Supplementary Information Table S1. Details of the LA-ICP-MS operating parameters used in this study.

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| **Laser ablation system** |   |
| Wavelength |  | 193 nm (ArF) |
| Repetition rate | 5 Hz |
| Energy density  |  | ~7 J.cm-2 |
| Spot size |  | 60 µm |
| Mixing chamber | He (0.5 L min-1) |
|  |  |  |
| **ICP-MS** |  |  |
| Resolution |  | Low |
| Gas flow |  |  |
| Coolant |  | 16 L/min |
| Auxiliary |  | 1.0 L/min |
| Sample |  | 1.1 L/min |
| Cone |  | Nickel |
| Detection modes | 25Mg: Triple43Ca and 86Sr: AnalogOthers: counting |
| Sample time |  | 25Mg: 100 msOthers:10 ms |
| Samples/peak | 5 (25% of mass window) |
|  |  |  |

Table S2. Calibration curve equations of polynomial models applied for describing the Sr/Ca ratio life trajectories of each spawning group in this study.

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| --- | --- |
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| Spawning groups | Caliboration curve equations of polynomial models |
| Jwinter | y = 6e-11x4 + 2e-8x3 - 4e-5x2 + 0.0088x + 6.7616 |
| Jspring | y = -3e-11x4 + 9e-8x3 - 5e-5x2 + 0.0103x + 6.5053 |
| Jsummer | y = -7e-11x4 + 7e-8x3 - 2e-5x2 + 0.0024x + 6.6562 |
| Tspring | y = 3e-10x4 - 4e-7x3 + 0.0002x2 - 0.0431x + 10.175 |
| Tautumn | y = 4e-10x4 - 2e-7x3 + 2e-5x2 + 0.0052x + 6.9126 |
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