**Supplementary material**

*Supplementary Figure 1 : Illustration of the 26 KDE for the four habitat variablesused in FRM*

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**Supplementary material**

*Supplementary Table 1: Backward variable selection for GAM (0+ model)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model** | **Significance of the predictor (*p-value*)** | | | | **AICc** |
| **Depth** | **Velocity** | **D50** | **Temperature** |
| Initial | 0.298 | 0.785 | 0.499 | 0.000 | 154.6 |
| Reduced model #1 | 0.286 | - | 0.471 | 0.000 | 151.2 |
| Reduced model #2 | 0.210 | - | - | 0.000 | 148.4 |
| Reduced model #3 | - | - | - | 0.000 | 145.8 |

*The grey color indicates that this predictor will be removed in the next tested model while the green color denotes the final retained model.*

*Supplementary Table 2: Backward variable selection for GAM (1+ model)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model** | **Significance of the predictor(*p-value*)** | | | | **AICc** |
| **Depth** | **Velocity** | **D50** | **Temperature** |
| Initial | 0.174 | 0.676 | 0.051 | 0.000 | 119.7 |
| Reduced model #1 | 0.067 | - | 0.032 | 0.000 | 116.1 |
| Reduced model #2 | - | - | 0.046 | 0.000 | 118.5 |

*The grey color indicated that this predictor will be removed in the next tested model while the green color denotes the final retained model.*