Supplementary Materials

Supplemental Table 1. Classification of gonad maturity based on Mann (1979), Steele and Mulcahy (1999), and Normand *et al.* (2008).

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| Stage | Description |
| 0 | Resting or Inactive stage. Follicles are non-existent or elongated and consist of undifferentiated germinal epithelium. |
| 1 | Early active stage. Follicles are small and isolated with numerous spermatogonia or oogonia arising from the stem cells along the follicle. |
| 2 | Late active stage. Follicles are enlarged. In males, spermatozoa are oriented with tails to the follicle lumen forming characteristics swirling pattern. In females, free and attached oocytes are present with a distinct nucleus and nucleolus. |
| 3 | Mature or Ripe. Follicles are completely filled with free mature gametes. |
| 4 | Partially spawned. Follicles are partially empty, the remaining gametes are not densely packed. Haemocyte infiltration and degenerative oocytes are sometimes present (early stage gonad resorption). |
| 5 | Spent or Post-Spawning. Follicles are collapsed, with few or no gametes remaining. Haemocyte infiltration and or degenerative oocytes are often present (gonad resorption).  |

**Supplemental Table 2.** Mean (±SD) temperature, dissolved oxygen (DO), salinity, and pH across project farm sites (deep-water) at sampling events between May and August 2021.

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| --- | --- | --- | --- |
| Farm Month | Temperature (°C) | DO (mg L-1) | Salinity (ppt) |
| DB |  |  |  |
| May | 12.4 ± 1.9 | 11.0 ± 2.4 | 28.1 ± 1.7 |
| June | 19.2 ± 4.6 | 11.0 ± 3.0 | 24.5 ± 2.5 |
| July | 20.6 ± 0.9 | 8.5 ± 0.4 | 24.7 ± 0.5 |
| August | 22.0 ± 0.1 | 8.6 ± 0.2 | 25.4 ± 0.0 |
| DN |  |  |  |
| May | 13.0 ± 0.0 | 14.5 ± 0.9 | 27.7 ± 0.2 |
| June | 17.0 ± 3.5 | 15.5 ± 7.6 | 25.9 ± 2.7 |
| July | 20.5 ± 0.8 | 8.8 ± 0.5 | 24.5 ± 0.3 |
| August | 22.7 ± 0.2 | 7.8 ± 0.2 | 25.2 ± 0.1 |
| FB |  |  |  |
| May | 14.8 ± 0.2 | 11.4 ± 1.6 | 23.8 ± 4.8 |
| June | 18.0 ± 3.4 | 10.3 ± 0.9 | 24.3 ± 2.6 |
| July | 20.6 ± 0.6 | 7.8 ± 0.5 | 24.8 ± 0.7 |
| August | 22.4 ± 0.0 | 8.4 ± 0.3 | 25.2 ± 0.0 |