The following supplement accompanies the article

**Effects of thermal stress on key processes driving coral-population dynamics**

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**Supplement 1**

Table S1 The initial abundances for each size class used in the differential equations coral model

<table>
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<th>Site</th>
<th>Depth (m)</th>
<th>Size class</th>
<th>Year</th>
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<th>1997</th>
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1

Kushibaru 6 7 0 0 0 0
All the Lefkovitch matrices should be read first by row and then by column. Therefore, the upper triangle represents growth transitions and the lower triangle represents partial mortality transitions.

Table S2 Lefkovitch matrices calculated for Kushibaru depths 1, 3, and 6 m for the 1996–97 transition. The resulting mortality rate is also shown below each matrix.

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<tr>
<th>Nishihama</th>
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<table>
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<th>Kushibaru Depth 0 to 1 m, 1996–97</th>
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<td>6</td>
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| Mortality | 0.38 | 0.06 | 0 | 0 | 0 | 0 | 0 |
### Kushibaru Depth 3 to 4 m, 1996–97

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**Mortality** | 0.38 | 0.63 | 0.40 | 0.40 | 0    | 0    | 0    |

### Kushibaru Depth 6 to 7 m, 1996–97

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**Mortality** | 0.20 | 0.29 | 0.40 | 0    | 0    | 0    | 0    |
Table S3 Lefkovitch matrices calculated for Nishihama depths 1, 3, and 6 m for the 1996-97 transition. The resulting mortality rate is also shown below each matrix.

<table>
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<td>7</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Nishihama Depth 3 to 4 m, 1996–97</th>
</tr>
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<tr>
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<tr>
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<table>
<thead>
<tr>
<th>Nishihama Depth 6 to 7 m, 1996–97</th>
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<tr>
<td>6</td>
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<td>7</td>
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</tbody>
</table>

Mortality | 0.22 | 0.14 | 0.17 | 0.50 | 0 | 0.50 | 0
Table S4 Lefkovitch matrices calculated for Kushibaru depths 1, 3, and 6 m for the 1997-98 transition. The resulting mortality rate is also shown below each matrix.

### Kushibaru Depth 0 to 1 m, 1997–98

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Mortality: 0.11 0.28 0.07 0 0 0.33 0

### Kushibaru Depth 3 to 4 m, 1997–98

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Mortality: 0 0.13 0 0 0 0 0 0

### Kushibaru Depth 6 to 7 m, 1997–98

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Mortality: 0.25 0 0 0 0 0 0 0
Table S5 Lefkovitch matrices calculated for Nishihama depths 1, 3, and 6 m for the 1997-98 transition. The resulting mortality rate is also shown below each matrix.

**Nishihama Depth 0 to 1 m, 1997–98**

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</table>

Mortality | 0.21 | 0.12 | 0.30 | 0.00 | 0.00 | 0.00 | 0.00 |

**Nishihama Depth 3 to 4 m, 1997–98**

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Mortality | 0.25 | 0.37 | 0.31 | 0.00 | 1.00 | 0.00 | 0.00 |

**Nishihama Depth 6 to 7 m, 1997–98**

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</table>

Mortality | 0.23 | 0.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
Table S6 Lefkovitch matrices calculated for Kushibaru depths 1, 3, and 6 m for the 1998-99 transition. The resulting mortality rate is also shown below each matrix.

### Kushibaru Depth 0 to 1 m, 1998–99

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**Mortality** 0.17 0.25 0.13 0 0.20 0 0

### Kushibaru Depth 3 to 4 m, 1998–99

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**Mortality** 0 0.30 0 0 0 0 0

### Kushibaru Depth 6 to 7 m, 1998–99

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**Mortality** 0 0 0 0 0 0 0
Table S7 Lefkovitch matrices calculated for Nishihama depths 1, 3, and 6 m for the 1998-99 transition. The resulting mortality rate is also shown below each matrix.

### Nishihama Depth 0 to 1 m, 1998–99

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**Mortality**

| Size Class | 0.29 | 0.19 | 0    | 0    | 0    | 1.00 | 0    |

### Nishihama Depth 3 to 4 m, 1998–99

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**Mortality**

| Size Class | 0.31 | 0.08 | 0.15 | 0    | 0    | 0    | 0    |

### Nishihama Depth 6 to 7 m, 1998–99

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**Mortality**

| Size Class | 0.33 | 0.50 | 0    | 1.00 | 0    | 0    | 0    |


Table S8 Lefkovitch matrices calculated for Kushibaru depths 1, 3, and 6 m for the 1999-2000 transition. The resulting mortality rate is also shown below each matrix.

**Kushibaru Depth 0 to 1 m, 1999–2000**

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Mortality: 0.67 0.24 0.11 0.18 0.25 1.00 0

**Kushibaru Depth 3 to 4 m, 1999–2000**

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Mortality: 0 0.70 0 0.50 0 0 0

**Kushibaru Depth 6 to 7 m, 1999–2000**

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</table>

Mortality: 0.33 0.60 0 0.50 0 0 0
Table S9 Lefkovitch matrices calculated for Nishihama depths 1, 3, and 6 m for the 1999-2000 transition. The resulting mortality rate is also shown below each matrix.

### Nishihama Depth 0 to 1 m, 1999–2000

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### Nishihama Depth 3 to 4 m, 1999–2000

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### Nishihama Depth 6 to 7 m, 1999–2000

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