**Supplementary Material:**

**“Rapid human-induced divergence of life-history strategies in Bahamian livebearing fishes (family Poeciliidae)”**

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**Table S1.** Sample locations and sample sizes of sexually mature males and pregnant females used in analyses.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Species | Island | Fragmentation | Population | Latitude / Longitude | Males | Females |
| *Gambusia* sp. | Abaco | Fragmented | Double Blocked Down | 26°36'32.76"N / 77°15'27.72"W | 10 | 7 |
|  |  |  | Double Blocked Up | 26°36'32.28"N / 77°15'25.95"W | 10 | - |
|  |  |  | Indian River East | 26°17'31.19"N / 77° 6'44.14"W | 10 | 10 |
|  |  |  | Sandy Point | 26° 0'27.00"N / 77°24'12.60"W | 10 | 10 |
|  |  |  | Stinky Pond | 26°34'56.03"N / 77°10'8.72"W | 10 | - |
|  |  | Unfragmented | Blue Holes Creek | 26°19'1.89"N / 77° 2'17.16"W | 10 | 10 |
|  |  |  | Cherokee Creek | 26°16'57.72"N / 77° 2'33.00"W | 10 | - |
|  |  |  | Sand Bar | 26°16'47.94"N / 77° 3'11.17"W | 5 | 10 |
|  |  |  | Treasure Cay | 26°41'1.68"N / 77°18'24.48"W | 10 | - |
|  |  |  | Twisted Bridge | 26°36'3.15"N / 77°10'32.52"W | 10 | 10 |
|  | Grand Bahama | Fragmented | Crumbling Road | 26°40'38.64"N / 78° 4'3.36"W | 10 | - |
|  |  |  | Jellyshell West | 26°33'41.76"N / 78°50'35.88"W | 10 | 6 |
|  |  |  | Rainy Blocked Creek | 26°39'18.72"N / 78°16'54.12"W | 10 | - |
|  |  | Unfragmented | Blue Holes Creek | 26°39'32.40"N / 77°59'53.52"W | 10 | - |
|  |  |  | Empty House Creek | 26°38'43.44"N / 77°56'2.40"W | 10 | - |
|  |  |  | Expansive Creek | 26°36'7.92"N / 78°51'13.68"W | 10 | 10 |
| *Gambusia hubbsi* | Andros | Fragmented | Fresh Creek Back Up | 24°42'48.66"N / 78° 3'58.30"W | 10 | 10 |
|  |  |  | Independence Park | 24°28'2.64"N / 77°43'51.24"W | 10 | - |
|  |  |  | Red Bays Pond | 25° 7'59.52"N / 78°12'20.16"W | 9 | 7 |
|  |  |  | Thompson/Scott | 24°54'31.83"N / 77°56'8.20"W | 10 | - |
|  |  | Unfragmented | Cargill Creek | 24°28'54.48"N / 77°43'24.96"W | 10 | 10 |
|  |  |  | Davy Creek | 25° 8'52.44"N / 78° 3'55.44"W | 10 | - |
|  |  |  | Fresh Creek Twin Lakes | 24°43'7.32"N / 78° 0'5.40"W | 10 | 10 |
|  |  |  | Stafford Creek North | 24°54'11.41"N / 77°56'6.33"W | 10 | - |
|  | New Providence | Fragmented | Adelaide Up | 25° 0'7.56"N / 77°29'44.88"W | 10 | 10 |
|  |  |  | Fox Hill Creek Up | 25° 1'2.34"N / 77°18'14.24"W | 10 | 10 |
|  |  | Unfragmented | Defense Creek | 24°59'25.08"N / 77°28'35.76"W | 10 | 9 |
|  |  |  | Fox Hill Creek Down | 25° 0'59.65"N / 77°18'17.26"W | 10 | - |
| *Gambusia manni* | Eleuthera | Fragmented | John Miller | 24°40'41.38"N / 76°12'9.94"W | 10 | 10 |
|  |  |  | Princess Cay | 24°37'55.67"N / 76° 9'57.98"W | 10 | - |
|  |  |  | Tarpum Bay | 24°58'35.27"N / 76°10'28.84"W | 10 | 10 |
|  |  | Unfragmented | Airport | 24°53'25.95"N / 76° 9'57.88"W | 10 | 10 |
|  |  |  | Cape Eleuthera | 24°47'18.09"N / 76°19'20.18"W | 10 | 9 |
|  |  |  | Cruise Ship | 24°38'5.19"N / 76°10'19.54"W | 10 | 10 |
|  | Long Island | Fragmented | Airport Creek | 23° 9'51.87"N / 75° 6'22.09"W | 10 | - |
|  |  |  | Gordon's Beach | 22°52'14.16"N / 74°51'51.48"W | 10 | 9 |
|  |  |  | Stella Maris | 23°33'41.40"N / 75°16'15.60"W | 10 | - |
|  |  |  | Two Sisters | 23°37'18.84"N / 75°17'28.68"W | 10 | 6 |
|  |  | Unfragmented | Clarence Creek | 23° 4'12.36"N / 74°58'55.20"W | 10 | 10 |
|  |  |  | Cliff Creek | 23°10'42.60"N / 75° 7'32.88"W | 10 | - |
|  |  |  | Glinton’s Creek | 23°39'10.43"N / 75°18'34.15"W | 10 | - |
|  |  |  | Gordon's Creek | 22°53'0.60"N / 74°52'24.96"W | 10 | 10 |

**Table S2.** Summary of results for separate general linear models testing for consistent differences in the six environmental factors between fragmentation regimes of Bahamian tidal creeks. *P* values shown.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model Term | *Gambusia* Density | Piscivore Density | # Competitors | Salinity | pH | Dissolved Oxygen |
| Fragmentation Regime | **< 0.0001** | **< 0.0001** | **< 0.0001** | **0.0014** | 0.0928 | 0.8688 |
| Species Range | 0.6220 | 0.9061 | 0.5849 | **0.0008** | 0.1879 | 0.1052 |
| Island (Species Range) | **0.0287** | 0.4209 | 0.4000 | **0.0415** | 0.2687 | 0.9633 |
| Fragmentation Regime × Species Range | 0.7830 | 0.8557 | 0.4662 | 0.0612 | 0.1473 | 0.2494 |
| Fragmentation Regime × Island (Species Range) | 0.2894 | 0.6800 | 0.0811 | **0.0304** | 0.6922 | 0.1657 |

**Table S3.** Descriptive life histories (mean±SD) for 414 male mosquitofish (*Gambusia* spp.) from three different species and six islands (42 populations). Lean weight, fat content, and GSI (gonadosomatic index) are given as estimated marginal means corrected for differences in SL (evaluated at SL = 20.30 mm).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Species | Island | Fragmentation | Population | *N* | SL [mm] | Lean [mg] | Fat Content [%] | GSI [%] |
| *Gambusia* sp. | Abaco | Fragmented | Double Blocked Down | 10 | 19.52±1.15 | 31.73±3.16 | 4.33±2.53 | 1.89±3.16 |
|  |  |  | Double Blocked Up | 10 | 20.02±1.79 | 31.26±3.16 | 2.08±2.53 | 1.36±3.16 |
|  |  |  | Indian River East | 10 | 18.92±0.95 | 32.26±3.16 | 4.07±2.53 | 1.64±3.16 |
|  |  |  | Sandy Point | 10 | 20.40±1.02 | 34.07±3.16 | 0.23±2.53 | 1.58±3.16 |
|  |  |  | Stinky Pond | 10 | 19.31±1.29 | 30.91±3.16 | 2.18±2.53 | 1.78±3.16 |
|  |  | Unfragmented | Blue Holes Creek | 10 | 19.11±0.88 | 34.52±3.16 | 0.29±2.53 | 2.48±3.16 |
|  |  |  | Cherokee Creek | 10 | 17.83±1.50 | 39.30±3.16 | 3.27±2.85 | 2.11±3.16 |
|  |  |  | Sand Bar | 5 | 20.70±2.03 | 34.41±6.32 | 0.00±2.68 | 1.98±4.47 |
|  |  |  | Treasure Cay | 10 | 19.00±2.30 | 38.54±3.16 | 0.49±2.53 | 2.16±3.16 |
|  |  |  | Twisted Bridge | 10 | 18.90±0.90 | 36.09±3.16 | 0.95±2.53 | 2.47±3.16 |
|  | Grand Bahama | Fragmented | Crumbling Road | 10 | 23.09±1.72 | 33.46±3.16 | 9.18±2.85 | 1.70±3.16 |
|  |  |  | Jellyshell West | 10 | 21.42±1.70 | 33.39±3.16 | 0.00±2.53 | 2.03±3.16 |
|  |  |  | Rainy Blocked Creek | 10 | 20.52±1.86 | 34.78±3.16 | 1.32±2.53 | 1.71±3.16 |
|  |  | Unfragmented | Blue Holes Creek | 10 | 23.33±2.39 | 38.09±3.16 | 0.02±2.85 | 2.19±3.16 |
|  |  |  | Empty House Creek | 10 | 21.75±2.26 | 39.97±3.16 | 1.10±2.53 | 1.38±3.16 |
|  |  |  | Expansive Creek | 10 | 19.30±1.27 | 39.63±3.16 | 0.02±2.53 | 1.44±3.16 |
| *Gambusia hubbsi* | Andros | Fragmented | Fresh Creek Back Up | 10 | 20.38±1.48 | 30.80±3.16 | 0.62±2.53 | 1.41±3.16 |
|  |  |  | Independence Park | 10 | 19.01±1.92 | 41.17±3.16 | 4.85±2.53 | 2.51±3.16 |
|  |  |  | Red Bays Pond | 9 | 19.28±1.22 | 36.38±3.00 | 1.53±2.70 | 1.84±3.00 |
|  |  |  | Thompson/Scott | 10 | 21.54±3.90 | 38.81±3.16 | 2.80±2.53 | 1.49±3.16 |
|  |  | Unfragmented | Cargill Creek | 10 | 17.94±1.22 | 39.68±3.16 | 1.01±2.85 | 1.69±3.16 |
|  |  |  | Davy Creek | 10 | 20.16±2.18 | 33.84±3.16 | 1.93±2.53 | 1.29±3.16 |
|  |  |  | Fresh Creek Twin Lakes | 10 | 22.69±1.51 | 31.08±3.16 | 0.00±2.85 | 1.50±3.16 |
|  |  |  | Stafford Creek North | 10 | 19.31±1.65 | 38.11±3.16 | 1.29±2.53 | 1.65±3.16 |
|  | New Providence | Fragmented | Adelaide Up | 10 | 19.34±2.17 | 37.21±3.16 | 0.24±2.53 | 1.43±3.16 |
|  |  |  | Fox Hill Creek Up | 10 | 19.33±1.78 | 37.38±3.16 | 1.03±2.53 | 1.56±3.16 |
|  |  | Unfragmented | Defense Creek | 10 | 19.33±0.96 | 38.88±3.16 | 0.78±2.53 | 1.85±3.16 |
|  |  |  | Fox Hill Creek Down | 10 | 17.79±1.27 | 41.16±3.16 | 2.29±2.85 | 1.58±3.16 |
| *Gambusia manni* | Eleuthera | Fragmented | John Miller | 10 | 21.89±2.21 | 30.21±3.16 | 3.47±2.53 | 2.52±3.16 |
|  |  |  | Princess Cay | 10 | 20.77±2.28 | 31.55±3.16 | 2.68±2.53 | 1.50±3.16 |
|  |  |  | Tarpum Bay | 10 | 22.25±1.72 | 32.56±3.16 | 2.61±2.53 | 1.82±3.16 |
|  |  | Unfragmented | Airport | 10 | 22.98±1.09 | 37.58±3.16 | 0.00±2.85 | 2.09±3.16 |
|  |  |  | Cape Eleuthera | 10 | 19.57±1.32 | 38.10±3.16 | 2.57±2.53 | 2.53±3.16 |
|  |  |  | Cruise Ship | 10 | 19.77±1.58 | 34.99±3.16 | 2.78±2.53 | 2.49±3.16 |
|  | Long Island | Fragmented | Airport Creek | 10 | 21.61±1.26 | 39.05±3.16 | 12.93±2.53 | 1.61±3.16 |
|  |  |  | Gordon's Beach | 10 | 20.38±2.59 | 44.30±3.16 | 3.81±2.53 | 2.25±3.16 |
|  |  |  | Stella Maris | 10 | 20.66±3.06 | 44.67±3.16 | 3.46±2.53 | 1.26±3.16 |
|  |  |  | Two Sisters | 10 | 20.49±1.48 | 38.08±3.16 | 2.95±2.53 | 1.61±3.16 |
|  |  | Unfragmented | Clarence Creek | 10 | 19.53±2.08 | 42.47±3.16 | 2.52±2.53 | 1.54±3.16 |
|  |  |  | Cliff Creek | 10 | 18.34±2.75 | 42.96±3.16 | 2.54±2.53 | 1.74±3.16 |
|  |  |  | Glinton’s Creek | 10 | 22.04±2.62 | 39.83±3.16 | 0.93±2.53 | 1.41±3.16 |
|  |  |  | Gordon's Creek | 10 | 23.35±2.21 | 39.45±3.16 | 2.15±2.85 | 1.54±3.16 |

**Table S4.** Descriptive life histories (mean±SD) for 223 pregnant female mosquitofish (*Gambusia* spp.) from three different species and six islands (24 populations). Lean weight and fat content are given as estimated marginal means corrected for differences in SL (evaluated at SL = 24.74 mm), while RA (reproductive allocation) is given as estimated marginal means corrected for differences in embryonic stage of development (evaluated at stage = 25.94).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Species | Island | Fragmentation | Population | *N* | SL [mm] | Lean [mg] | Fat Content [%] | RA [%] |
| *Gambusia* sp. | Abaco | Fragmented | Double Blocked Down | 7 | 19.64±0.85 | 86.00±13.23 | 1.26±1.85 | 14.25±3.70 |
|  |  |  | Double Blocked Up | - | - | - | - | - |
|  |  |  | Indian River East | 10 | 26.21±1.53 | 63.43±12.65 | 8.30±1.58 | 13.89±3.48 |
|  |  |  | Sandy Point | 10 | 26.43±3.45 | 75.01±12.65 | 4.16±1.58 | 12.48±3.48 |
|  |  |  | Stinky Pond | - | - | - | - | - |
|  |  | Unfragmented | Blue Holes Creek | 10 | 23.45±1.26 | 68.64±12.65 | 0.00±1.58 | 17.15±3.48 |
|  |  |  | Cherokee Creek | - | - | - | - | - |
|  |  |  | Sand Bar | 10 | 26.52±1.44 | 69.07±12.65 | 0.79±1.58 | 11.09±3.48 |
|  |  |  | Treasure Cay | - | - | - | - | - |
|  |  |  | Twisted Bridge | 10 | 21.25±1.07 | 80.11±12.65 | 1.13±1.90 | 13.34±3.79 |
|  | Grand Bahama | Fragmented | Crumbling Road | - | - | - | - | - |
|  |  |  | Jellyshell West | 6 | 28.65±4.86 | 69.44±12.25 | 0.90±1.71 | 13.60±3.67 |
|  |  |  | Rainy Blocked Creek | - | - | - | - | - |
|  |  | Unfragmented | Blue Holes Creek | - | - | - | - | - |
|  |  |  | Empty House Creek | - | - | - | - | - |
|  |  |  | Expansive Creek | 10 | 24.50±1.84 | 78.97±12.65 | 0.86±1.58 | 9.67±3.48 |
| *Gambusia hubbsi* | Andros | Fragmented | Fresh Creek Back Up | 10 | 27.95±5.29 | 69.05±12.65 | 1.07±1.90 | 9.72±3.48 |
|  |  |  | Independence Park | - | - | - | - | - |
|  |  |  | Red Bays Pond | 7 | 23.91±2.56 | 71.65±10.58 | 0.21±1.59 | 12.44±3.70 |
|  |  |  | Thompson/Scott | - | - | - | - | - |
|  |  | Unfragmented | Cargill Creek | 10 | 21.16±1.90 | 87.64±12.65 | 0.17±1.90 | 10.26±3.79 |
|  |  |  | Davy Creek | - | - | - | - | - |
|  |  |  | Fresh Creek Twin Lakes | 10 | 22.66±1.32 | 70.41±12.65 | 0.40±1.58 | 10.18±3.48 |
|  |  |  | Stafford Creek North | - | - | - | - | - |
|  | New Providence | Fragmented | Adelaide Up | 10 | 23.34±2.55 | 78.20±12.65 | 2.01±1.58 | 12.21±3.79 |
|  |  |  | Fox Hill Creek Up | 10 | 32.44±3.82 | 109.07±15.81 | 4.69±2.21 | 10.21±3.48 |
|  |  | Unfragmented | Defense Creek | 9 | 25.49±2.67 | 82.42±12.00 | 1.24±1.80 | 10.15±3.60 |
|  |  |  | Fox Hill Creek Down | - | - | - | - | - |
| *Gambusia manni* | Eleuthera | Fragmented | John Miller | 10 | 24.37±2.17 | 69.97±12.65 | 1.17±1.58 | 11.74±3.79 |
|  |  |  | Princess Cay | - | - | - | - | - |
|  |  |  | Tarpum Bay | 10 | 24.76±2.05 | 68.19±12.65 | 2.90±1.58 | 11.50±3.48 |
|  |  | Unfragmented | Airport | 10 | 25.46±2.02 | 76.85±12.65 | 1.51±1.58 | 13.58±3.48 |
|  |  |  | Cape Eleuthera | 9 | 20.34±1.51 | 92.29±12.00 | 0.92±1.80 | 16.27±3.60 |
|  |  |  | Cruise Ship | 10 | 22.07±1.40 | 79.39±12.65 | 1.91±1.90 | 16.50±3.48 |
|  | Long Island | Fragmented | Airport Creek | - | - | - | - | - |
|  |  |  | Gordon's Beach | 9 | 22.48±2.84 | 81.90±12.00 | 2.26±1.80 | 12.18±3.60 |
|  |  |  | Stella Maris | - | - | - | - | - |
|  |  |  | Two Sisters | 6 | 30.90±3.97 | 88.09±12.25 | 3.27±1.96 | 12.58±3.67 |
|  |  | Unfragmented | Clarence Creek | 10 | 23.01±0.81 | 88.39±12.65 | 0.00±1.58 | 11.60±3.79 |
|  |  |  | Cliff Creek | - | - | - | - | - |
|  |  |  | Glinton’s Creek | - | - | - | - | - |
|  |  |  | Gordon's Creek | 10 | 28.46±1.63 | 73.99±12.65 | 2.09±1.90 | 7.69±3.79 |

**Table S5.** Descriptive offspring-related life histories (mean±SD) for 223 pregnant female mosquitofish (*Gambusia* spp.) from three different species and six islands (24 populations). Fecundity is given as estimated marginal means corrected for differences in SL (evaluated at SL = 24.74 mm), while embryo lean weight is given as estimated marginal means corrected for differences in embryonic stage of development (evaluated at stage = 25.94).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Species | Island | Fragmentation | Population | *N* | Fecundity | Embryo Lean [mg] | Embryo Fat Content [%] |
| *Gambusia* sp. | Abaco | Fragmented | Double Blocked Down | 7 | 6.88±1.39 | 1.34±0.38 | 2.67±1.42 |
|  |  |  | Double Blocked Up | - | - | - | - |
|  |  |  | Indian River East | 10 | 6.04±2.10 | 1.80±0.37 | 10.87±6.55 |
|  |  |  | Sandy Point | 10 | 4.11±2.10 | 1.90±0.38 | 10.60±4.90 |
|  |  |  | Stinky Pond | - | - | - | - |
|  |  | Unfragmented | Blue Holes Creek | 10 | 6.88±2.10 | 1.76±0.37 | 0.05±0.16 |
|  |  |  | Cherokee Creek | - | - | - | - |
|  |  |  | Sand Bar | 10 | 6.45±2.11 | 1.57±0.38 | 0.85±0.89 |
|  |  |  | Treasure Cay | - | - | - | - |
|  |  |  | Twisted Bridge | 10 | 6.42±2.19 | 1.67±0.38 | 0.47±0.59 |
|  | Grand Bahama | Fragmented | Crumbling Road | - | - | - | - |
|  |  |  | Jellyshell West | 6 | 10.04±2.15 | 1.64±0.38 | 0.80±1.06 |
|  |  |  | Rainy Blocked Creek | - | - | - | - |
|  |  | Unfragmented | Blue Holes Creek | - | - | - | - |
|  |  |  | Empty House Creek | - | - | - | - |
|  |  |  | Expansive Creek | 10 | 4.62±2.07 | 1.63±0.37 | 2.08±2.19 |
| *Gambusia hubbsi* | Andros | Fragmented | Fresh Creek Back Up | 10 | 3.57±2.15 | 2.01±0.38 | 1.26±1.73 |
|  |  |  | Independence Park | - | - | - | - |
|  |  |  | Red Bays Pond | 7 | 6.14±2.08 | 1.59±0.38 | 0.28±0.74 |
|  |  |  | Thompson/Scott | - | - | - | - |
|  |  | Unfragmented | Cargill Creek | 10 | 5.73±2.20 | 1.33±0.39 | 7.45±12.05 |
|  |  |  | Davy Creek | - | - | - | - |
|  |  |  | Fresh Creek Twin Lakes | 10 | 4.92±2.11 | 1.29±0.37 | 4.97±5.75 |
|  |  |  | Stafford Creek North | - | - | - | - |
|  | New Providence | Fragmented | Adelaide Up | 10 | 5.12±2.09 | 1.78±0.39 | 2.96±1.55 |
|  |  |  | Fox Hill Creek Up | 10 | 5.07±2.47 | 2.04±0.37 | 7.37±6.35 |
|  |  | Unfragmented | Defense Creek | 9 | 4.10±2.08 | 2.00±0.38 | 0.95±1.27 |
|  |  |  | Fox Hill Creek Down | - | - | - | - |
| *Gambusia manni* | Eleuthera | Fragmented | John Miller | 10 | 4.01±2.08 | 2.02±0.39 | 1.37±1.06 |
|  |  |  | Princess Cay | - | - | - | - |
|  |  |  | Tarpum Bay | 10 | 4.76±2.08 | 1.82±0.38 | 3.65±1.81 |
|  |  | Unfragmented | Airport | 10 | 5.91±2.08 | 2.06±0.38 | 2.09±1.69 |
|  |  |  | Cape Eleuthera | 9 | 8.93±2.25 | 1.44±0.38 | 3.13±1.57 |
|  |  |  | Cruise Ship | 10 | 7.94±2.14 | 1.49±0.38 | 3.70±3.58 |
|  | Long Island | Fragmented | Airport Creek | - | - | - | - |
|  |  |  | Gordon's Beach | 9 | 5.54±2.12 | 1.89±0.38 | 3.01±1.57 |
|  |  |  | Stella Maris | - | - | - | - |
|  |  |  | Two Sisters | 6 | 6.28±2.25 | 2.16±0.38 | 3.17±0.37 |
|  |  | Unfragmented | Clarence Creek | 10 | 5.97±2.10 | 1.85±0.38 | 3.78±1.46 |
|  |  |  | Cliff Creek | - | - | - | - |
|  |  |  | Glinton’s Creek | - | - | - | - |
|  |  |  | Gordon's Creek | 10 | 1.95±2.20 | 1.98±0.39 | 2.82±0.85 |