
Table S1 Chi-square tests for differences between light conditions A and B

Variable	χ^2	df	p	
Click Rate (pulses/s)	141.000	138	0.413	n.s.
Flight Speed (m/s)	77.330	78	0.5	n.s.
Absolute Sonar Gaze (°)	132.504	135	0.545	n.s.

Note. * $p < .05$; n.s. = not significant. Tests conducted using Pearson's chi-square.

Table S2 Results of a ranked linear mixed model examining the effects of species and turn type on flight speed (m/s). Fixed effects estimates, standard errors, and test statistics are reported with bat ID included as a random effect to account for repeated measures within individuals.

Flight Speed (m/s)				
<i>Predictors</i>	<i>Estimates</i>	<i>std. Error</i>	<i>Statistic</i>	<i>p</i>
(Intercept)	108.74 ***	9.19	11.83	<0.001
Species (<i>R. aegyptiacus</i>)	-61.84 ***	12.92	-4.79	<0.001
Turn type	-8.91	5.73	-1.56	0.122
Random Effects				
σ^2	1192.30			
τ_{00} batID	481.02			
ICC	0.29			
N _{batID}	19			
Observations	170			
Marginal R ² / Conditional R ²	0.238 / 0.457			
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$				

Table S3 Post hoc pairwise comparisons between species (*C. perspicillata* vs. *R. aegyptiacus*) within each turn type (High and low angle turns) for flight speed, pulse rate, and absolute sonar gaze, derived from ranked linear mixed models. P-values are Holm-adjusted for multiple comparisons.

Post hoc Pairwise Comparisons

Species contrasts within each turn class (Holm-adjusted p-values)

Outcome	Turn type	Species contrast	Δ mean	SE	df	t	Holm_p	Holm-adjusted p	Sig.
Flight speed	All turns	<i>C. perspicillata</i> – <i>R. aegyptiacus</i>	61.84	13.53	20.30	4.57	1.80 e-04	< 0.001	***
Pulse rate†	Low angle turns	<i>C. perspicillata</i> – <i>R. aegyptiacus</i>	27.34	15.36	90.44	1.78	7.84e-02	0.08	n.s.
Pulse rate†	High angle turns	<i>C. perspicillata</i> – <i>R. aegyptiacus</i>	69.19	12.80	66.41	5.41	9.37e-07	< 0.001	***
Absolute sonar gaze†	Low angle turns	<i>C. perspicillata</i> – <i>R. aegyptiacus</i>	-22.54	16.42	126.58	-1.37	1.72e-01	0.17	n.s.
Absolute sonar gaze†	High angle turns	<i>C. perspicillata</i> – <i>R. aegyptiacus</i>	48.78	13.58	104.22	3.59	5.01e-04	< 0.001	***

Post hoc contrasts derived from ranked linear mixed-effects models. Estimates represent differences in mean ranks between species. † Simple effects shown for pulse rate and absolute sonar gaze deviation due to significant interaction between turn type and species.

Table S4 Results of a ranked linear mixed model examining the effects of species and turn type on sonar pulse rate (pulses/s). Fixed effects estimates, standard errors, and test statistics are reported with bat ID included as a random effect to account for repeated measures within individuals.

<i>Predictors</i>	Pulse Rate (pulse/s)			
	<i>Estimates</i>	<i>std. Error</i>	<i>Statistic</i>	<i>p</i>
(Intercept)	98.67 ***	5.32	18.56	<0.001
Species (R. aegyptiacus)	-84.47 ***	8.26	-10.23	<0.001
Turn type	0.65	6.11	0.11	0.915
Random Effects				
σ^2	1443.65			
τ_{00} batID	15.85			
ICC	0.01			
N _{batID}	19			
Observations	170			
Marginal R ² / Conditional R ²	0.397 / 0.403			
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$				

Table S5 Results of a ranked linear mixed model examining the effects of species and turn type on absolute sonar gaze (°). Fixed effects estimates, standard errors, and test statistics are reported with bat ID included as a random effect to account for repeated measures within individuals.

<i>Predictors</i>	Absolute Sonar Gaze (°)			
	<i>Estimates</i>	<i>std. Error</i>	<i>Statistic</i>	<i>p</i>
(Intercept)	61.45 ***	6.99	8.79	<0.001
Species (<i>R. aegyptiacus</i> v. <i>C. perspicillata</i>)	93.43 ***	15.01	6.22	<0.001
Turn type (High angle turns v. Low angle turns)	26.44 ***	7.43	3.56	<0.001
Interaction between Species:Turn type	-75.97 ***	18.36	-4.14	<0.001
Random Effects				
σ^2	1756.46			
τ_{00} batID	94.08			
ICC	0.05			
N _{batID}	19			
Observations	170			
Marginal R ² / Conditional R ²	0.221 / 0.260			
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$				

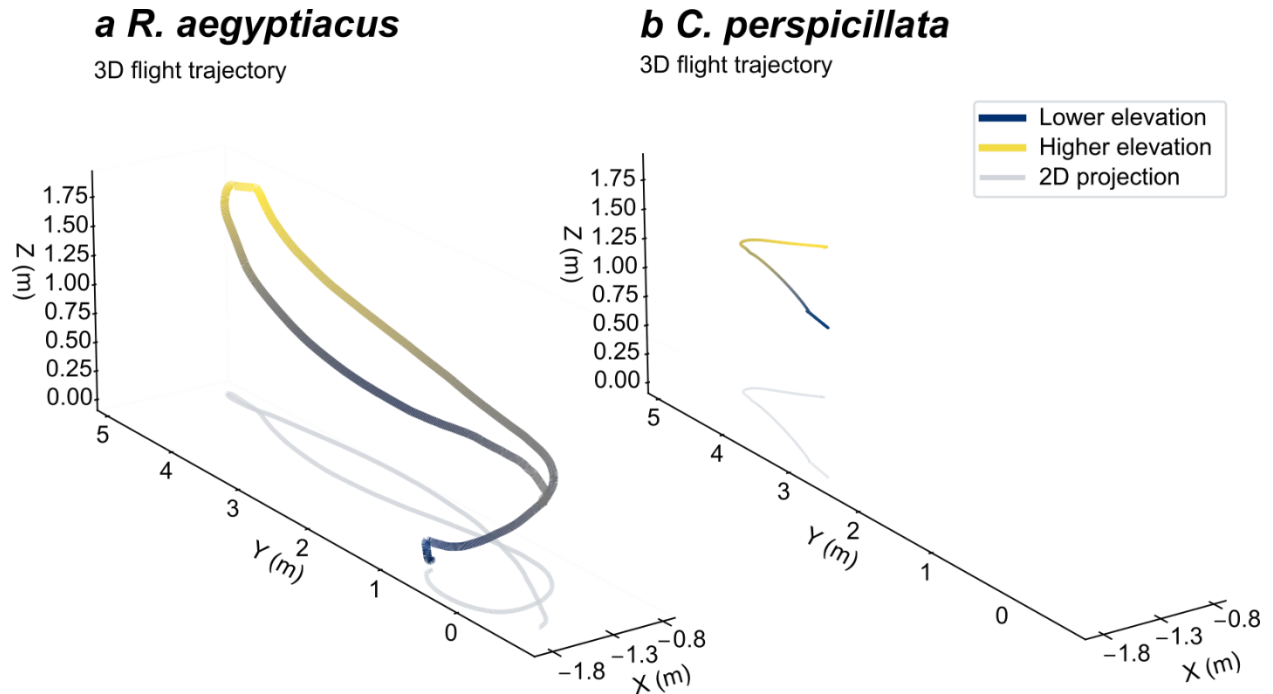


Fig. S1 Three-dimensional flight trajectories of *R. aegyptiacus* and *C. perspicillata*. The trajectories are color-coded by vertical position (Z-axis (m)), with dark blue indicating lower altitudes and yellow indicating higher altitudes. The gray line shows the 2D projection of the flight path. **a**, *R. aegyptiacus* often initiated flight at lower altitudes (~0.25 m) ascending to high altitudes (~ 1.75 m) while traversing the chamber, and then descended back down near the floor. **b**, *C. perspicillata* often initiated flights at lower altitudes (~0.5 m) and ascended to high altitudes (~1.25 m). Their flights often included many turns close together, therefore one turn is included here for clarity.