**Table S1 Trait divergence categories**

(Starts on next page) Trait divergence was considered 'parallel' when the best model of the species effect was either 'same effect' or was 'different effect' and the direction of divergence was 'same'. Trait divergence was considered 'single lake' when the best model of the species effect was either 'effect only in Paxton' or 'effect only in Priest'. Trait divergence was considered 'opposite' when the best model of species effect was 'different effect' and the direction of divergence was 'opposite'. The second best model of species effect and the delta AICc between it and the best model is also shown. When the delta AICc was less than two and the 2nd best model called for a different trait divergence category than the best model, we dropped the trait from further study (indicated by 'NA' in the ''Trait divergence' based on AICc model selection' column), though detected QTL for all traits measured are shown in Tables S2 – S4.

| Trait | 'Trait divergence' based on AICc model selection | Direction of divergence | Best model of species effect | 2nd best model of species effect | Delta AICc |
|---|---|---|---|---|---|
| plate count | Parallel | same | different effect | same effect | 35.62 |
| gill raker count | Parallel | same | same effect | different effect | 1.24 |
| 1st dorsal spine | Single lake | opposite | effect in Paxton only | different effect | 2.14 |
| 2nd dorsal spine | NA | same | no effect | effect in Priest only | 0.95 |
| x1 | NA | opposite | no effect | effect in Priest only | 0.17 |
| y1 | Parallel | same | same effect | different effect | 1.72 |
| x2 | Parallel | same | different effect | same effect | 5.78 |
| y2 | Parallel | same | same effect | different effect | 1.28 |
| x3 | Opposite | opposite | different effect | effect in Paxton only | 3.97 |
| y3 | Parallel | same | different effect | same effect | 1.14 |
| x4 | Single lake | opposite | effect in Priest only | different effect | 2.12 |
| y4 | Parallel | same | different effect | same effect | 31.59 |
| x5 | NA | opposite | effect in Priest only | different effect | 0.02 |
| y5 | Parallel | same | different effect | same effect | 2.77 |
| x6 | Parallel | same | same effect | different effect | 2.20 |
| y6 | Opposite | opposite | different effect | effect in Priest only | 5.36 |
| x7 | NA | opposite | different effect | effect in Priest only | 1.47 |
| y7 | Parallel | same | same effect | different effect | 1.90 |
| x8 | NA | opposite | effect in Paxton only | different effect | 0.32 |
| y8 | Parallel | same | different effect | same effect | 0.53 |
| x9 | NA | same | effect in Priest only | different effect | 1.36 |
| y9 | NA | same | effect in Paxton only | different effect | 0.26 |
| x10 | Single lake | same | effect in Priest only | different effect | 2.18 |
| y10 | Parallel | same | same effect | different effect | 1.01 |
| x11 | NA | same | effect in Paxton only | different effect | 1.69 |
| y11 | Parallel | same | same effect | different effect | 1.83 |
| x12 | Opposite | opposite | different effect | effect in Priest only | 19.50 |
| y12 | Parallel | same | same effect | different effect | 1.03 |
| x13 | Parallel | same | different effect | same effect | 2.97 |
| y13 | Parallel | same | same effect | different effect | 1.72 |
| x15 | NA | same | same effect | effect in Priest only | 1.70 |
| y15 | Parallel | same | same effect | different effect | 1.01 |
| x16 | Parallel | same | different effect | same effect | 0.78 |
| y16 | Parallel | same | same effect | different effect | 0.67 |
| x17 | Parallel | same | different effect | same effect | 3.19 |
| y17 | Parallel | same | different effect | same effect | 0.37 |
| x18 | Parallel | same | different effect | same effect | 0.84 |
| y18 | Parallel | same | different effect | same effect | 0.43 |
| x19 | NA | opposite | different effect | effect in Priest only | 1.00 |
| y19 | Single lake | same | effect in Paxton only | different effect | 2.13 |
| x20 | Parallel | same | different effect | effect in Priest only | 3.10 |
| y20 | Parallel | same | different effect | same effect | 17.17 |

| Trait | 'Trait divergence' based on AICc model selection | Direction of divergence | Best model of species effect | 2nd best model of species effect | Delta AICc |
|---|---|---|---|---|---|
| x21 | Parallel | same | same effect | different effect | 2.09 |
| y21 | NA | opposite | no effect | effect in Priest only | 0.37 |
| x22 | Parallel | same | same effect | different effect | 2.17 |
| y22 | NA | same | effect in Paxton only | different effect | 0.27 |
| x23 | Opposite | opposite | different effect | effect in Paxton only | 4.95 |
| y23 | NA | same | different effect | effect in Priest only | 0.29 |
| x24 | NA | same | effect in Priest only | different effect | 1.32 |
| y24 | Opposite | opposite | different effect | effect in Paxton only | 17.01 |
| x25 | Single lake | same | effect in Priest only | different effect | 2.19 |
| y25 | Parallel | same | different effect | effect in Paxton only | 4.15 |
| x26 | NA | same | different effect | effect in Priest only | 1.63 |
| y26 | Parallel | same | different effect | same effect | 3.30 |
| x27 | Parallel | same | same effect | different effect | 2.12 |
| y27 | Parallel | same | same effect | different effect | 2.15 |
| centroid | Parallel | same | different effect | effect in Paxton only | 25.59 |