Supplementary Material – Journal of the Marine Biological Association of the UK

Bolzan et al - Juvenile fish habitats in a tropical estuarine protected area

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| **Table S1.** Fish standard length (SL mean and range),mean fish density per 100 m2, site where the species was recorded and total fish weight (WT - mean and total) in the São Mateus River estuary, ES. |
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| **Family** | **SL (mm)** | **Mean Density (fish/100 m2)** | **Site** | **TW (g)** |
|  **Species** | **Mean** | **Range** | **Mean**  | **Total** |
| **Elopidae** |  |  |  |  |  |  |
| *Elops smithi* (McBride, Rocha, Ruiz-Carus & Bowen, 2010) | 31 | 30-32 | < 0.01 | 1 | 0.08 | 0.25 |
| **Albulidae** |  |  |  |  |  |  |
| *Albula vulpes* (Linnaeus, 1758) | 40.4 | 25-58 | 0.08 | 1; 2 | 0.2 | 7.14 |
| **Ophichthidae** |  |  |  |  |  |  |
| *Ahlia egmontis* (Jordan, 1884) | 59 | 59 | < 0.01 | 8 | 0.08 | 0.08 |
| **Engraulidae** |  |  |  |  |  |  |
| *Cetengraulis edentulus* (Cuvier, 1829) | 84.4 | 80-88 | 0.01 | 1 | 8.95 | 62.67 |
| *Anchovia clupeoides* (Swainson, 1839) | 67.7 | 44-92 | 0.39 | 3; 6; 7; 8 | 3.92 | 674.99 |
| *Anchoviella lepidentostole* (Fowler, 1911) | 35.6 | 27-74 | 0.05 | 5; 8 | 0.53 | 11.81 |
| *Lycengraulis grossidens* (Agassiz, 1829) | 44 | 19-139 | 1.91 | All | 2.08 | 1725.22 |
| *Anchoa spinifer* (Valenciennes, 1848) | 56 | 34-76 | 0.06 | 1; 3; 7 | 2.28 | 66.15 |
| *Anchoa januaria* (Steindachner, 1879) | 44 | 27-62 | 0.4 | 7; 8 | 0.87 | 153.03 |
| *Anchoa tricolor* (Spix & Agassiz, 1829) | 66.7 | 65-70 | < 0.01 | 3 | 3.86 | 11.6 |
| *Anchoa lyolepis* (Evermann & Marsh, 1900) | 36 | 36 | < 0.01 | 1 | 0.51 | 0.51 |
| Non-identified juvenile | 24.4 | 9-42 | 10.56 | All | 0.11 | 498.36 |
| **Clupeidae** |  |  |  |  |  |  |
| *Rhinosardinia bahiensis* (Steindachner, 1879) | 46.6 | 24-80 | 2.25 | 3; 4; 5; 6; 7; 8 | 1.56 | 1525.19 |
| **Prochilodontidae** |  |  |  |  |  |  |
| *Prochilodus argenteus* (Spix & Agassiz, 1829) | 68 | 65-70 | < 0.01 | 1; 4 | 9.6 | 28.82 |
| **Characidae** |  |  |  |  |  |  |
| *Astyanax lacustris* (Lütken, 1875) | 63.7 | 49-80 | < 0.01 | 5; 8 | 7.91 | 23.75 |
| **Heptapteridae** |  |  |  |  |  |  |
| **Table S1 (continuation):** |   |   |   |   |   |   |
| **Family** | **SL (mm)** | **Mean Density (fish/100 m2)** | **Site** | **TW (g)** |
|  **Species** | **Mean** | **Range** | **Mean**  | **Total** |
| *Pimelodella lateristriga* (Lichtenstein, 1823) | 67.3 | 22-105 | 0.08 | 5; 7; 8 | 5.07 | 177.61 |
| **Ariidae** |  |  |  |  |  |  |
| *Genidens genidens* (Cuvier, 1829) | 66.4 | 45-134 | 0.33 | All | 4.47 | 652.52 |
| *Aspistor luniscutis* (Valenciennes, 1840) | 93.2 | 80-116 | 0.02 | 1 | 11.41 | 125.6 |
| *Cathorops spixii* (Agassiz, 1829) | 62 | 62 | < 0.01 | 5 | 4.89 | 4.89 |
| *Sciades* sp. | 82.47 | 68-104 | 0.08 | 1; 2 | 7.52 | 285.75 |
| **Synodontidae** |  |  |  |  |  |  |
| *Synodus foetens* (Linnaeus, 1766) | 72 | 42-133 | 0.02 | 1; 2; 3 | 5.33 | 63.99 |
| **Mugilidae** |  |  |  |  |  |  |
| *Mugil curema* (Valenciennes, 1836) | 28.8 | 12-230 | 2.51 | All | 0.57 | 1557.71 |
| *Mugil hospes* (Jordan & Culver, 1895) | 21.8 | 15-92 | 0.23 | 1; 2; 4; 7; 8 | 1.43 | 58.15 |
| **Atherinopsidae** |  |  |  |  |  |  |
| *Atherinella brasiliensis* (Quoy & Gaimard, 1825) | 67.2 | 11-118 | 1.51 | 1; 2; 3; 4; 5; 7 | 5.06 | 3316.54 |
| **Hemiramphidae** |  |  |  |  |  |  |
| *Hemiramphus brasiliensis* (Linnaeus, 1758) | 68.6 | 29-123 | 0.04 | 1; 5; 6 | 1.34 | 24.12 |
| *Hyporhamphus unifasciatus* (Ranzani, 1841) | 96.3 | 57-116 | 0.02 | 3; 4; 5; 6 | 2.58 | 23.27 |
| **Belonidae** |  |  |  |  |  |  |
| *Strongylura marina* (Walbaum, 1792) | 154.2 | 65-259 | 0.01 | 1; 3; 5; 6 | 7.04 | 35.2 |
| *Strongylura timucu* (Walbaum, 1792) | 142.3 | 52-336 | 0.02 | 1; 4; 5; 6; 7; 8 | 7.41 | 88.96 |
| *Strongylura* sp. | 41 | 41 | < 0.01 | 6 | 0.02 | 0.02 |
| **Rivulidae** |  |  |  |  |  |  |
| *Kryptolebias ocellatus* (Hensel, 1868) | 22 | 22 | < 0.01 | 3 | 0.13 | 0.13 |
| **Syngnathidae** |  |  |  |  |  |  |
| *Syngnathus folletti* (Herald, 1942) | 76 | 65-78 | < 0.01 | 3; 4 | 0.15 | 0.46 |
| **Table S1 (continuation):** |   |   |   |   |   |   |
| **Family** | **SL (mm)** | **Mean Density (fish/100 m2)** | **Site** | **TW (g)** |
|  **Species** | **Mean** | **Range** | **Mean**  | **Total** |
| *Microphis brachyurus* (Bleeker, 1854) | 109.4 | 83-169 | 0.04 | 1; 3; 4; 7; 8 | 0.73 | 13.97 |
| **Centropomidae** |  |  |  |  |  |  |
| *Centropomus undecimalis* (Bloch, 1792) | 91 | 26-204 | 0.36 | 1; 2; 3; 5; 6; 7; 8 | 14.71 | 2310.05 |
| *Centropomus parallelus* (Poey, 1860) | 58.1 | 19-185 | 0.36 | 1; 2; 3; 5; 6; 7; 8 | 4.79 | 753.25 |
| *Centropomus* spp. | 14.5 | 14-15 | < 0.01 | 8 | 0.03 | 0.06 |
| **Carangidae** |  |  |  |  |  |  |
| *Caranx hippos* (Linnaeus, 1766) | 39.3 | 26-96 | 0.05 | All | 3.41 | 75.11 |
| *Caranx latus* (Agassiz, 1831) | 65.2 | 27-129 | 0.03 | 1; 2; 3; 7; 8 | 11.57 | 196.68 |
| *Caranx* sp. | 6 | 6 | < 0.01 | 3 | 0.01 | 0.01 |
| *Oligoplites saliens* (Bloch, 1793) | 64.8 | 15-109 | 0.01 | 2; 5; 7 | 6.61 | 33.08 |
| *Oligoplites saurus* (Bloch & Schneider, 1801) | 17.8 | 10-27 | 0.02 | 1; 3; 4; 5; 6; 7; 8 | 0.15 | 1.82 |
| *Oligoplites* sp. | 9 | 9 | < 0.01 | 7 | 0.01 | 0.01 |
| *Trachinotus carolinus* (Linnaeus, 1766) | 33.1 | 11-64 | 0.09 | 1; 2 | 1.98 | 77.45 |
| *Trachinotus falcatus* (Linnaeus, 1758) | 34 | 12-38 | 0.21 | 1; 2; 3; 5; 6 | 3.58 | 337.08 |
| *Trachinotus goodei* (Jordan & Evermann, 1896) | 80 | 31-113 | 0.02 | 1; 2 | 19.87 | 198.77 |
| **Lutjanidae** |  |  |  |  |  |  |
| *Lutjanus jocu* (Bloch & Schneider, 1801) | 34 | 15-71 | 0.02 | 1; 3; 5; 7 | 2.84 | 25.59 |
| **Lobotidae** |  |  |  |  |  |  |
| *Lobotes surinamensis* (Bloch, 1790) | 54 | 54 | < 0.01 | 2 | 7.1 | 7.1 |
| **Gerreidae** |  |  |  |  |  |  |
| *Eucinostomus melanopterus* (Bleeker, 1863) | 30.8 | 11-81 | 0.17 | 1; 3; 5; 6; 7; 8 | 1.16 | 86.94 |
| *Eucinostomus argenteus* (Baird & Girard, 1854) | 46.1 | 14-88 | 0.44 | 1; 3; 4; 5; 6; 7; 8 | 3.96 | 765.38 |
| *Eucinostomus* spp. | 11.4 | 8-19 | 0.21 | All | 0.01 | 1.42 |
| *Eugerres brasilianus* (Cuvier, 1830) | 37 | 35-39 | < 0.01 | 7; 8 | 1.41 | 2.83 |
| **Table S1 (continuation):** |   |   |   |   |   |   |
| **Family** | **SL (mm)** | **Density (fish/100 m2)** | **Site** | **TW (g)** |
|  **Species** | **Mean** | **Range** | **Mean**  | **Total** |
| *Diapterus rhombeus* (Cuvier, 1829) | 42.3 | 31-64 | 0.19 | 1; 3; 5; 6; 7; 8 | 2.33 | 196.12 |
| *Diapterus auratus* (Ranzani, 1842) | 53.5 | 52-55 | < 0.01 | 6; 7 | 4.41 | 8.83 |
| **Haemulidae** |  |  |  |  |  |  |
| *Pomadasys ramosus* (Poey, 1860) | 46.4 | 27-89 | 0.03 | 7;8 | 3.14 | 50.29 |
| *Pomadasys crocro* (Cuvier,1830) | 67 | 62-77 | < 0.01 | 5 | 8.27 | 24.81 |
| *Conodon nobilis* (Linnaeus, 1758) | 53 | 53 | < 0.01 | 2 | 3.22 | 3.22 |
| **Polynemidae** |  |  |  |  |  |  |
| *Polydactylus oligodon* (Günthe, 1860) | 96 | 90-100 | < 0.01 | 1 | 18.8 | 56.4 |
| *Polydactylus virginicus* (Linnaeus, 1758) | 104 | 101-107 | < 0.01 | 1; 3 | 25.42 | 50.84 |
| **Sciaenidae** |  |  |  |  |  |  |
| *Menticirrhus littoralis* (Holbrook, 1860) | 108.4 | 30-182 | 0.03 | 1; 2; 3 | 34.45 | 585.8 |
| *Micropogonias furnieri* (Desmarest, 1823) | 85.4 | 76-109 | 0.01 | 1; 6; 7 | 11.9 | 59.5 |
| *Stellifer rastrifer* (Jordan, 1889) | 51 | 51 | < 0.01 | 1 | 2.62 | 2.62 |
| *Stellifer naso* (Jordan, 1889) | 120 | 120 | < 0.01 | 3 | 38.5 | 38.5 |
| **Uranoscopidae** |  |  |  |  |  |  |
| *Astroscopus y-graecum* (Cuvier, 1829) | 57.5 | 49-65 | < 0.01 | 2; 3; 4 | 6.75 | 27.02 |
| **Gobiidae** |  |  |  |  |  |  |
| *Ctenogobius boleosoma* (Jordan & Gilbert, 1882) | 20 | 8-40 | 1.65 | All | 0.12 | 87.95 |
| *Gobionellus oceanicus* (Pallas, 1770) | 85.9 | 21-145 | 0.34 | 5; 7; 8 | 8.14 | 1221.72 |
| *Evorthodus lyricus* (Girard, 1858) | 27 | 27 | < 0.01 | 7 | 0.38 | 0.38 |
| *Bathygobius soporator* (Valenciennes 1837) | 86 | 86 | < 0.01 | 5 | 14.2 | 14.2 |
| *Awaous tajasica* (Lichtenstein, 1822) | 48 | 48 | < 0.01 | 8 | 1.53 | 1.53 |
| **Ephippidae** |  |  |  |  |  |  |
| *Chaetodipterus faber* (Broussonet, 1782) | 25 | 25 | < 0.01 | 3 | 1.06 | 1.06 |
| **Table S1 (continuation):** |   |   |   |   |   |   |
| **Family** | **SL (mm)** | **Density (fish/100 m2)** | **Site** | **TW (g)** |
|  **Species** | **Mean** | **Range** | **Mean**  | **Total** |
| **Paralichthyidae** |  |  |  |  |  |  |
| *Citharichthys arenaceus* (Evermann & Marsh, 1900) | 77.1 | 40-113 | 0.03 | 1; 2; 3; 5; 7 | 8.86 | 132.95 |
| *Citharichthys macrops* (Dresel, 1885) | 46.9 | 13-111 | 0.24 | All | 2.6 | 278.33 |
| *Etropus crossotus* (Jordan & Gilbert, 1882) | 69.9 | 49-87 | 0.03 | 1; 2; 3 | 7.91 | 134.54 |
| *Paralichthys brasiliensis* (Ranzani, 1842) | 73 | 8-156 | < 0.01 | 1; 3; 7 | 25.29 | 101.17 |
| **Achiridae** |  |  |  |  |  |  |
| *Achirus declivis* (Chabanaud, 1940) | 19.1 | 12-28 | 0.01 | 8 | 0.33 | 2.67 |
| *Achirus lineatus* (Linnaeus, 1758) | 27.4 | 9-78 | 0.71 | 1; 3; 4; 5; 6; 7; 8 | 1.33 | 414.5 |
| *Achirus* sp. | 6 | 6 | < 0.01 | 4 | 0.01 | 0.01 |
| *Catathyridium garmani* (Jordan, 1889) | 78.5 | 42-115 | < 0.01 | 4; 8 | 37.66 | 75.32 |
| *Trinectes microphthalmus* (Chabanaud, 1928) | 22.7 | 16-42 | 0.06 | 3; 4; 5; 6; 7; 8 | 0.57 | 16.73 |
| *Trinectes paulistanus* (Ribeiro, 1915) | 30.9 | 8-59 | 1.19 | 3; 4; 5; 6; 7; 8 | 1.15 | 595.34 |
| **Cynoglossidae** |  |  |  |  |  |  |
| *Symphurus plagusia* (Bloch & Schneider, 1801) | 86 | 86 | < 0.01 | 4 | 5.2 | 5.2 |
| *Symphurus tessellatus* (Quoy & Gaimard, 1824) | 54 | 54 | < 0.01 | 3 | 1.19 | 1.19 |
| **Tetraodontidae** |  |  |  |  |  |  |
| *Sphoeroides spengleri* (Bloch, 1785) | 35 | 6-67 | 0.74 | 1; 3; 4; 5; 6; 7 | 2.73 | 879 |
| *Sphoeroides testudineus* (Linnaeus, 1758) | 39.2 | 8-164 | 2.05 | All | 6.95 | 6180.44 |



**Figure S1.** Size histograms (Standard length) of *Atherinella brasiliensis* and *Mugil curema* in different sampled seasons in the São Mateus River estuary.



**Figure S2.** Size histograms (Standard length) of *Centropomus undecimalis* and *Centropomus parallelus* in different sampled seasons in the São Mateus River estuary.



**Figure S3.** Size histograms (Standard length) of *Ctenogobius boleosoma* and *Sphoeroides testudineus* in different sampled seasons in the São Mateus River estuary.



**Figure S4.** Size histograms (Standard length) of *Rhinosardinia bahiensis* and *Trinectes paulistanus* in different sampled seasons in the São Mateus River estuary.