**Supplementary material:**

Table S1. Results of the generalized linear mixed model to evaluate the influence of microhabitat characteristics on the frequency of *P. clarkii* individuals. Asterisks indicate the level of significance: "*" $p < 0.05$; "**" $p < 0.01$; and "***" $p < 0.001$.

| Variable | Estimate | Std. Error | Adjusted SE | z value | Pr(>\|z\|) | |
|---|---|---|---|---|---|---|
| Intercept | 1.10578 | 0.22392 | 0.23014 | 4.805 | 1.50E-06 | *** |
| O.D. | -0.29056 | 0.11872 | 0.12178 | 2.386 | 0.017 | * |
| S.W. | -0.18104 | 0.13188 | 0.13554 | 1.336 | 0.182 | |
| Turbidity | 0.20485 | 0.16252 | 0.16625 | 1.232 | 0.218 | |
| Channel depth | -0.11691 | 0.11192 | 0.11507 | 1.016 | 0.31 | |
| pH | -0.03562 | 0.19651 | 0.19937 | 0.179 | 0.858 | |
| E.C. | -0.12622 | 0.14533 | 0.14911 | 0.846 | 0.397 | |
| TDS | -0.12391 | 0.14468 | 0.14846 | 0.835 | 0.404 | |
| Coverage | -0.0275 | 0.12219 | 0.12548 | 0.219 | 0.827 | |
| Temperature | -0.04811 | 0.14282 | 0.14677 | 0.328 | 0.743 | |
| Elevation | 0.05777 | 0.12741 | 0.13082 | 0.442 | 0.659 | |

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table S2. Results of the generalized linear mixed model assessing the impact of microhabitat characteristics on the size of *P. clarkii* individuals. Asterisks indicate the level of significance: "*" $p < 0.05$; "**" $p < 0.01$; and "***" $p < 0.001$.

| Variable | Estimate | Std. Error | Adjusted SE | z value | Pr(>\|z\|) | |
|---|---|---|---|---|---|---|
| Intercept | 2.454012 | 0.138557 | 0.142457 | 17.226 | <2e-16 | *** |
| Elevation | -0.10249 | 0.04664 | 0.047962 | 2.137 | 0.0326 | * |
| Turbidity | 0.091648 | 0.056218 | 0.05773 | 1.588 | 0.1124 | |
| S.W. | -0.061138 | 0.047069 | 0.048408 | 1.263 | 0.2066 | |
| Temperature | 0.074828 | 0.063618 | 0.065197 | 1.148 | 0.2511 | |
| E.C. | -0.043544 | 0.071008 | 0.072387 | 0.602 | 0.5475 | |
| Salinity | -0.043162 | 0.070838 | 0.072216 | 0.598 | 0.5501 | |
| Channel depth | -0.040621 | 0.051655 | 0.053116 | 0.765 | 0.4444 | |
| Coverage | 0.014978 | 0.054687 | 0.056051 | 0.267 | 0.7893 | |
| D.O. | -0.015744 | 0.049537 | 0.050859 | 0.31 | 0.7569 | |
| pH | 0.004051 | 0.057299 | 0.058614 | 0.069 | 0.9449 | |

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table S3. Comparison of the fresh body mass of *P. clarkii* and the masses of the hepatopancreas, gills, and abdominal muscle between males and females. Different letters denote significant differences at $p < 0.05$ (Tukey post hoc after GLMM). Error bars show 95% confidence intervals. Significance codes: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

| Variable | Sex | Estimate | Std. Error | t value | Pr(>\|z\|) | | Tukey |
|---|---|---|---|---|---|---|---|
| Weight of *P. clarkii* (g) | Female | 10.85 | 0.551 | 46.95 | <2e-16 | *** | a |
| | Male | 9.49 | 0.396 | -2.03 | 0.04 | * | b |
| Hepatopancreas (g) | Female | 0.328 | 0.029 | -12.35 | <2e-16 | *** | a |
| | Male | 0.224 | 0.016 | -3.28 | 0.001 | ** | b |
| Abdominal muscle (g) | Female | 1.69 | 0.11 | 8.28 | <2e-16 | *** | a |
| | Male | 1.14 | 0.05 | -4.81 | 1.44E-06 | *** | b |
| Gill (g) | Female | 0.365 | 0.022 | -16.32 | <2e-16 | *** | a |
| | Male | 0.304 | 0.015 | -2.31 | 0.021 | * | b |