Supplementary tables

Supplementary File 1a. List of Interquartile Range of Compensation error

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Groups | Twilight\_2Hz | Twilight\_6Hz | Dark\_2Hz | Dark\_ 6Hz |
| *Flagella-intact* |  0.09 |  0.11 | 0.22 | 0.27 |
| *Flagella-clipped* | 0.06 | 0.13 | 0.03 | 0.07 |
| *Flagella-reattached* | 0.08 | 0.09 | 0.18 | 0.08 |
| *Sham* | 0.12 | 0.1 | 0.26 | 0.28 |
| *Johnston’s organ glued* | 0.05 | 0.22 | 0.18 | 0.18 |

Supplementary File 1b. List of interquartile ranges of Coherence

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Groups | Twilight\_2Hz | Twilight\_6Hz | Dark\_2Hz | Dark\_ 6Hz |
| *Flagella-intact* |  0.00 | 0.02 | 0.05 | 0.12 |
| *Flagella-clipped* | 0.01 | 0.01 | 0.41 | 0.41 |
| *Flagella-reattached* | 0.00 | 0.01 | 0.05 | 0.09 |
| *Sham* | 0.01 | 0.02 | 0.04 | 0.14 |
| *Johnston’s organ glued* | 0.00 | 0.01 | 0.29 | 0.31 |

Supplementary File 1c. Details of the statistical tests used in various experiments in this paper

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Groups compared** |  **n size** | **Tests** | **p-value** | **Groups significantly different** **(α = 0.05, post-hoc Nemenyi test)** |
| **1. Twilight and dark compensation error**(***Flagella-intact*, 2 Hz**) | Twilight: n = 8Dark: n =8 | WilcoxonSigned-rank |  0.0078 | Not applicable |
| **2. Twilight and dark****compensation error**(***Flagella-intact*, 6 Hz**) | Twilight: n = 8Dark: n = 8 | WilcoxonSigned-rank | 0.5469 | Not applicable |
| **3. *Flagella-intact, Flagella-clipped and Flagella-reattached* compensation error** (**Twilight, 2 Hz**) | Flagella-intact: n=8, Flagella-clipped: n = 7, Flagella-reattached: n = 8 | Kruskal-Wallis test followed by Nemenyi test |  0.0107 | Flagella-intact, flagella-clipped |
| **4*. Flagella-intact, Flagella-clipped and Flagella-reattached* compensation error**(**Dark, 2 Hz)** |  Flagella-intact: n=8, Flagella-clipped: n = 7, Flagella-reattached: n = 8  | Kruskal-Wallis test followed by Nemenyi test | 0.0133 | Flagella-intact, flagella-clipped |
| ***5. Flagella-intact, Flagella-clipped and Flagella-reattached* compensation error**(**Twilight, 6 Hz**) | Flagella-intact: n=8, Flagella-clipped: n = 7, Flagella-reattached: n = 8 | Kruskal-Wallis test followed by Nemenyi test | 0.0064 | Flagella-intact, flagella-clipped |
| ***6. Flagella-intact, Flagella-clipped and Flagella-reattached* compensation error**(**Dark, 6 Hz**) | Flagella-intact: n=8, Flagella-clipped: n = 7, Flagella-reattached: n = 8 | Kruskal-Wallis test followed by Nemenyi test | 0.0011 | 1. Flagella-intact, flagella-clipped2. Flagella-clipped, flagella-reattached |
| **7.** ***Sham* and *Johnston’s organ glued* compensation error(Twilight, 2 Hz)** | Sham: n = 12 Johnston’s organ glued: n = 7  | Wilcoxon ranksum | 0.5358 | Not applicable |
| **8**. ***Sham* and *Johnston’s organ glued* compensation error(Dark, 2 Hz)** | Sham: n = 10 Johnston’s organ glued: n = 8 | Wilcoxon ranksum | 0.0831 | Not applicable |
| 9. ***Sham* and *Johnston’s organ glued* compensation error(Twilight, 6 Hz)** | Sham: n = 10Johnston’s organ glued: n = 7 | Wilcoxon ranksum | 0.0097 | Not applicable |
| **10. *Sham* and *Johnston’s organ glued* compensation error(Dark, 6 Hz)** | Sham: n = 9 Johnston’s organ glued: n = 8  | Wilcoxon ranksum | 0.0055 | Not applicable |
| **11.Flight bout duration of** ***Control, sham and Head-restricted moths*** | Control: n = 11Sham: n = 12Head-restricted: n = 8  | Kruskal-Wallis test followed by Nemenyi test | 0.0001 | 1.Control, Head-restricted moths2. Sham, Head-restricted moths |
| **12. Collision frequency of** ***Control, sham and Head-restricted moths*** | Control: n = 11Sham: n = 12Head-restricted: n = 8 | Kruskal-Wallis test followed by Nemenyi test |  0.0002 | 1.Control, Head-restricted moths2. Sham, Head-restricted moths |