Table S2A. Changes in wing kinematics with increases in V_{horiz}, with the influence of A_{horiz} and A_{vert} held constant

Species	Cynopterus brachyotis (d.f.=17)	Rousettus aegyptiacus (d.f.=9)	Pteropus pumilus (d.f.=17)	Eidolon helvum (d.f.=17)	Pteropus hypomelanus (d.f.=17)	Pteropus vampyrus (d.f.=17)
Maximum wingspan (b_{max})	Decrease t=−2.51 P<0.034	t=0.07 P=0.95	t=1.35 P=0.20	t=1.30 P=0.21	t=1.06 P=0.30	t=−0.20 P=0.85
Minimum wingspan (b_{min})	Decrease t=−2.62 P=0.0178	t=1.96 P=0.08	t=0.96 P=0.35	Increase t=3.93 P=0.0011	t=−0.49 P=0.63	Increase t=2.69 P=0.019
Wingbeat period (T)	t=−0.48 P=0.64	t=2.00 P=0.08	Increase t=4.09 P<0.001	Increase t=4.80 P<0.001	Increase t=3.43 P<0.01	t=1.28 P=0.22
Downstroke period (T_{down})	t=−1.37 P=0.19	t=2.36 P=0.04	Increase t=5.07 P<0.0001	Increase t=3.71 P<0.01	Increase t=4.00 P<0.001	t=1.35 P=0.20
Downstroke ratio (τ)	t=−1.42 P=0.18	t=1.60 P=0.14	Increase t=3.57 P<0.01	t=1.28 P=0.22	Increase t=3.10 P<0.01	t=1.12 P=0.28
Wing stroke amplitude (ϕ)	t=1.40 P=0.18	t=−0.02 P=0.98	t=1.95 P=0.07	t=−0.11 P=0.91	t=0.87 P=0.40	t=−0.81 P=0.43
Stroke plane angle (β)	Decrease t=−5.61 P<0.0001	Decrease t=−6.36 P<0.001	Decrease t=−2.38 P<0.034	Decrease t=−4.08 P<0.001	Decrease t=−2.93 P<0.01	t=−1.84 P=0.09
Angle of attack (α)	Decrease t=−9.36 P<0.0001	t=−1.04 P=0.32	Decrease t=−3.62 P<0.01	t=−1.81 P=0.09	t=−1.22 P=0.24	Decrease t=−4.08 P<0.01
α_1	Decrease t=−4.64 P<0.001	t=−1.33 P=0.22	Decrease t=−2.55 P<0.034	t=−2.16 P=0.05	t=1.03 P=0.32	t=−1.49 P=0.16
α_2	t=−0.43 P=0.67	t=0.24 P=0.81	t=0.20 P=0.85	t=0.24 P=0.81	Decrease t=−2.43 P<0.034	Decrease t=−2.68 P<0.034
Wing camber	Decrease t=−5.56 P<0.0001	Decrease t=−3.86 P<0.01	t=−1.88 P=0.08	Decrease t=−2.42 P<0.034	Decrease t=−2.63 P<0.034	t=−0.65 P=0.53
Strouhal number (St)	Decrease t=−5.97 P<0.0001	Decrease t=−4.37 P<0.01	Decrease t=−4.82 P<0.001	Decrease t=−8.59 P<0.0001	Decrease t=−5.84 P<0.0001	Decrease t=−4.97 P<0.001
Lift coefficient (C_L)	Decrease t=−11.50 P<0.0001	Decrease t=−3.69 P<0.01	Decrease t=−3.64 P<0.01	Decrease t=−4.00 P<0.001	Decrease t=−4.61 P<0.001	t=−1.75 P=0.10

The t statistic and two-tailed P-value for the partial regression slope are shown. Where P=0.034, it is noted whether the significant trend is an increase or decrease. That alpha level was chosen as a threshold for rejection of the null hypothesis to account for the increased Type I error rate from multiple tests on correlated data, as explained in the methods.

Table S2B. Changes in wing kinematics with increases in A_{horiz}, with the influence of V_{horiz} and A_{vert} held constant

	Cynopterus brachyotis (d.f.=17)	*Rousettus aegyptiacus* (d.f.=9)	*Pteropus pumilus* (d.f.=17)	*Eidolon helvum* (d.f.=17)	*Pteropus hypomelanus* (d.f.=17)	*Pteropus vampyrus* (d.f.=17)
Maximum wingspan (b_{max})	Increase t=4.17 P<0.001	t=0.01 P=0.99	t=0.90 P=0.38	t=−1.12 P=0.28	Increase t=3.19 P<0.01	t=−1.41 P=0.18
Minimum Wingspan (b_{min})	t=−0.89 P=0.38	t=−0.25 P=0.81	Decrease t=−3.29 P<0.01	t=−1.43 P=0.17	t=−1.59 P=0.13	t=0.13 P=0.90
Wingbeat period (T)	t=−1.63 P=0.12	t=−1.18 P=0.27	t=−0.39 P=0.70	t=−0.56 P=0.58	t=−1.01 P=0.33	t=0.83 P=0.42
Downstroke period (T_{down})	t=−0.81 P=0.43	t=−0.54 P=0.60	t=−1.67 P=0.11	t=−1.77 P=0.10	t=−1.82 P=0.09	t=0.61 P=0.55
Downstroke Ratio (τ)	t=0.43 P=0.67	t=0.26 P=0.80	t=−2.04 P=0.06	t=−2.17 P=0.04	t=−2.27 P=0.04	t=0.14 P=0.89
Wing stroke amplitude (ϕ)	t=1.49 P=0.16	t=−0.22 P=0.83	Increase t=4.44 P<0.001	t=0.05 P=0.96	t=0.01 P=1.00	t=0.90 P=0.38
Stroke plane angle (β)	Decrease t=−3.96 P<0.01	Decrease t=−3.85 P<0.01	Decrease t=−5.09 P<0.0001	Decrease t=−3.06 P<0.01	t=−2.21 P=0.04	t=−1.43 P=0.18
Angle of attack (α)	t=−1.07 P=0.30	t=1.71 P=0.12	t=−1.78 P=0.09	t=−0.13 P=0.90	Increase t=2.38 P<0.034	t=1.03 P=0.32
α_1	Decrease t=−4.10 P<0.001	t=−2.10 P=0.07	Decrease t=−5.02 P<0.001	Decrease t=−2.77 P<0.034	t=−0.26 P=0.80	t=−2.05 P=0.06
α_2	Increase t=3.99 P<0.001	Increase t=2.92 P<0.034	Increase t=3.51 P<0.01	Increase t=2.55 P<0.034	Increase t=2.57 P<0.034	Increase t=3.48 P<0.01
Wing camber	t=0.85 P=0.41	t=−1.95 P=0.08	t=0.33 P=0.74	t=−0.56 P=0.58	t=1.62 P=0.12	t=0.75 P=0.46
Strouhal number (St)	Increase t=2.94 P<0.01	t=1.94 P=0.08	Increase t=5.58 P<0.0001	Increase t=3.92 P<0.01	t=1.48 P=0.16	t=2.12 P=0.05
Lift coefficient (C_L)	t=−1.18 P=0.26	t=−1.96 P=0.08	t=−1.78 P=0.09	t=0.05 P=0.96	t=0.46 P=0.65	Increase t=2.57 P<0.034

Table S2C. Changes in wing kinematics with Increases in A_{vert}, with the influence of V_{horiz} and A_{horiz} held constant

	Cynopterus brachyotis (d.f.=17)	Rousettus aegyptiacus (d.f.=9)	Pteropus pumilus (d.f.=17)	Eidolon helvum (d.f.=17)	Pteropus hypomelanus (d.f.=17)	Pteropus vampyrus (d.f.=17)
Maximum wingspan (b_{max})	Increase t=4.18 P<0.001	t=0.44 P=0.67	t=2.04 P=0.06	t=1.10 P=0.29	Increase t=3.20 P<0.01	t=−0.97 P=0.35
Minimum wingspan (b_{min})	t=0.31 P=0.76	t=0.76 P=0.47	t=−0.64 P=0.53	t=−1.17 P=0.26	t=0.09 P=0.93	t=0.14 P=0.89
Wingbeat period (T)	t=−2.19 P=0.04	Decrease t=−4.24 P<0.01	t=−0.26 P=0.80	t=−0.93 P=0.37	t=−1.30 P=0.21	t=0.29 P=0.77
Downstroke period (T_{down})	t=−1.26 P=0.23	t=−1.12 P=0.29	t=−0.31 P=0.76	t=−1.47 P=0.16	t=−0.44 P=0.66	t=0.68 P=0.51
Downstroke ratio (τ)	t=0.38 P=0.71	t=2.13 P=0.06	t=−0.09 P=0.93	t=−1.49 P=0.15	t=0.74 P=0.47	t=1.01 P=0.33
Wing stroke amplitude (ϕ)	t=−0.38 P=0.71	t=0.15 P=0.89	t=0.21 P=0.84	t=1.11 P=0.28	t=−1.86 P=0.08	t=0.34 P=0.74
Stroke plane angle (β)	t=−0.11 P=0.91	t=0.80 P=0.44	t=0.68 P=0.51	t=−1.76 P=0.10	t=0.91 P=0.37	t=−0.41 P=0.69
Angle of attack (α)	Increase t=2.55 P<0.034	t=2.12 P=0.06	t=0.63 P=0.54	t=−0.57 P=0.57	t=1.88 P=0.08	t=0.89 P=0.39
α_1	t=0.85 P=0.41	t=1.20 P=0.26	t=0.19 P=0.85	Decrease t=−2.73 P<0.034	t=1.03 P=0.32	t=−1.52 P=0.15
α_2	t=0.58 P=0.57	t=0.67 P=0.52	t=0.19 P=0.85	t=2.06 P=0.06	t=0.51 P=0.62	Increase t=2.72 P<0.034
Wing camber	t=2.18 P=0.04	t=1.31 P=0.22	t=1.35 P=0.19	t=2.15 P=0.05	Increase t=3.08 P<0.01	t=1.18 P=0.26
Strouhal number (St)	t=0.20 P=0.84	t=2.26 P=0.05	t=−0.57 P=0.58	Increase t=4.01 P<0.001	t=0.25 P=0.80	t=1.06 P=0.31
Lift coefficient (C_L)	Increase t=5.32 P<0.0001	Increase t=2.98 P<0.034	Increase t=5.24 P<0.0001	t=1.48 P=0.16	Increase t=5.97 P<0.0001	Increase t=3.77 P<0.01