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

| **Tukey's Multiple Comparisons - All species** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Species** | **Null** | **Estimate** | **SE** | **Statistic** | **Adjusted p-value** | **Signif1** |
| Bombina variegata - Alytes obstetricans | 0.000 | 1.634 | 0.204 | 8.026 | 0.000 | \*\*\* |
| Bufo bufo - Alytes obstetricans | 0.000 | 0.261 | 0.185 | 1.415 | 0.907 |  |
| Bufo spinosus - Alytes obstetricans | 0.000 | 0.050 | 0.209 | 0.238 | 1.000 |  |
| Ichthyosaura alpestris - Alytes obstetricans | 0.000 | 0.464 | 0.170 | 2.723 | 0.133 |  |
| Lissotriton helveticus - Alytes obstetricans | 0.000 | 0.688 | 0.175 | 3.943 | 0.002 | \*\* |
| Lissotriton vulgaris - Alytes obstetricans | 0.000 | 0.342 | 0.185 | 1.847 | 0.660 |  |
| Pelobates cultripes - Alytes obstetricans | 0.000 | 0.572 | 0.226 | 2.527 | 0.212 |  |
| Pelophylax sp. - Alytes obstetricans | 0.000 | 0.637 | 0.166 | 3.838 | 0.004 | \*\* |
| Rana temporaria - Alytes obstetricans | 0.000 | -0.892 | 0.212 | -4.202 | 1.000 |  |
| Salamandra salamandra - Alytes obstetricans | 0.000 | 0.864 | 0.172 | 5.035 | 0.000 | \*\*\* |
| Triturus anatolicus - Alytes obstetricans | 0.000 | -0.179 | 0.661 | -0.271 | 1.000 |  |
| Triturus cristatus - Alytes obstetricans | 0.000 | 0.251 | 0.209 | 1.202 | 0.966 |  |
| Triturus marmoratus - Alytes obstetricans | 0.000 | 2.342 | 0.141 | 16.567 | 0.000 | \*\*\* |
| Bufo bufo - Bombina variegata | 0.000 | -1.373 | 0.137 | -10.046 | 1.000 |  |
| Bufo spinosus - Bombina variegata | 0.000 | -1.584 | 0.217 | -7.305 | 1.000 |  |
| Ichthyosaura alpestris - Bombina variegata | 0.000 | -1.170 | 0.116 | -10.087 | 1.000 |  |
| Lissotriton helveticus - Bombina variegata | 0.000 | -0.946 | 0.121 | -7.817 | 1.000 |  |
| Lissotriton vulgaris - Bombina variegata | 0.000 | -1.292 | 0.108 | -11.936 | 1.000 |  |
| Pelobates cultripes - Bombina variegata | 0.000 | -1.062 | 0.234 | -4.544 | 1.000 |  |
| Pelophylax sp. - Bombina variegata | 0.000 | -0.997 | 0.175 | -5.705 | 1.000 |  |
| Rana temporaria - Bombina variegata | 0.000 | -2.526 | 0.173 | -14.599 | 1.000 |  |
| Salamandra salamandra - Bombina variegata | 0.000 | -0.770 | 0.124 | -6.205 | 1.000 |  |
| Triturus anatolicus - Bombina variegata | 0.000 | -1.813 | 0.664 | -2.730 | 1.000 |  |
| Triturus cristatus - Bombina variegata | 0.000 | -1.383 | 0.155 | -8.938 | 1.000 |  |
| Triturus marmoratus - Bombina variegata | 0.000 | 0.708 | 0.153 | 4.628 | 0.000 | \*\*\* |
| Bufo spinosus - Bufo bufo | 0.000 | -0.212 | 0.199 | -1.062 | 1.000 |  |
| Ichthyosaura alpestris - Bufo bufo | 0.000 | 0.203 | 0.082 | 2.461 | 0.245 |  |
| Lissotriton helveticus - Bufo bufo | 0.000 | 0.427 | 0.085 | 5.027 | 0.000 | \*\*\* |
| Lissotriton vulgaris - Bufo bufo | 0.000 | 0.080 | 0.106 | 0.760 | 0.999 |  |
| Pelobates cultripes - Bufo bufo | 0.000 | 0.311 | 0.217 | 1.429 | 0.901 |  |
| Pelophylax sp. - Bufo bufo | 0.000 | 0.376 | 0.152 | 2.466 | 0.242 |  |
| Rana temporaria - Bufo bufo | 0.000 | -1.153 | 0.147 | -7.844 | 1.000 |  |
| Salamandra salamandra - Bufo bufo | 0.000 | 0.602 | 0.084 | 7.168 | 0.000 | \*\*\* |
| Triturus anatolicus - Bufo bufo | 0.000 | -0.440 | 0.658 | -0.669 | 1.000 |  |
| Triturus cristatus - Bufo bufo | 0.000 | -0.010 | 0.145 | -0.070 | 1.000 |  |
| Triturus marmoratus - Bufo bufo | 0.000 | 2.080 | 0.127 | 16.429 | 0.000 | \*\*\* |
| Ichthyosaura alpestris - Bufo spinosus | 0.000 | 0.414 | 0.186 | 2.227 | 0.385 |  |
| Lissotriton helveticus - Bufo spinosus | 0.000 | 0.639 | 0.190 | 3.363 | 0.021 | \* |
| Lissotriton vulgaris - Bufo spinosus | 0.000 | 0.292 | 0.200 | 1.463 | 0.887 |  |
| Pelobates cultripes - Bufo spinosus | 0.000 | 0.522 | 0.238 | 2.191 | 0.410 |  |
| Pelophylax sp. - Bufo spinosus | 0.000 | 0.588 | 0.182 | 3.227 | 0.032 | \* |
| Rana temporaria - Bufo spinosus | 0.000 | -0.942 | 0.225 | -4.184 | 1.000 |  |
| Salamandra salamandra - Bufo spinosus | 0.000 | 0.814 | 0.187 | 4.350 | 0.000 | \*\*\* |
| Triturus anatolicus - Bufo spinosus | 0.000 | -0.229 | 0.666 | -0.343 | 1.000 |  |
| Triturus cristatus - Bufo spinosus | 0.000 | 0.201 | 0.222 | 0.908 | 0.995 |  |
| Triturus marmoratus - Bufo spinosus | 0.000 | 2.292 | 0.160 | 14.332 | 0.000 | \*\*\* |
| Lissotriton helveticus - Ichthyosaura alpestris | 0.000 | 0.224 | 0.048 | 4.721 | 0.000 | \*\*\* |
| Lissotriton vulgaris - Ichthyosaura alpestris | 0.000 | -0.122 | 0.078 | -1.568 | 1.000 |  |
| Pelobates cultripes - Ichthyosaura alpestris | 0.000 | 0.108 | 0.205 | 0.526 | 1.000 |  |
| Pelophylax sp. - Ichthyosaura alpestris | 0.000 | 0.173 | 0.135 | 1.286 | 0.947 |  |
| Rana temporaria - Ichthyosaura alpestris | 0.000 | -1.356 | 0.134 | -10.148 | 1.000 |  |
| Salamandra salamandra - Ichthyosaura alpestris | 0.000 | 0.400 | 0.063 | 6.296 | 0.000 | \*\*\* |
| Triturus anatolicus - Ichthyosaura alpestris | 0.000 | -0.643 | 0.655 | -0.982 | 1.000 |  |
| Triturus cristatus - Ichthyosaura alpestris | 0.000 | -0.213 | 0.125 | -1.700 | 1.000 |  |
| Triturus marmoratus - Ichthyosaura alpestris | 0.000 | 1.878 | 0.105 | 17.939 | 0.000 | \*\*\* |
| Lissotriton vulgaris - Lissotriton helveticus | 0.000 | -0.347 | 0.085 | -4.098 | 1.000 |  |
| Pelobates cultripes - Lissotriton helveticus | 0.000 | -0.116 | 0.209 | -0.557 | 1.000 |  |
| Pelophylax sp. - Lissotriton helveticus | 0.000 | -0.051 | 0.140 | -0.364 | 1.000 |  |
| Rana temporaria - Lissotriton helveticus | 0.000 | -1.580 | 0.134 | -11.767 | 1.000 |  |
| Salamandra salamandra - Lissotriton helveticus | 0.000 | 0.176 | 0.067 | 2.605 | 0.178 |  |
| Triturus anatolicus - Lissotriton helveticus | 0.000 | -0.867 | 0.656 | -1.323 | 1.000 |  |
| Triturus cristatus - Lissotriton helveticus | 0.000 | -0.437 | 0.128 | -3.413 | 1.000 |  |
| Triturus marmoratus - Lissotriton helveticus | 0.000 | 1.653 | 0.111 | 14.848 | 0.000 | \*\*\* |
| Pelobates cultripes - Lissotriton vulgaris | 0.000 | 0.230 | 0.218 | 1.058 | 0.986 |  |
| Pelophylax sp. - Lissotriton vulgaris | 0.000 | 0.296 | 0.153 | 1.939 | 0.592 |  |
| Rana temporaria - Lissotriton vulgaris | 0.000 | -1.234 | 0.150 | -8.206 | 1.000 |  |
| Salamandra salamandra - Lissotriton vulgaris | 0.000 | 0.522 | 0.092 | 5.698 | 0.000 | \*\*\* |
| Triturus anatolicus - Lissotriton vulgaris | 0.000 | -0.521 | 0.659 | -0.790 | 1.000 |  |
| Triturus cristatus - Lissotriton vulgaris | 0.000 | -0.090 | 0.128 | -0.706 | 1.000 |  |
| Triturus marmoratus - Lissotriton vulgaris | 0.000 | 2.000 | 0.127 | 15.740 | 0.000 | \*\*\* |
| Pelophylax sp. - Pelobates cultripes | 0.000 | 0.065 | 0.202 | 0.323 | 1.000 |  |
| Rana temporaria - Pelobates cultripes | 0.000 | -1.464 | 0.241 | -6.066 | 1.000 |  |
| Salamandra salamandra - Pelobates cultripes | 0.000 | 0.292 | 0.206 | 1.414 | 0.907 |  |
| Triturus anatolicus - Pelobates cultripes | 0.000 | -0.751 | 0.671 | -1.119 | 1.000 |  |
| Triturus cristatus - Pelobates cultripes | 0.000 | -0.321 | 0.238 | -1.346 | 1.000 |  |
| Triturus marmoratus - Pelobates cultripes | 0.000 | 1.770 | 0.182 | 9.720 | 0.000 | \*\*\* |
| Rana temporaria - Pelophylax sp. | 0.000 | -1.529 | 0.185 | -8.266 | 1.000 |  |
| Salamandra salamandra - Pelophylax sp. | 0.000 | 0.227 | 0.136 | 1.660 | 0.785 |  |
| Triturus anatolicus - Pelophylax sp. | 0.000 | -0.816 | 0.654 | -1.249 | 1.000 |  |
| Triturus cristatus - Pelophylax sp. | 0.000 | -0.386 | 0.181 | -2.134 | 1.000 |  |
| Triturus marmoratus - Pelophylax sp. | 0.000 | 1.704 | 0.097 | 17.485 | 0.000 | \*\*\* |
| Salamandra salamandra - Rana temporaria | 0.000 | 1.756 | 0.134 | 13.115 | 0.000 | \*\*\* |
| Triturus anatolicus - Rana temporaria | 0.000 | 0.713 | 0.667 | 1.070 | 0.985 |  |
| Triturus cristatus - Rana temporaria | 0.000 | 1.143 | 0.179 | 6.382 | 0.000 | \*\*\* |
| Triturus marmoratus - Rana temporaria | 0.000 | 3.234 | 0.164 | 19.675 | 0.000 | \*\*\* |
| Triturus anatolicus - Salamandra salamandra | 0.000 | -1.043 | 0.655 | -1.592 | 1.000 |  |
| Triturus cristatus - Salamandra salamandra | 0.000 | -0.613 | 0.133 | -4.604 | 1.000 |  |
| Triturus marmoratus - Salamandra salamandra | 0.000 | 1.478 | 0.107 | 13.867 | 0.000 | \*\*\* |
| Triturus cristatus - Triturus anatolicus | 0.000 | 0.430 | 0.666 | 0.646 | 1.000 |  |
| Triturus marmoratus - Triturus anatolicus | 0.000 | 2.521 | 0.648 | 3.892 | 0.003 | \*\* |
| Triturus marmoratus - Triturus cristatus | 0.000 | 2.090 | 0.160 | 13.065 | 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-value** | **Signif1** |
| Bombina variegata - Alytes obstetricans | 0.000 | 1.326 | 0.224 | 5.917 | 0.000 | \*\*\* |
| Bufo bufo - Alytes obstetricans | 0.000 | 0.161 | 0.207 | 0.776 | 0.997 |  |
| Bufo spinosus - Alytes obstetricans | 0.000 | 0.050 | 0.210 | 0.236 | 1.000 |  |
| Ichthyosaura alpestris - Alytes obstetricans | 0.000 | 0.205 | 0.189 | 1.087 | 0.973 |  |
| Lissotriton helveticus - Alytes obstetricans | 0.000 | 0.421 | 0.195 | 2.163 | 0.386 |  |
| Lissotriton vulgaris - Alytes obstetricans | 0.000 | 0.010 | 0.204 | 0.047 | 1.000 |  |
| Pelobates cultripes - Alytes obstetricans | 0.000 | 0.572 | 0.227 | 2.515 | 0.192 |  |
| Pelophylax sp. - Alytes obstetricans | 0.000 | 0.631 | 0.167 | 3.783 | 0.004 | \*\* |
| Rana temporaria - Alytes obstetricans | 0.000 | -0.718 | 0.235 | -3.050 | 1.000 |  |
| Triturus anatolicus - Alytes obstetricans | 0.000 | -0.179 | 0.665 | -0.269 | 1.000 |  |
| Triturus cristatus - Alytes obstetricans | 0.000 | -0.092 | 0.227 | -0.405 | 1.000 |  |
| Triturus marmoratus - Alytes obstetricans | 0.000 | 2.342 | 0.142 | 16.487 | 0.000 | \*\*\* |
| Bufo bufo - Bombina variegata | 0.000 | -1.165 | 0.146 | -8.007 | 1.000 |  |
| Bufo spinosus - Bombina variegata | 0.000 | -1.276 | 0.236 | -5.400 | 1.000 |  |
| Ichthyosaura alpestris - Bombina variegata | 0.000 | -1.121 | 0.122 | -9.156 | 1.000 |  |
| Lissotriton helveticus - Bombina variegata | 0.000 | -0.905 | 0.128 | -7.075 | 1.000 |  |
| Lissotriton vulgaris - Bombina variegata | 0.000 | -1.316 | 0.112 | -11.754 | 1.000 |  |
| Pelobates cultripes - Bombina variegata | 0.000 | -0.754 | 0.252 | -2.992 | 1.000 |  |
| Pelophylax sp. - Bombina variegata | 0.000 | -0.695 | 0.197 | -3.522 | 1.000 |  |
| Rana temporaria - Bombina variegata | 0.000 | -2.044 | 0.184 | -11.115 | 1.000 |  |
| Triturus anatolicus - Bombina variegata | 0.000 | -1.505 | 0.674 | -2.235 | 1.000 |  |
| Triturus cristatus - Bombina variegata | 0.000 | -1.418 | 0.159 | -8.901 | 1.000 |  |
| Triturus marmoratus - Bombina variegata | 0.000 | 1.015 | 0.179 | 5.678 | 0.000 | \*\*\* |
| Bufo spinosus - Bufo bufo | 0.000 | -0.111 | 0.220 | -0.505 | 1.000 |  |
| Ichthyosaura alpestris - Bufo bufo | 0.000 | 0.044 | 0.086 | 0.512 | 1.000 |  |
| Lissotriton helveticus - Bufo bufo | 0.000 | 0.260 | 0.088 | 2.946 | 0.064 | . |
| Lissotriton vulgaris - Bufo bufo | 0.000 | -0.151 | 0.110 | -1.372 | 1.000 |  |
| Pelobates cultripes - Bufo bufo | 0.000 | 0.411 | 0.237 | 1.733 | 0.691 |  |
| Pelophylax sp. - Bufo bufo | 0.000 | 0.470 | 0.178 | 2.642 | 0.142 |  |
| Rana temporaria - Bufo bufo | 0.000 | -0.879 | 0.151 | -5.801 | 1.000 |  |
| Triturus anatolicus - Bufo bufo | 0.000 | -0.340 | 0.668 | -0.509 | 1.000 |  |
| Triturus cristatus - Bufo bufo | 0.000 | -0.253 | 0.150 | -1.682 | 1.000 |  |
| Triturus marmoratus - Bufo bufo | 0.000 | 2.181 | 0.157 | 13.873 | 0.000 | \*\*\* |
| Ichthyosaura alpestris - Bufo spinosus | 0.000 | 0.155 | 0.203 | 0.765 | 0.997 |  |
| Lissotriton helveticus - Bufo spinosus | 0.000 | 0.371 | 0.209 | 1.780 | 0.659 |  |
| Lissotriton vulgaris - Bufo spinosus | 0.000 | -0.040 | 0.217 | -0.184 | 1.000 |  |
| Pelobates cultripes - Bufo spinosus | 0.000 | 0.522 | 0.240 | 2.181 | 0.374 |  |
| Pelophylax sp. - Bufo spinosus | 0.000 | 0.582 | 0.183 | 3.178 | 0.032 | \* |
| Rana temporaria - Bufo spinosus | 0.000 | -0.767 | 0.247 | -3.106 | 1.000 |  |
| Triturus anatolicus - Bufo spinosus | 0.000 | -0.229 | 0.669 | -0.342 | 1.000 |  |
| Triturus cristatus - Bufo spinosus | 0.000 | -0.142 | 0.239 | -0.592 | 1.000 |  |
| Triturus marmoratus - Bufo spinosus | 0.000 | 2.292 | 0.161 | 14.263 | 0.000 | \*\*\* |
| Lissotriton helveticus - Ichthyosaura alpestris | 0.000 | 0.216 | 0.048 | 4.478 | 0.000 | \*\*\* |
| Lissotriton vulgaris - Ichthyosaura alpestris | 0.000 | -0.195 | 0.080 | -2.453 | 1.000 |  |
| Pelobates cultripes - Ichthyosaura alpestris | 0.000 | 0.367 | 0.221 | 1.659 | 0.741 |  |
| Pelophylax sp. - Ichthyosaura alpestris | 0.000 | 0.426 | 0.156 | 2.729 | 0.115 |  |
| Rana temporaria - Ichthyosaura alpestris | 0.000 | -0.923 | 0.141 | -6.538 | 1.000 |  |
| Triturus anatolicus - Ichthyosaura alpestris | 0.000 | -0.384 | 0.663 | -0.580 | 1.000 |  |
| Triturus cristatus - Ichthyosaura alpestris | 0.000 | -0.297 | 0.128 | -2.320 | 1.000 |  |
| Triturus marmoratus - Ichthyosaura alpestris | 0.000 | 2.136 | 0.132 | 16.210 | 0.000 | \*\*\* |
| Lissotriton vulgaris - Lissotriton helveticus | 0.000 | -0.411 | 0.087 | -4.741 | 1.000 |  |
| Pelobates cultripes - Lissotriton helveticus | 0.000 | 0.151 | 0.226 | 0.667 | 0.999 |  |
| Pelophylax sp. - Lissotriton helveticus | 0.000 | 0.210 | 0.163 | 1.289 | 0.925 |  |
| Rana temporaria - Lissotriton helveticus | 0.000 | -1.139 | 0.142 | -8.040 | 1.000 |  |
| Triturus anatolicus - Lissotriton helveticus | 0.000 | -0.600 | 0.664 | -0.903 | 1.000 |  |
| Triturus cristatus - Lissotriton helveticus | 0.000 | -0.513 | 0.131 | -3.902 | 1.000 |  |
| Triturus marmoratus - Lissotriton helveticus | 0.000 | 1.921 | 0.140 | 13.707 | 0.000 | \*\*\* |
| Pelobates cultripes - Lissotriton vulgaris | 0.000 | 0.562 | 0.234 | 2.399 | 0.246 |  |
| Pelophylax sp. - Lissotriton vulgaris | 0.000 | 0.622 | 0.174 | 3.570 | 0.009 | \*\* |
| Rana temporaria - Lissotriton vulgaris | 0.000 | -0.727 | 0.158 | -4.599 | 1.000 |  |
| Triturus anatolicus - Lissotriton vulgaris | 0.000 | -0.189 | 0.667 | -0.283 | 1.000 |  |
| Triturus cristatus - Lissotriton vulgaris | 0.000 | -0.102 | 0.130 | -0.783 | 1.000 |  |
| Triturus marmoratus - Lissotriton vulgaris | 0.000 | 2.332 | 0.153 | 15.244 | 0.000 | \*\*\* |
| Pelophylax sp. - Pelobates cultripes | 0.000 | 0.059 | 0.203 | 0.293 | 1.000 |  |
| Rana temporaria - Pelobates cultripes | 0.000 | -1.289 | 0.262 | -4.921 | 1.000 |  |
| Triturus anatolicus - Pelobates cultripes | 0.000 | -0.751 | 0.675 | -1.113 | 1.000 |  |
| Triturus cristatus - Pelobates cultripes | 0.000 | -0.664 | 0.255 | -2.606 | 1.000 |  |
| Triturus marmoratus - Pelobates cultripes | 0.000 | 1.770 | 0.183 | 9.673 | 0.000 | \*\*\* |
| Rana temporaria - Pelophylax sp. | 0.000 | -1.349 | 0.210 | -6.423 | 1.000 |  |
| Triturus anatolicus - Pelophylax sp. | 0.000 | -0.810 | 0.657 | -1.234 | 1.000 |  |
| Triturus cristatus - Pelophylax sp. | 0.000 | -0.723 | 0.201 | -3.603 | 1.000 |  |
| Triturus marmoratus - Pelophylax sp. | 0.000 | 1.710 | 0.098 | 17.459 | 0.000 | \*\*\* |
| Triturus anatolicus - Rana temporaria | 0.000 | 0.539 | 0.677 | 0.795 | 0.997 |  |
| Triturus cristatus - Rana temporaria | 0.000 | 0.626 | 0.187 | 3.339 | 0.019 | \* |
| Triturus marmoratus - Rana temporaria | 0.000 | 3.059 | 0.193 | 15.880 | 0.000 | \*\*\* |
| Triturus cristatus - Triturus anatolicus | 0.000 | 0.087 | 0.675 | 0.129 | 1.000 |  |
| Triturus marmoratus - Triturus anatolicus | 0.000 | 2.521 | 0.651 | 3.873 | 0.003 | \*\* |
| Triturus marmoratus - Triturus cristatus | 0.000 | 2.434 | 0.183 | 13.320 | 0.000 | \*\*\* |
| 1\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; | | | | | | |