**Supplementary Materials**

Table S1. Annually averaged selected sediment and bottom water variables for each zone, using only years where *T. bacillum* density data were available for that particular area. Station codes are those monitoring sites in the different water zones from Environmental Protection Department (EPD), Hong Kong Special Administrative Region Government online database (<https://cd.epic.epd.gov.hk/EPICRIVER/marine/?lang=en>)

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| Deep Bay |   |   |   |   |   |   |   |   |   |   |   |   |   |
|  | Sediment variables (stations DS1 to DS4) |  | Bottom water variables (stations DM1 to DM5) |
| Year | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total phosphorus (mg/L) |   | Dissolved oxygen (mg/L) | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total Kjeldahl nitrogen (mg/L) | Temperature (°C) | Suspended solids (mg/L) | Salinity (psu) | Orthophosphate phosphorus (mg/L) | Turbidity (NTU) | Total phosphorus (mg/L) |
| 2006 | 0.63 | 353.75 | 198.75 |  | 5.62 | 2.41 | 1.04 | 0.50 | 24.39 | 15.16 | 26.20 | 0.04 | 19.96 | 0.07 |
| 2009 | 0.70 | 347.50 | 233.75 |  | 6.05 | 2.33 | 0.99 | 0.40 | 24.48 | 19.24 | 26.36 | 0.04 | 22.25 | 0.07 |
| 2012 | 0.63 | 423.75 | 230.00 |  | 6.29 | 1.83 | 1.42 | 0.44 | 24.26 | 13.11 | 23.84 | 0.04 | 10.35 | 0.07 |
| 2015 | 0.64 | 448.75 | 245.00 |   | 5.75 | 2.24 | 1.34 | 0.45 | 24.74 | 8.80 | 23.81 | 0.04 | 5.13 | 0.10 |

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| Northwestern Waters |   |   |   |   |   |   |   |   |   |   |   |   |   |
|  | Sediment variables (stations NS2 to NS6) |  | Bottom water variables (stations NM1 to NM8, and NT1) |
| Year | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total phosphorus (mg/L) |   | Dissolved oxygen (mg/L) | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total Kjeldahl nitrogen (mg/L) | Temperature (°C) | Suspended solids (mg/L) | Salinity (psu) | Orthophosphate phosphorus (mg/L) | Turbidity (NTU) | Total phosphorus (mg/L) |
| 1990 | 0.97 | 453.33 | 1053.33 |  | 6.44 | 2.00 | 0.75 | 0.51 | 23.32 | 7.52 | 29.48 | 0.02 | 7.30 | 0.09 |
| 1992 | 0.64 | 411.50 | 230.88 |  | 6.73 | 1.03 | 0.77 | 0.48 | 21.20 | 17.78 | 29.54 | 0.04 | 15.22 | 0.14 |
| 1995 | 0.53 | 557.50 | 166.25 |  | 6.28 | 2.19 | 0.54 | 0.33 | 22.61 | 26.46 | 29.10 | 0.03 | 22.87 | 0.07 |
| 1998 | 0.61 | 246.25 | 137.00 |  | 5.54 | 2.08 | 1.15 | 0.82 | 23.54 | 12.24 | 28.99 | 0.03 | 11.64 | 0.07 |
| 1999 | 0.54 | 320.63 | 181.25 |  | 6.02 | 3.36 | 0.55 | 0.26 | 23.78 | 14.16 | 29.69 | 0.02 | 13.84 | 0.05 |
| 2000 | 0.48 | 340.63 | 173.31 |  | 5.91 | 3.31 | 0.44 | 0.23 | 23.22 | 15.67 | 30.29 | 0.02 | 17.73 | 0.05 |
| 2001 | 0.48 | 303.13 | 176.88 |  | 5.62 | 1.67 | 0.52 | 0.25 | 23.16 | 19.79 | 29.42 | 0.02 | 24.29 | 0.06 |
| 2002 | 0.54 | 272.50 | 188.75 |  | 6.08 | 2.26 | 0.44 | 0.22 | 23.16 | 15.85 | 30.24 | 0.02 | 20.81 | 0.04 |
| 2006 | 0.81 | 317.50 | 181.25 |  | 6.27 | 3.15 | 0.60 | 0.30 | 23.54 | 16.72 | 29.97 | 0.02 | 27.84 | 0.05 |
| 2009 | 0.65 | 348.75 | 186.25 |  | 5.52 | 2.90 | 0.47 | 0.23 | 23.81 | 19.77 | 30.37 | 0.02 | 17.02 | 0.04 |
| 2012 | 0.67 | 366.00 | 182.00 |  | 6.09 | 2.34 | 0.70 | 0.28 | 23.82 | 8.39 | 28.77 | 0.02 | 7.05 | 0.04 |
| 2015 | 0.78 | 438.00 | 215.00 |   | 5.52 | 1.73 | 0.76 | 0.34 | 23.73 | 11.85 | 29.48 | 0.02 | 8.32 | 0.05 |

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| Inner Mirs Bay |   |   |   |   |   |   |   |   |   |   |   |   |   |
|  | Sediment variables (stations MS1 to MS7, MS16, and MS17) |  | Bottom water variables (stations MM1 to MM7, MM16, and MM17) |
| Year | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total phosphorus (mg/L) |   | Dissolved oxygen (mg/L) | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total Kjeldahl nitrogen (mg/L) | Temperature (°C) | Suspended solids (mg/L) | Salinity (psu) | Orthophosphate phosphorus (mg/L) | Turbidity (NTU) | Total phosphorus (mg/L) |
| 1998 | 0.80 | 523.89 | 180.56 |  | 5.66 | 2.70 | 0.87 | 0.86 | 22.86 | 1.97 | 32.72 | 0.02 | 5.11 | 0.04 |
| 1999 | 0.69 | 573.06 | 197.50 |  | 5.77 | 3.27 | 0.30 | 0.26 | 23.01 | 4.02 | 32.46 | 0.02 | 6.95 | 0.04 |
| 2000 | 0.68 | 603.33 | 199.44 |  | 6.53 | 2.69 | 0.20 | 0.16 | 21.90 | 4.14 | 32.30 | 0.02 | 8.70 | 0.03 |
| 2001 | 0.71 | 611.39 | 210.83 |  | 5.43 | 2.82 | 0.20 | 0.15 | 22.56 | 3.86 | 32.37 | 0.01 | 8.34 | 0.03 |
| 2002 | 0.77 | 616.67 | 232.78 |  | 6.39 | 2.34 | 0.17 | 0.14 | 23.00 | 4.13 | 32.99 | 0.01 | 9.06 | 0.03 |
| 2006 | 0.73 | 591.67 | 194.44 |  | 7.03 | 3.30 | 0.20 | 0.16 | 22.27 | 4.30 | 32.77 | 0.01 | 11.81 | 0.03 |
| 2009 | 0.67 | 552.22 | 197.22 |  | 5.70 | 2.44 | 0.17 | 0.14 | 22.92 | 3.45 | 32.97 | 0.01 | 5.04 | 0.03 |
| 2012 | 0.76 | 591.11 | 196.67 |  | 6.18 | 2.68 | 0.26 | 0.19 | 22.55 | 3.40 | 32.17 | 0.01 | 3.02 | 0.03 |
| 2015 | 0.79 | 643.33 | 204.44 |   | 5.34 | 2.38 | 0.33 | 0.27 | 22.79 | 4.54 | 33.03 | 0.01 | 3.38 | 0.05 |

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| Port Shelter and Outer Mirs Bay |   |   |   |   |   |   |   |   |
|  | Sediment variables (stations PS2 to PS6, MS8, MS13 to MS15) |  | Bottom water variables (stations PM1 to PM9, PM11, PT2 to PT4, MM8, MM13 to MM15, MM19) |
| Year | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total phosphorus (mg/L) |   | Dissolved oxygen (mg/L) | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total Kjeldahl nitrogen (mg/L) | Temperature (°C) | Suspended solids (mg/L) | Salinity (psu) | Orthophosphate phosphorus (mg/L) | Turbidity (NTU) | Total phosphorus (mg/L) |
| 1995 | 0.70 | 587.14 | 227.86 |   | 6.37 | 1.80 | 0.18 | 0.17 | 22.17 | 4.47 | 33.22 | 0.02 | 3.60 | 0.07 |
| 1998 | 0.92 | 420.00 | 176.43 |  | 5.91 | 3.41 | 0.84 | 0.82 | 22.41 | 2.51 | 32.84 | 0.02 | 5.31 | 0.04 |
| 2000 | 0.59 | 488.57 | 210.36 |  | 6.67 | 2.25 | 0.17 | 0.12 | 22.00 | 3.78 | 32.68 | 0.01 | 9.49 | 0.03 |
| 2001 | 0.70 | 481.72 | 212.07 |  | 5.87 | 2.16 | 0.15 | 0.11 | 22.43 | 4.65 | 32.59 | 0.01 | 9.31 | 0.03 |
| 2002 | 0.79 | 425.00 | 214.29 |  | 6.22 | 1.48 | 0.13 | 0.11 | 22.82 | 4.83 | 33.34 | 0.01 | 10.27 | 0.03 |
| 2006 | 0.89 | 463.57 | 206.93 |  | 6.97 | 2.61 | 0.17 | 0.13 | 22.43 | 4.47 | 33.21 | 0.01 | 12.67 | 0.02 |
| 2009 | 0.94 | 491.43 | 216.43 |  | 5.80 | 1.76 | 0.15 | 0.12 | 23.45 | 4.61 | 33.24 | 0.01 | 5.65 | 0.02 |
| 2012 | 0.88 | 554.44 | 200.06 |  | 6.53 | 1.72 | 0.24 | 0.16 | 22.40 | 2.98 | 32.45 | 0.01 | 2.63 | 0.03 |
| 2015 | 1.21 | 619.44 | 219.94 |   | 5.95 | 1.94 | 0.28 | 0.24 | 22.78 | 4.42 | 33.27 | 0.01 | 3.83 | 0.05 |

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| Southern Waters |   |   |   |   |   |   |   |   |
|  | Sediment variables (stations SS1 to SS8) |  | Bottom water variables (stations SM1 to SM7, SM9, SM10 to SM13, SM17 to SM20, ST1, and ST3) |
| Year | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total phosphorus (mg/L) |   | Dissolved oxygen (mg/L) | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total Kjeldahl nitrogen (mg/L) | Temperature (°C) | Suspended solids (mg/L) | Salinity (psu) | Orthophosphate phosphorus (mg/L) | Turbidity (NTU) | Total phosphorus (mg/L) |
| 1998 | 0.66 | 366.67 | 183.33 |  | 5.63 | 3.08 | 0.87 | 0.78 | 23.00 | 6.02 | 32.34 | 0.02 | 8.29 | 0.04 |
| 1999 | 0.54 | 387.50 | 195.83 |  | 5.95 | 2.40 | 0.33 | 0.22 | 23.54 | 11.37 | 32.19 | 0.02 | 12.37 | 0.04 |
| 2000 | 0.61 | 430.42 | 209.58 |  | 6.39 | 2.59 | 0.29 | 0.17 | 22.50 | 10.05 | 31.87 | 0.02 | 12.73 | 0.04 |
| 2001 | 0.61 | 410.42 | 210.42 |  | 5.81 | 2.97 | 0.29 | 0.16 | 23.19 | 11.81 | 31.60 | 0.02 | 15.20 | 0.04 |
| 2002 | 0.70 | 362.50 | 204.17 |  | 6.43 | 2.89 | 0.30 | 0.17 | 23.40 | 10.45 | 32.04 | 0.01 | 13.82 | 0.04 |
| 2006 | 0.74 | 404.17 | 196.67 |  | 6.68 | 3.11 | 0.28 | 0.18 | 23.57 | 8.48 | 32.42 | 0.01 | 16.00 | 0.04 |
| 2009 | 0.68 | 418.33 | 216.67 |  | 5.79 | 3.45 | 0.28 | 0.18 | 23.82 | 8.81 | 32.06 | 0.01 | 8.26 | 0.03 |
| 2012 | 0.66 | 453.13 | 216.88 |  | 6.91 | 3.75 | 0.41 | 0.23 | 23.07 | 6.93 | 31.22 | 0.01 | 5.49 | 0.04 |
| 2015 | 0.68 | 495.00 | 218.13 |   | 5.98 | 4.32 | 0.48 | 0.33 | 23.23 | 6.34 | 31.91 | 0.01 | 5.14 | 0.05 |

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| Tolo Channel |   |   |   |   |   |   |   |   |
|  | Sediment variables (stations TS2 to TS5, and TS7) |  | Bottom water variables (stations TM2 to TM8, and TT1) |
| Year | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total phosphorus (mg/L) |   | Dissolved oxygen (mg/L) | Chlorophyll-a (μg/L) | Total nitrogen (mg/L) | Total Kjeldahl nitrogen (mg/L) | Temperature (°C) | Suspended solids (mg/L) | Salinity (psu) | Orthophosphate phosphorus (mg/L) | Turbidity (NTU) | Total phosphorus (mg/L) |
| 1998 | 0.87 | 551.67 | 176.67 |  | 5.61 | 6.06 | 1.01 | 0.97 | 23.39 | 3.42 | 31.69 | 0.02 | 4.27 | 0.05 |
| 2000 | 0.75 | 686.88 | 194.38 |  | 6.34 | 6.04 | 0.29 | 0.26 | 22.57 | 4.32 | 31.40 | 0.02 | 6.98 | 0.04 |
| 2001 | 0.79 | 671.25 | 194.38 |  | 5.51 | 5.68 | 0.27 | 0.22 | 23.66 | 3.53 | 31.46 | 0.01 | 7.91 | 0.04 |
| 2002 | 0.79 | 598.75 | 183.75 |  | 6.11 | 3.17 | 0.23 | 0.19 | 23.83 | 4.15 | 32.26 | 0.01 | 7.96 | 0.03 |
| 2012 | 0.79 | 609.00 | 174.00 |  | 5.89 | 4.00 | 0.30 | 0.25 | 23.07 | 2.49 | 31.48 | 0.01 | 1.57 | 0.03 |
| 2015 | 0.88 | 667.00 | 183.00 |   | 5.91 | 4.78 | 0.40 | 0.37 | 23.93 | 4.69 | 32.22 | 0.01 | 3.14 | 0.05 |

 Table S2. Carbon and oxygen isotope values for *T. bacillum* shells (A, B, C, D)

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| *T. bacillum,* shell A |   |   |  |
| Spiral length (cm) | Sample name | Sample number from apex | δ¹⁸O(‰ VPDB) | δ¹³C(‰ VPDB) |
|
| 31.8 | TB 1A | 17 | -1.57 | 0.10 |
| 30.8 | TBA2 | 16 | -2.46 | 0.00 |
| 29.7 | TBA3 | 15 | -1.96 | 0.15 |
| 27.5 | TBA4 | 14 | -0.75 | 0.83 |
| 25.6 | TBA5 | 13 | -1.76 | 0.96 |
| 23.3 | TBA6 | 12 | -2.62 | -0.15 |
| 21.0 | TBA7 | 11 | -2.58 | 0.03 |
| 19.1 | TBA8 | 10 | -2.32 | 0.15 |
| 17.4 | TBA9 | 9 | -1.94 | 0.75 |
| 15.5 | TBA10 | 8 | -1.57 | 1.19 |
| 14.2 | TBA11 | 7 | -1.63 | 1.09 |
| 12.7 | TBA12 | 6 | -1.67 | 1.02 |
| 11.3 | TBA13 | 5 | -0.94 | 1.20 |
| 9.7 | TBA14 | 4 | -0.53 | 1.13 |
| 8.4 | TBA15 | 3 | -0.67 | 1.08 |
| 6.3 | TBA16 | 2 | -0.51 | 0.87 |
| 4.2 | TBA17 | 1 | -0.69 | 0.70 |

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| *T. bacillum*, shell B |   |   |   |
| Spiral length (cm) | Sample name | Sample number from apex | δ¹⁸O(‰ VPDB) | δ¹³C(‰ VPDB) |
|
| 17.0 | TBB2 | 11 | -2.83 | 0.06 |
| 15.5 | TBB3 | 10 | -2.75 | 0.18 |
| 13.9 | TBB4 | 9 | -2.65 | 0.04 |
| 12.5 | TBB5 | 8 | -2.62 | 0.40 |
| 11.4 | TBB6 | 7 | -2.80 | 0.31 |
| 10.1 | TBB7 | 6 | -2.35 | 0.51 |
| 9.1 | TBB8 | 5 | -2.00 | 0.58 |
| 7.9 | TBB9 | 4 | -0.99 | 0.74 |
| 5.8 | TBB10 | 3 | -0.48 | 0.86 |
| 4.0 | TBB11 | 2 | -1.13 | 0.75 |
| 2.7 | TBB12 | 1 | -2.13 | 0.41 |

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| *T. bacillum*, shell C |   |   |   |
| Spiral length (cm) | Sample name | Sample number from apex | δ¹⁸O(‰ VPDB) | δ¹³C(‰ VPDB) |
|
| 34.0 | TBC2 | 17 | -3.95 | -1.53 |
| 30.6 | TBC3 | 16 | -0.93 | 0.25 |
| 28.1 | TBC4 | 15 | -2.08 | 0.30 |
| 25.9 | TBC5 | 14 | -3.07 | -0.42 |
| 23.7 | TBC6 | 13 | -3.48 | -0.71 |
| 21.7 | TBC7 | 12 | -3.97 | -1.56 |
| 19.5 | TBC8 | 11 | -4.41 | -2.27 |
| 17.8 | TBC9 | 10 | -3.95 | -2.13 |
| 15.9 | TBC10 | 9 | -3.57 | -1.43 |
| 13.8 | TBC11 | 8 | -2.16 | -0.25 |
| 12.1 | TB C12 | 7 | -1.47 | -0.11 |
| 10.5 | TB C13 | 6 | -1.47 | -0.11 |
| 9.0 | TB C14 | 5 | -1.38 | 0.05 |
| 7.7 | TB C15 | 4 | -1.41 | 0.18 |
| 6.5 | TB C16 | 3 | -0.50 | 0.58 |
| 4.8 | TB C17 | 2 | -1.14 | 0.30 |
| 3.2 | TB C18 | 1 | -2.07 | -0.12 |

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| *T. bacillum*, shell D  |   |   |   |
| Spiral length (cm) | Sample name | Sample number from apex | δ¹⁸O(‰ VPDB) | δ¹³C(‰ VPDB) |
|
| 19.4 | TB D2 | 11 | -3.95 | -1.29 |
| 18.0 | TB D3 | 10 | -3.98 | -1.35 |
| 16.1 | TB D4 | 9 | -3.87 | -1.17 |
| 14.6 | TB D5 | 8 | -3.69 | -1.05 |
| 12.9 | TB D6 | 7 | -4.20 | -1.86 |
| 11.8 |  TB D7 | 6 | -3.90 | -0.99 |
| 10.2 | TB D8 | 5 | -3.48 | -0.74 |
| 7.8 | TB D9 | 4 | -3.08 | -0.56 |
| 5.5 | TB D10 | 3 | -2.87 | -0.60 |
| 3.5 | TB D11 | 2 | -1.50 | -0.08 |
| 1.7 | TB D12 | 1 | -0.85 | 0.45 |