

**SMF 1.** Study area and measurements taken of *Procambarus clarkii*. TL: Total length. CL: Carapace length. POCL: Postorbital carapace length. Pink spot: *P. punctatum*, green spot: *J. effusus*, yellow spot: *L. peruviana*.

SMT 1

Physicochemical parameters of water in the macrophyte transects from the study area

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Month | Macrophyte species | Temperature (°C) | Conductivity (µS/cm) | Dissolved Oxygen (mg/L) | pH | Substrate |
| May | *Juncus effusus* | 19.00 | 130.10 | 9.10 | 7.51 | Clayey |
| *Ludwigia peruviana* | 20.00 | 139.20 | 8.48 | 9.96 | Stony |
| *Polygonum punctatum* | 20.00 | 138.80 | 7.54 | 8.01 | Muddy |
| July | *Juncus effusus* | 15.60 | 160.10 | 1.47 | 7.00 | Clayey |
| *Ludwigia peruviana* | 19.90 | 153.90 | 3.83 | 9.03 | Stony |
| *Polygonum punctatum* | 16.00 | 161.40 | 1.44 | 7.03 | Muddy |
| September | *Juncus effusus* | 20.60 | 164.40 | 2.04 | 6.80 | Clayey |
| *Ludwigia peruviana* | 20.10 | 161.80 | 1.94 | 6.93 | Stony |
| *Polygonum punctatum* | 19.10 | 160.60 | 1.50 | 6.90 | Muddy |
| November | *Juncus effusus* | 20.90 | 152.60 | 2.69 | 7.06 | Clayey |
| *Ludwigia peruviana* | 20.10 | 151.06 | 2.21 | 6.92 | Stony |
| *Polygonum punctatum* | 20.00 | 152.40 | 2.12 | 7.39 | Muddy |

SMT 2

Morphometry of *Procambarus clarkii* specimens evaluated in the study

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Description |  | Weight (gr) | Total length (mm) | POCL (mm) | Carapace length (mm) |
| N°indiv. | Rank | Mean±des | Rank | Mean±des | Rank | Mean±des | Rank | Mean±des |
| ***Juncus effusus*** | ***80*** | ***1.1-25.7*** | ***11±5.9*** | ***40.5-106.1*** | ***78.2±14.4*** | ***14.1-41.3*** | ***28.9±6*** | ***17.9-54.6*** | ***38.7±7.6*** |
| May | 34 | 1.1-22.2 | 9.2±5.0 | 40.5-99.7 | 74.0±14.4 | 14.1-37.9 | 27.3±5.9 | 17.9-50.8 | 36.5±7.8 |
| Female | 12 | 2.0-15.6 | 7.4±4.5.0 | 48.2-90.9 | 69.4±13.3 | 16.1-34.3 | 25±5.6 | 22.6-45.0 | 33.9±7.0 |
| Male | 22 | 1.1-22.2 | 10.2±5.1 | 40.5-99.7 | 76.5±14.7 | 14.1-37.9 | 28.5±5.9 | 17.9-50.8 | 38.0±7.9 |
| Jul | 17 | 4.7-24.5 | 11.7±5.5 | 61.9-105.2 | 79.8±11.7 | 22.7-38.0 | 29.7±4.5 | 31.1-50.3 | 39.1±5.5 |
| Female | 7 | 5.0-24.5 | 12.8±6.7 | 62.5-105.2 | 81.5±13.9 | 22.7-38.0 | 30.3±5.2 | 31.2-50.3 | 39.8±6.5 |
| Male | 10 | 4.7-20.1 | 10.9±4.8 | 61.9-94.2 | 78.7±10.5 | 23.4-36.6 | 29.2±4.1 | 31.1-47.0 | 38.6±5.0 |
| Sep | 16 | 4.7-23.4 | 12.5±5.4 | 62.3-106.1 | 83.2±11.5 | 22.1-41.3 | 31.0±5.1 | 30.1-54.6 | 41.7±6.3 |
| Female | 9 | 4.7-23.4 | 13.6±6.5 | 62.3-106.1 | 85.1±14 | 22.1-41.3 | 31.8±6.1 | 30.1-54.6 | 42.7±7.7 |
| Male | 7 | 6.7-18.0 | 11.0±3.6 | 70.9-94.8 | 80.9±7.7 | 25.1-36.7 | 30.0±3.7 | 35.6-47.4 | 40.4±3.9 |
| Nov | 13 | 2.0-25.7 | 12.7±8.1 | 48.7-105.1 | 81.2±18.5 | 15.8-39.4 | 29.3±8.2 | 23.4-51.9 | 40.1±9.8 |
| Female | 11 | 2.0-25.7 | 12.6±7.9 | 48.7-105.1 | 81.3±18.6 | 15.8-39.4 | 29.4±8.3 | 23.4-51.9 | 40.4±9.7 |
| Male | 2 | 4.1-21.9 | 13.0±12.6 | 61.8-98.6 | 80.2±26.0 | 21.2-36.7 | 28.9±11 | 28.7-49.0 | 38.9±14.4 |
| ***Ludwigia peruviana*** | ***138*** | ***0.01-23.1*** | ***8*.0*±6.3*** | ***11.6-153.6*** | ***65.9±25.1*** | ***4.4-40.9*** | ***24.3±9.4*** | ***6.1-54.2*** | ***32.5±12.2*** |
| May | 4 | 4.1-15.7 | 9.3±5.8 | 57.5-85.9 | 71.2±15.3 | 20.6-34.9 | 27.1±7.0 | 28.3-45.6 | 36.4±8.5 |
| Female | 2 | 4.5-12.7 | 8.6±5.8 | 58.6-82.9 | 70.8±17.2 | 21.9-31.1 | 26.5±6.5 | 30.2-41.7 | 35.9±8.1 |
| Male | 2 | 4.1-15.7 | 9.9±8.2 | 57.5-85.9 | 71.7±20.1 | 20.6-34.9 | 27.7±10.1 | 28.3-45.6 | 37±12.3 |
| Jul | 70 | 0.7-20.2 | 6.4±6.3 | 11.6-100.6 | 57.2±25.4 | 4.4-36.8 | 21.2±9.9 | 6.1-48.5 | 28.2±12.7 |
| Female | 34 | 0.7-20.2 | 7.6±7.3 | 17.7-100.6 | 59.1±28.8 | 6.2-36.8 | 22±11.4 | 8.7-48.5 | 29.4±14.3 |
| Indeterminate | 1 | 0.01-0.01 | 0.01±0.0 | 11.6-11.6 | 11.6±0.0 | 4.4-4.4 | 4.4±0.0 | 6.1-6.1 | 6.1±0.0 |
| Male | 35 | 0.2-18.6 | 5.4±4.9 | 17.9-94.5 | 56.7±20.8 | 6.8-36 | 20.9±8 | 7.6-47.4 | 27.7±10.6 |
| Sep | 62 | 0.3-23.1 | 9.6±5.9 | 22.0-153.6 | 74.5±22.3 | 8.2-40.9 | 27.4±7.9 | 11-54.2 | 36.7±10.1 |
| Female | 39 | 0.3-19.6 | 8.9±6.0 | 22.0-101.5 | 70.3±21.2 | 8.2-38.8 | 25.8±8.3 | 11-50.9 | 34.9±10.6 |
| Male | 23 | 0.3-23.1 | 10.9±5.6 | 22.2-153.6 | 81.7±22.7 | 9.0-40.9 | 30.1±6.5 | 11.4-54.2 | 39.9±8.5 |
| Nov | 2 | 13.4-17.3 | 15.4±2.8 | 84.4-93.5 | 89±6.4 | 31.1-35.9 | 33.5±3.3 | 41.8-46.4 | 44.1±3.2 |
| Female | 1 | 17.3-17.3 | 17.3±0.0 | 93.5-93.5 | 93.5±0.0 | 35.9-35.9 | 35.9±0.0 | 46.4-46.4 | 46.4±0.0 |
| Male | 1 | 13.4-13.4 | 13.4±0.0 | 84.4-84.4 | 84.4±0.0 | 31.1-31.1 | 31.1±0.0 | 41.8-41.8 | 41.8±0.0 |
| ***Polygonum punctatum*** | ***560*** | **0.05-31.2** | **7.0±7.7** | ***8.1-110.6*** | ***55.4±30*** | ***2.7-43.5*** | ***20.4±11.8*** | ***4.1-57.1*** | ***27.4±15.2*** |
| May | 46 | 7.5-23.3 | 14.3±3.4 | 71.5-101.1 | 86.9±6.8 | 26.7-40.8 | 33.3±3.0 | 36.2-53.3 | 43.8±3.9 |
| Female | 18 | 8.9-22.3 | 13.8±3.5 | 75.4-100.9 | 86.4±7 | 28.6-38.3 | 32.4±2.6 | 37.3-51.1 | 42.7±3.8 |
| Male | 28 | 7.5-23.3 | 14.6±3.3 | 71.5-101.1 | 87.2±6.7 | 26.7-40.8 | 33.9±3.1 | 36.2-53.3 | 44.5±3.9 |
| Jul | 134 | 0.1-27.2 | 8.3±7.9 | 8.1-106.7 | 60.0±30.0 | 2.7-41.4 | 22.4±12 | 4.1-53.4 | 29.8±15.4 |
| Female | 65 | 0.1-27.2 | 8.3±8.1 | 16.6-106.7 | 60.4±29.9 | 5.6-41.4 | 22.5±11.8 | 7.1-53.4 | 29.8±15.2 |
| Indeterminate | 8 | 0.1-0.3 | 0.1±0.0 | 8.1-19.0 | 12.9±4.8 | 2.7-6.2 | 4.1±1.6 | 4.1-8.6 | 6.0±2.0 |
| Male | 61 | 0.1-26.8 | 9.3±7.8 | 18.2-99.0 | 65.7±26.7 | 6.7-39.7 | 24.7±10.9 | 9.6-50.9 | 32.9±13.8 |
| Sep | 234 | 0.05-31.2 | 5.5±7.5 | 14.7-110.6 | 47.3±30.4 | 5.1-43.5 | 17.3±11.7 | 7.1-57.1 | 23.6±15.2 |
| Female | 82 | 0.1-27.2 | 7.7±8.1 | 14.8-108.3 | 58.5±29.7 | 5.8-39.7 | 21.6±11.5 | 8.3-54.4 | 29.2±14.7 |
| Indeterminate | 56 | 0.05-0.1 | 0.08±0.03 | 14.7-20.7 | 17.6±3.1 | 5.1-7.1 | 6.0±1.0 | 7.1-9.9 | 8.4±1.4 |
| Male | 96 | 0.1-31.2 | 6.7±7.7 | 19.4-110.6 | 55.1±28.6 | 7.2-43.5 | 20.1±11.1 | 10.6-57.1 | 27.6±14.3 |
| Nov | 146 | 0.1-27.1 | 5.9±7.4 | 17.6-106.1 | 54.4±26.6 | 4.6-40.9 | 19.4±10.3 | 8.2-54.1 | 26.2±13.7 |
| Female | 85 | 0.1-27.1 | 4.6±6.4 | 17.6-106.1 | 50.3±24.5 | 6.3-40.9 | 17.7±9.1 | 8.2-54.1 | 24.0±12.3 |
| Indeterminate | 4 | 0.1-0.9 | 0.15±0.07 | 18.5-37.6 | 24.5±8.9 | 6.2-12.5 | 8.3±2.8 | 8.7-15.8 | 11.3±3.1 |
| Male | 57 | 0.1-24.7 | 8.3±8.5 | 19.4-103.1 | 62.6±27.8 | 4.6-39.8 | 22.7±11.2 | 9.3-52.2 | 30.6±14.6 |
| **Overall total** | 778 | 0.01-31.2 | 7.6±7.4 | 8.1-153.6 | 59.6±28.9 | 2.7-43.5 | 22±11.3 | 4.1-57.1 | 29.5±14.6 |



**SMF 2.** Size range of red swamp crayfish by macrophyte and per month, assessed in a tropical high mountain aquatic ecosystem. The areas of the charts in gray represent the sizes of adult individuals. Sizes in millimeters.



**SMF 3.** Habitat use by red crayfish in the macrophytes evaluated. *J. effusus* (*Juncus effusus*), *L. peruviana* (*Ludwigia peruviana*), *P. punctatum* (*Polygonum punctatum*).