | **3.249** | **0.028** | **\*** |
| Lissotriton vulgaris - Bufo spinosus | 0.000 | 0.251 | 0.186 | 1.353 | 0.910 |  |
| Pelobates cultripes - Bufo spinosus | 0.000 | 0.522 | 0.221 | 2.358 | 0.284 |  |
| **Pelophylax sp. - Bufo spinosus** | **0.000** | **0.587** | **0.169** | **3.467** | **0.014** | **\*** |
| Rana temporaria - Bufo spinosus | 0.000 | -0.936 | 0.209 | -4.468 | 1.000 |  |
| **Salamandra salamandra - Bufo spinosus** | **0.000** | **0.872** | **0.174** | **5.001** | **0.000** | **\*\*\*** |
| Triturus cristatus - Bufo spinosus | 0.000 | 0.207 | 0.207 | 0.999 | 0.985 |  |
| **Triturus marmoratus - Bufo spinosus** | **0.000** | **1.869** | **0.150** | **12.455** | **0.000** | **\*\*\*** |
| **Lissotriton helveticus - Ichthyosaura alpestris** | **0.000** | **0.211** | **0.045** | **4.658** | **0.000** | **\*\*\*** |
| Lissotriton vulgaris - Ichthyosaura alpestris | 0.000 | -0.113 | 0.073 | -1.551 | 1.000 |  |
| Pelobates cultripes - Ichthyosaura alpestris | 0.000 | 0.158 | 0.191 | 0.826 | 0.996 |  |
| Pelophylax sp. - Ichthyosaura alpestris | 0.000 | 0.222 | 0.126 | 1.768 | 0.685 |  |
| Rana temporaria - Ichthyosaura alpestris | 0.000 | -1.300 | 0.125 | -10.434 | 1.000 |  |
| **Salamandra salamandra - Ichthyosaura alpestris** | **0.000** | **0.507** | **0.062** | **8.148** | **0.000** | **\*\*\*** |
| Triturus cristatus - Ichthyosaura alpestris | 0.000 | -0.157 | 0.118 | -1.335 | 1.000 |  |
| **Triturus marmoratus - Ichthyosaura alpestris** | **0.000** | **1.505** | **0.100** | **15.027** | **0.000** | **\*\*\*** |
| Lissotriton vulgaris - Lissotriton helveticus | 0.000 | -0.324 | 0.079 | -4.087 | 1.000 |  |
| Pelobates cultripes - Lissotriton helveticus | 0.000 | -0.053 | 0.195 | -0.273 | 1.000 |  |
| Pelophylax sp. - Lissotriton helveticus | 0.000 | 0.011 | 0.131 | 0.086 | 1.000 |  |
| Rana temporaria - Lissotriton helveticus | 0.000 | -1.511 | 0.126 | -12.027 | 1.000 |  |
| **Salamandra salamandra - Lissotriton helveticus** | **0.000** | **0.297** | **0.067** | **4.455** | **0.000** | **\*\*\*** |
| Triturus cristatus - Lissotriton helveticus | 0.000 | -0.368 | 0.121 | -3.049 | 1.000 |  |
| **Triturus marmoratus - Lissotriton helveticus** | **0.000** | **1.294** | **0.107** | **12.129** | **0.000** | **\*\*\*** |
| Pelobates cultripes - Lissotriton vulgaris | 0.000 | 0.271 | 0.203 | 1.337 | 0.915 |  |
| Pelophylax sp. - Lissotriton vulgaris | 0.000 | 0.335 | 0.142 | 2.358 | 0.284 |  |
| Rana temporaria - Lissotriton vulgaris | 0.000 | -1.187 | 0.140 | -8.461 | 1.000 |  |
| **Salamandra salamandra - Lissotriton vulgaris** | **0.000** | **0.621** | **0.087** | **7.108** | **0.000** | **\*\*\*** |
| Triturus cristatus - Lissotriton vulgaris | 0.000 | -0.044 | 0.121 | -0.367 | 1.000 |  |
| **Triturus marmoratus - Lissotriton vulgaris** | **0.000** | **1.618** | **0.121** | **13.418** | **0.000** | **\*\*\*** |
| Pelophylax sp. - Pelobates cultripes | 0.000 | 0.064 | 0.188 | 0.343 | 1.000 |  |
| Rana temporaria - Pelobates cultripes | 0.000 | -1.458 | 0.225 | -6.495 | 1.000 |  |
| Salamandra salamandra - Pelobates cultripes | 0.000 | 0.350 | 0.192 | 1.819 | 0.649 |  |
| Triturus cristatus - Pelobates cultripes | 0.000 | -0.315 | 0.222 | -1.417 | 1.000 |  |
| **Triturus marmoratus - Pelobates cultripes** | **0.000** | **1.347** | **0.170** | **7.901** | **0.000** | **\*\*\*** |
| Rana temporaria - Pelophylax sp. | 0.000 | -1.522 | 0.172 | -8.839 | 1.000 |  |
| Salamandra salamandra - Pelophylax sp. | 0.000 | 0.285 | 0.127 | 2.239 | 0.354 |  |
| Triturus cristatus - Pelophylax sp. | 0.000 | -0.380 | 0.169 | -2.241 | 1.000 |  |
| **Triturus marmoratus - Pelophylax sp.** | **0.000** | **1.283** | **0.093** | **13.788** | **0.000** | **\*\*\*** |
| **Salamandra salamandra - Rana temporaria** | **0.000** | **1.808** | **0.125** | **14.425** | **0.000** | **\*\*\*** |
| **Triturus cristatus - Rana temporaria** | **0.000** | **1.143** | **0.168** | **6.814** | **0.000** | **\*\*\*** |
| **Triturus marmoratus - Rana temporaria** | **0.000** | **2.805** | **0.155** | **18.151** | **0.000** | **\*\*\*** |
| Triturus cristatus - Salamandra salamandra | 0.000 | -0.665 | 0.126 | -5.264 | 1.000 |  |
| **Triturus marmoratus - Salamandra salamandra** | **0.000** | **0.998** | **0.102** | **9.770** | **0.000** | **\*\*\*** |
| **Triturus marmoratus - Triturus cristatus** | **0.000** | **1.662** | **0.152** | **10.964** | **0.000** | **\*\*\*** |
| 1\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; | | | | | | |

## Model 2b Tukey's HSD - No fire salamanders

| **Tukey's Multiple Comparisons - No fire salamanders** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Species** | **Null** | **Estimate** | **SE** | **Statistic** | **Adjusted p-value1** |  |
| **Bombina variegata - Alytes obstetricans** | **0.000** | **1.343** | **0.208** | **6.462** | **0.000** | **\*\*\*** |
| Bufo bufo - Alytes obstetricans | 0.000 | 0.304 | 0.192 | 1.587 | 0.752 |  |
| Bufo spinosus - Alytes obstetricans | 0.000 | 0.050 | 0.191 | 0.259 | 1.000 |  |
| Ichthyosaura alpestris - Alytes obstetricans | 0.000 | 0.195 | 0.173 | 1.128 | 0.952 |  |
| Lissotriton helveticus - Alytes obstetricans | 0.000 | 0.391 | 0.178 | 2.194 | 0.339 |  |
| Lissotriton vulgaris - Alytes obstetricans | 0.000 | -0.002 | 0.187 | -0.012 | 1.000 |  |
| Pelobates cultripes - Alytes obstetricans | 0.000 | 0.572 | 0.207 | 2.759 | 0.098 | . |
| **Pelophylax sp. - Alytes obstetricans** | **0.000** | **0.631** | **0.152** | **4.148** | **0.001** | **\*\*\*** |
| Rana temporaria - Alytes obstetricans | 0.000 | -0.673 | 0.216 | -3.120 | 1.000 |  |
| Triturus cristatus - Alytes obstetricans | 0.000 | -0.046 | 0.209 | -0.221 | 1.000 |  |
| **Triturus marmoratus - Alytes obstetricans** | **0.000** | **1.919** | **0.131** | **14.633** | **0.000** | **\*\*\*** |
| Bufo bufo - Bombina variegata | 0.000 | -1.039 | 0.136 | -7.641 | 1.000 |  |
| Bufo spinosus - Bombina variegata | 0.000 | -1.293 | 0.219 | -5.911 | 1.000 |  |
| Ichthyosaura alpestris - Bombina variegata | 0.000 | -1.148 | 0.116 | -9.866 | 1.000 |  |
| Lissotriton helveticus - Bombina variegata | 0.000 | -0.952 | 0.122 | -7.787 | 1.000 |  |
| Lissotriton vulgaris - Bombina variegata | 0.000 | -1.345 | 0.107 | -12.552 | 1.000 |  |
| Pelobates cultripes - Bombina variegata | 0.000 | -0.771 | 0.233 | -3.311 | 1.000 |  |
| Pelophylax sp. - Bombina variegata | 0.000 | -0.712 | 0.184 | -3.874 | 1.000 |  |
| Rana temporaria - Bombina variegata | 0.000 | -2.016 | 0.170 | -11.830 | 1.000 |  |
| Triturus cristatus - Bombina variegata | 0.000 | -1.389 | 0.152 | -9.137 | 1.000 |  |
| **Triturus marmoratus - Bombina variegata** | **0.000** | **0.576** | **0.169** | **3.414** | **0.014** | **\*** |
| Bufo spinosus - Bufo bufo | 0.000 | -0.255 | 0.203 | -1.251 | 1.000 |  |
| Ichthyosaura alpestris - Bufo bufo | 0.000 | -0.109 | 0.084 | -1.306 | 1.000 |  |
| Lissotriton helveticus - Bufo bufo | 0.000 | 0.087 | 0.087 | 0.995 | 0.976 |  |
| Lissotriton vulgaris - Bufo bufo | 0.000 | -0.306 | 0.105 | -2.910 | 1.000 |  |
| Pelobates cultripes - Bufo bufo | 0.000 | 0.268 | 0.219 | 1.225 | 0.925 |  |
| Pelophylax sp. - Bufo bufo | 0.000 | 0.327 | 0.165 | 1.975 | 0.484 |  |
| Rana temporaria - Bufo bufo | 0.000 | -0.977 | 0.140 | -7.000 | 1.000 |  |
| Triturus cristatus - Bufo bufo | 0.000 | -0.350 | 0.141 | -2.482 | 1.000 |  |
| **Triturus marmoratus - Bufo bufo** | **0.000** | **1.615** | **0.148** | **10.888** | **0.000** | **\*\*\*** |
| Ichthyosaura alpestris - Bufo spinosus | 0.000 | 0.145 | 0.186 | 0.782 | 0.994 |  |
| Lissotriton helveticus - Bufo spinosus | 0.000 | 0.342 | 0.191 | 1.789 | 0.616 |  |
| Lissotriton vulgaris - Bufo spinosus | 0.000 | -0.052 | 0.199 | -0.260 | 1.000 |  |
| Pelobates cultripes - Bufo spinosus | 0.000 | 0.522 | 0.218 | 2.393 | 0.231 |  |
| **Pelophylax sp. - Bufo spinosus** | **0.000** | **0.581** | **0.167** | **3.485** | **0.011** | **\*** |
| Rana temporaria - Bufo spinosus | 0.000 | -0.722 | 0.226 | -3.192 | 1.000 |  |
| Triturus cristatus - Bufo spinosus | 0.000 | -0.096 | 0.220 | -0.435 | 1.000 |  |
| **Triturus marmoratus - Bufo spinosus** | **0.000** | **1.870** | **0.148** | **12.635** | **0.000** | **\*\*\*** |
| **Lissotriton helveticus - Ichthyosaura alpestris** | **0.000** | **0.196** | **0.045** | **4.344** | **0.000** | **\*\*\*** |
| Lissotriton vulgaris - Ichthyosaura alpestris | 0.000 | -0.197 | 0.073 | -2.694 | 1.000 |  |
| Pelobates cultripes - Ichthyosaura alpestris | 0.000 | 0.377 | 0.202 | 1.866 | 0.562 |  |
| **Pelophylax sp. - Ichthyosaura alpestris** | **0.000** | **0.436** | **0.143** | **3.050** | **0.043** | **\*** |
| Rana temporaria - Ichthyosaura alpestris | 0.000 | -0.867 | 0.130 | -6.693 | 1.000 |  |
| Triturus cristatus - Ichthyosaura alpestris | 0.000 | -0.241 | 0.119 | -2.029 | 1.000 |  |
| **Triturus marmoratus - Ichthyosaura alpestris** | **0.000** | **1.724** | **0.123** | **14.045** | **0.000** | **\*\*\*** |
| Lissotriton vulgaris - Lissotriton helveticus | 0.000 | -0.394 | 0.080 | -4.933 | 1.000 |  |
| Pelobates cultripes - Lissotriton helveticus | 0.000 | 0.181 | 0.207 | 0.873 | 0.989 |  |
| Pelophylax sp. - Lissotriton helveticus | 0.000 | 0.240 | 0.150 | 1.601 | 0.744 |  |
| Rana temporaria - Lissotriton helveticus | 0.000 | -1.064 | 0.131 | -8.148 | 1.000 |  |
| Triturus cristatus - Lissotriton helveticus | 0.000 | -0.437 | 0.122 | -3.580 | 1.000 |  |
| **Triturus marmoratus - Lissotriton helveticus** | **0.000** | **1.528** | **0.131** | **11.696** | **0.000** | **\*\*\*** |
| Pelobates cultripes - Lissotriton vulgaris | 0.000 | 0.574 | 0.214 | 2.678 | 0.120 |  |
| **Pelophylax sp. - Lissotriton vulgaris** | **0.000** | **0.633** | **0.160** | **3.965** | **0.002** | **\*\*** |
| Rana temporaria - Lissotriton vulgaris | 0.000 | -0.670 | 0.145 | -4.610 | 1.000 |  |
| Triturus cristatus - Lissotriton vulgaris | 0.000 | -0.044 | 0.120 | -0.364 | 1.000 |  |
| **Triturus marmoratus - Lissotriton vulgaris** | **0.000** | **1.921** | **0.142** | **13.515** | **0.000** | **\*\*\*** |
| Pelophylax sp. - Pelobates cultripes | 0.000 | 0.059 | 0.185 | 0.319 | 1.000 |  |
| Rana temporaria - Pelobates cultripes | 0.000 | -1.245 | 0.240 | -5.189 | 1.000 |  |
| Triturus cristatus - Pelobates cultripes | 0.000 | -0.618 | 0.234 | -2.644 | 1.000 |  |
| **Triturus marmoratus - Pelobates cultripes** | **0.000** | **1.347** | **0.168** | **8.015** | **0.000** | **\*\*\*** |
| Rana temporaria - Pelophylax sp. | 0.000 | -1.304 | 0.193 | -6.764 | 1.000 |  |
| Triturus cristatus - Pelophylax sp. | 0.000 | -0.677 | 0.185 | -3.663 | 1.000 |  |
| **Triturus marmoratus - Pelophylax sp.** | **0.000** | **1.288** | **0.092** | **14.043** | **0.000** | **\*\*\*** |
| **Triturus cristatus - Rana temporaria** | **0.000** | **0.627** | **0.173** | **3.624** | **0.006** | **\*\*** |
| **Triturus marmoratus - Rana temporaria** | **0.000** | **2.592** | **0.178** | **14.539** | **0.000** | **\*\*\*** |
| **Triturus marmoratus - Triturus cristatus** | **0.000** | **1.965** | **0.170** | **11.565** | **0.000** | **\*\*\*** |
| 1\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; | | | | | | |