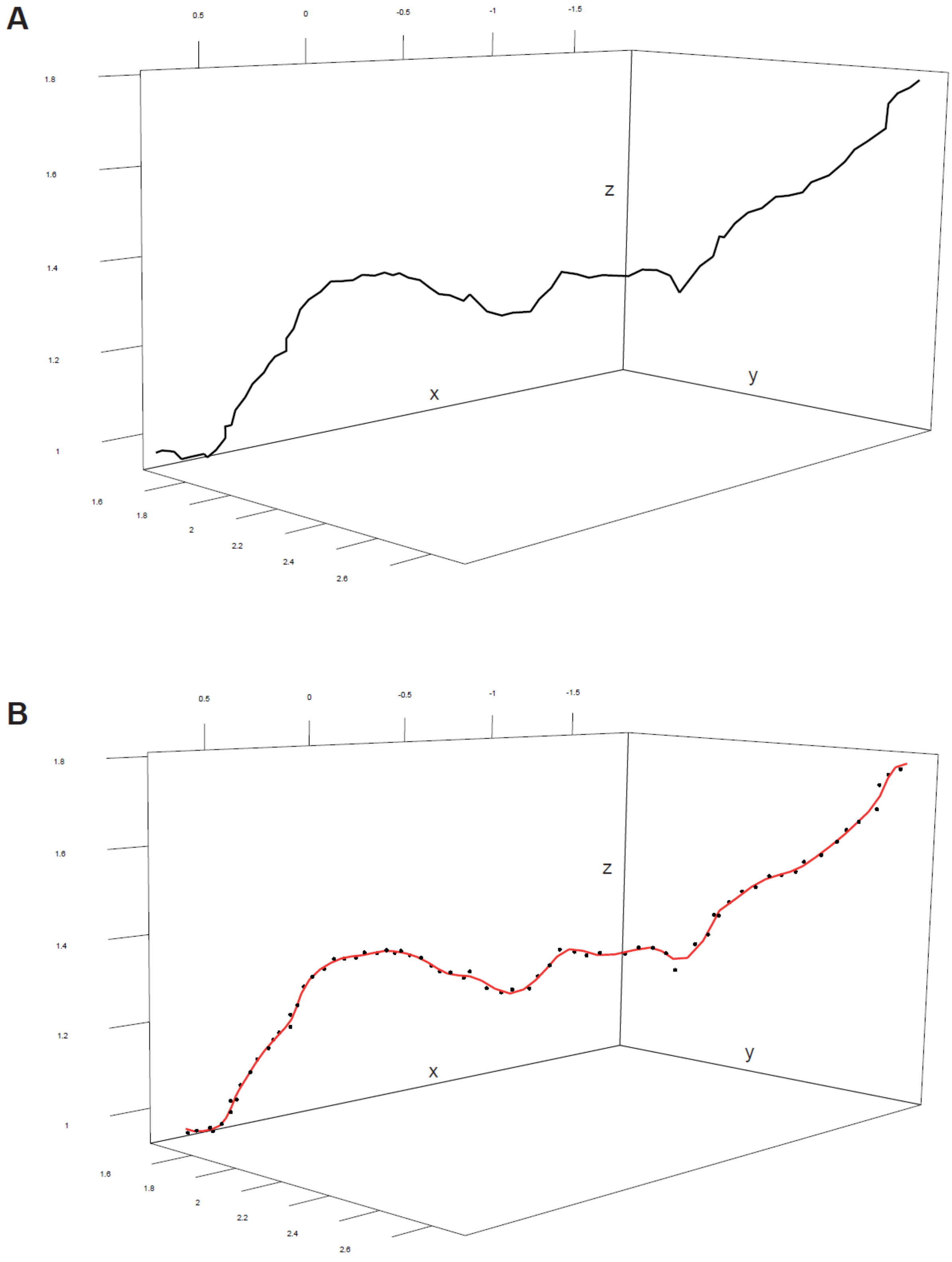

Figure S1. Trajectory smoothing using low pass Butterworth filter. A raw flight trajectory of a single individual (A), and its corresponding smoothed trajectory shown in red (B).

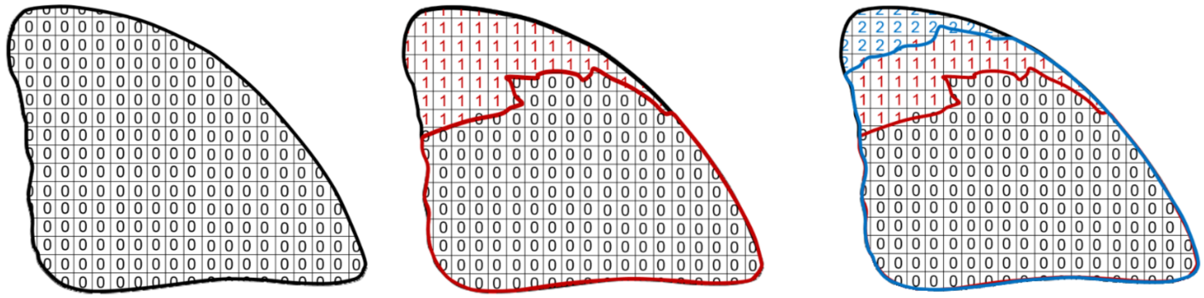

Figure S2. Method used to generate a heat map describing variation in wing damage. Using the mean shape of intact wings as a template (A), we superimposed damaged wings on the intact one by fitting the corresponding undamaged wing outlines (B and C). After each superimposition, missing wing area were counted at the pixel scale. The pixel matrix shown here is at very low resolution for the sake of simplicity. Note that the natural shape variation between individuals (i.e. not due to wing damage) was eliminated so as to match the intact template.

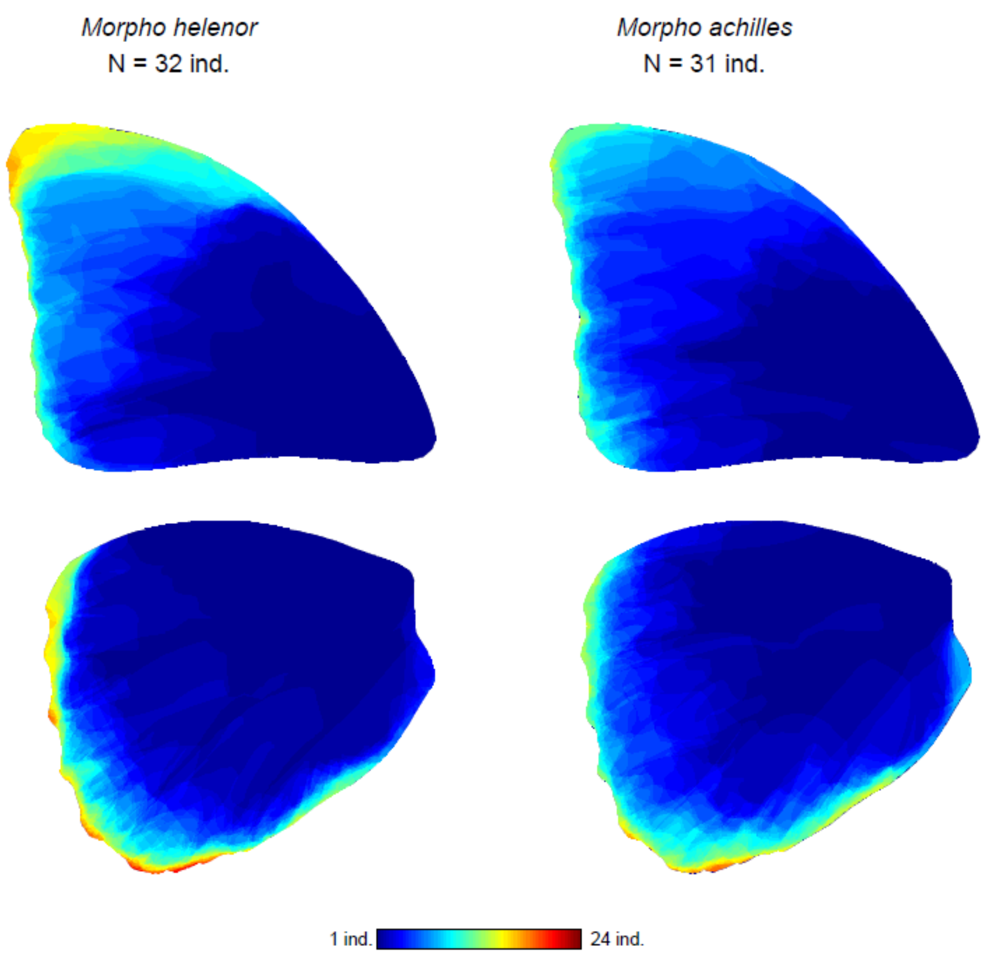

Figure S3. Heat map describing variation in spatial location of wing damage. Left: *Morpho helenor*. Right: *Morpho achilles*. Left and right wings are pooled together for each wing pair. Most frequent damages are in dark red.

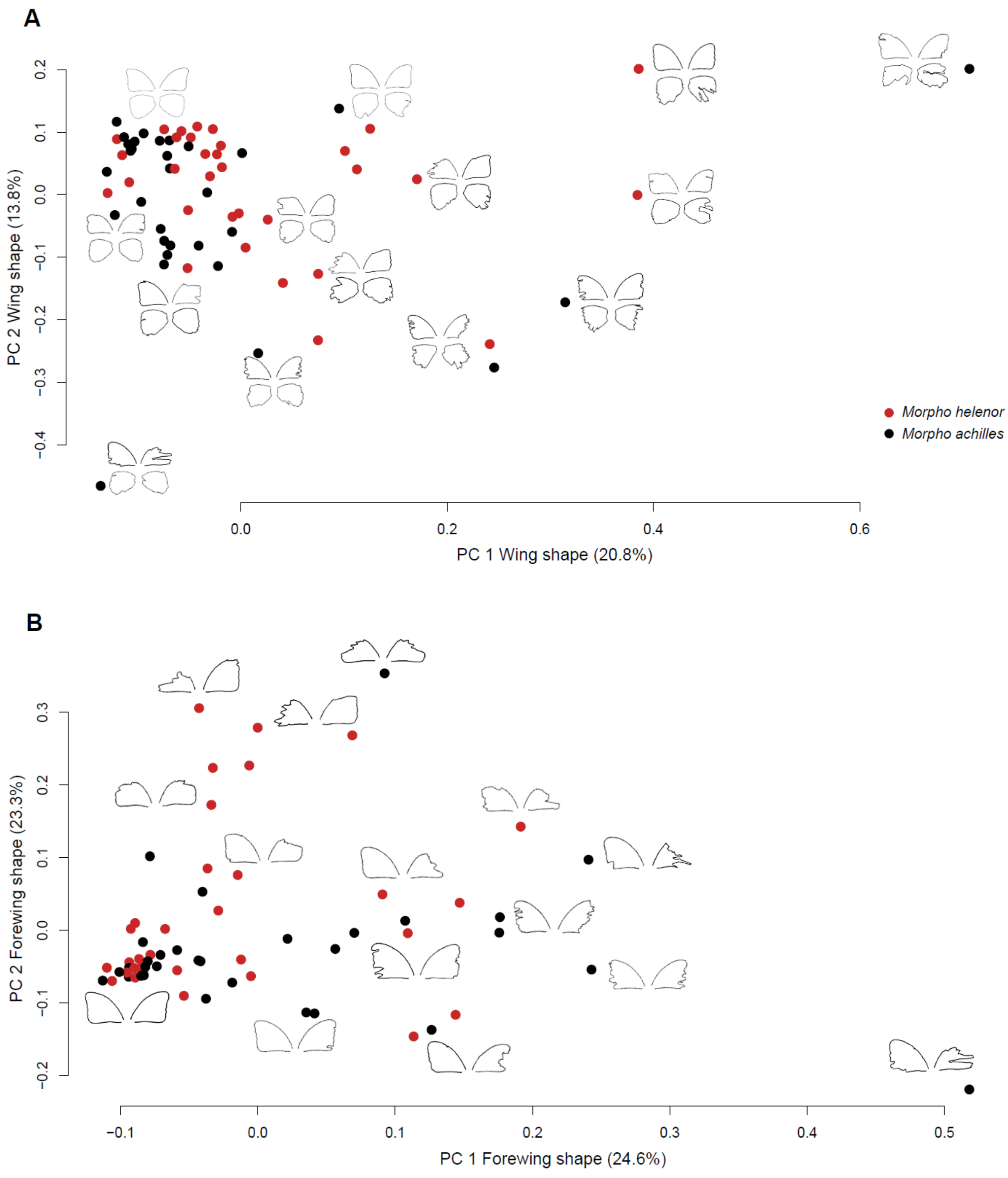

Figure S4. PCA performed on wing outline coordinates. Variation in wing shape among individuals is shown along the two first axes of the PCA. (A) Shape variation when both wing pairs are considered. (B) Shape variation of the forewing pair only is considered. While no clear pattern emerges from the PCA considering both wing pairs, the PCA focusing on forewing shape distinguishes damage occurring mostly on the wing margin along the PC 1 and damage occurring mostly on the upper wing part along PC 2.

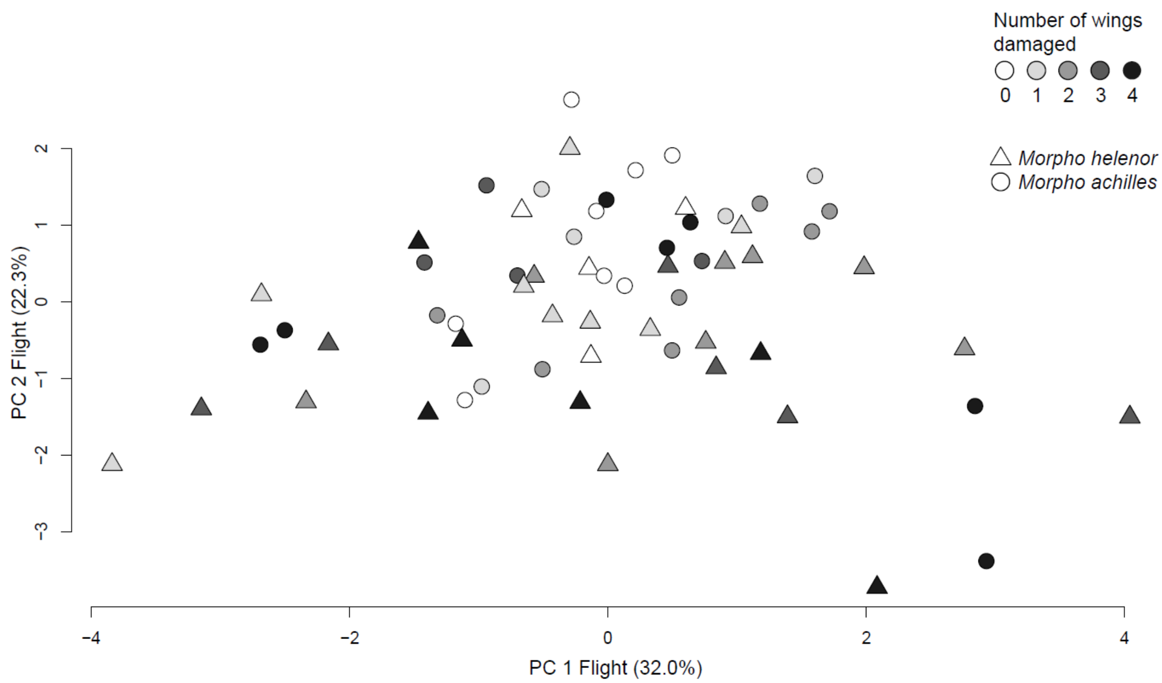

Figure S5. PCA performed on flight parameters. Variation in flight parameters among individuals is shown along the two first axes of the PCA. Triangles and circles represent *Morpho helenor* and *Morpho achilles* respectively. Shades of grey indicate the number of wings damaged at a threshold of >5% of wing area loss. See table S1 for variation in flight parameters along the PCs.

Table S1. Results of Principal Component Analysis on flight parameters.

Axis	1	2	3	4	5	6	7
Percentage of variation explained	32.03	22.26	14.83	11.53	10.02	5.73	3.57
Loadings:							
Wingbeat frequency	0.463	0.372	0.016	0.071	0.368	0.711	0.023
Flight speed	-0.283	0.548	-0.267	0.276	0.426	-0.332	-0.424
Flapping duration	0.555	-0.246	-0.196	-0.168	-0.144	-0.114	-0.729
Flight height	0.336	0.294	0.212	0.669	-0.520	-0.178	0.075
Sinuosity	0.155	-0.328	-0.781	0.363	0.117	-0.020	0.335
Smallest angle	-0.191	0.445	-0.483	-0.343	-0.596	0.246	-0.008
Gliding proportion	-0.473	-0.330	0.035	0.439	-0.152	0.528	-0.413