Supplementary Materials

Table S1: Summary of headcam video analysis

Track	Target	Pursuit duration [s] (% on camera)	v ± 95% C.I. [m/s] initial (final)	a ± 95% C.I. [g]	Pursuit and evasion details
LR1	Lure	7.37 (10%)	16 ± 3 (9 ± 1)	-1.5 ± 0.4	Perched in tree before
LR2	Lure	6.14 (11%)	8 ± 2		Perched on a rooftop post before
LR3	Lure	11.85 (5.3%)	7 ± 1		Perched in tree before
L1	Falconer's glove	2.269 (100%)	9 ± 2 (3 ± 1)	-0.9 ± 0.2	Perched on ground before
L2	Falconer's glove	1.268 (100%)	7 ± 1		Perched on powerline tower before
L3	Falconer's glove	0.467 (100%)	5 ± 1 (6 ± 1)		In air before
L4	Falconer's glove	2.536 (100%)	13 ± 5 (5 ± 4)	-2.4 ± 0.8	In air before
L5	Wooden post	0.567 (100%)	12 ± 2 (5 ± 1)	-1.6 ± 0.3	In air before
L6	Falconer's	3.17 (55%)	11 ± 2		Perched on post before

	glove				
L7	Metal post	2.34 (100%)	6 ± 1 (2.8 ± 0.5)	-0.12 ± 0.02	In air before
L8	Falconer's glove	2.74 (90%)	11 ± 2		Perched on post before flight
L9	Falconer's glove	0.83 (100%)	9 ± 2		Perched in tree before flight
L10	Falconer's glove	0.83 (100%)			In air before landing
P1a	Pheasant (stationary)	8.07 (9.5%)	18 ± 4		Swoop from midair; $v_e = 0$ initially; CP: $\theta \approx 0$ deg; prey fled directly
P1b	pheasant	1.90 (77%)			Shortly after P1a: fly from ground; CATD: $\theta \neq 0$ deg, $\gamma \approx 0$ deg; prey fled directly
P2	pheasant (stationary)	1.60 (100%)	17 ± 3		Swoop from midair; $v_e = 0$ initially; CP: $\theta \approx 0$ deg; prey escaped sideways
P3a	pheasant (stationary)	5.71 (21%)	10 ± 3 (25 ± 4)		Swoop from tree; $v_e = 0$ initially; CP: $\theta \approx 0$ deg; prey escaped sideways
P3b	pheasant	0.53	5 ± 2		Shortly after P3a: $\theta \neq 0$ and

		(100%)			approx. constant but $\gamma \neq 0$ deg; prey escaped sideways
P4a	2 pheasants (stationary)	3.34 (83%)	12 ± 2		Swoop from tree perch; $v_e = 0$ initially; CP: $\theta \approx 0$ deg; one bird escaped sideways, second fled directly
P4b	2 pheasants	1.17 (100%)	13 ± 10		Shortly after P4a: flies from ground; $\theta \neq 0$ and approx. constant but $\gamma \neq 0$ deg; prey escaped sideways
P5	pheasant (stationary)	7.17 (13%)			Swoop from midair; $v_e = 0$ initially; CP: $\theta \approx 0$ deg; prey escaped sideways
P6	pheasant	0.57 (100%)			Swoop from midair; initially CPE: $\theta \neq 0$ deg, $\gamma \approx 0$; prey escaped sideways
P7	pheasant	0.74 (100%)	8 ± 4		Swoop from falconer's glove; CPE: $\theta \approx 0$ deg & $\gamma \approx 0$ deg; prey jinked but captured
R1	rabbit	2.97 (28%)	2 ± 1		Swoop from tree; CPE: $\theta \approx 0$ deg & $\gamma \approx 0$ deg; prey fled directly
R2	rabbit	5.30 (9.4%)	9 ± 4		Swoop from tree; CP: $\theta \approx 0$ deg, $\gamma \neq 0$ deg; prey escaped

					sideways
R3	rabbit	4.67 (28%)	4 ± 3 (8.3 ± 1.7)		Swoop from powerline tower; CATD: $\theta \neq 0$ deg, $\gamma \approx 0$ deg as prey jinked, dodged back toward the Goshawk
R4	rabbit	2.74 (86%)	6 ± 1 (4 ± 1)	-2.2 ± 0.8	Swoop from tree; CATD: $\theta \neq 0$ deg, $\gamma \approx 0$ deg as prey jinked, then fled directly
R5	rabbit	2.57 (67%)	-9 ± 2 (7 ±3)		Swoop from powerline tower; $\theta \approx 0$ deg; prey made two large angle turns, then fled directly; CPE; $\gamma \approx 0$ deg
R6	rabbit	8.34 (20%)			Swoop from hilltop perch: no visual fixation: initially θ varies; CPE: $\theta \approx 0$ deg & $\gamma \approx 0$ deg briefly as distant rabbit fled directly before it reached cover.

4

5

6

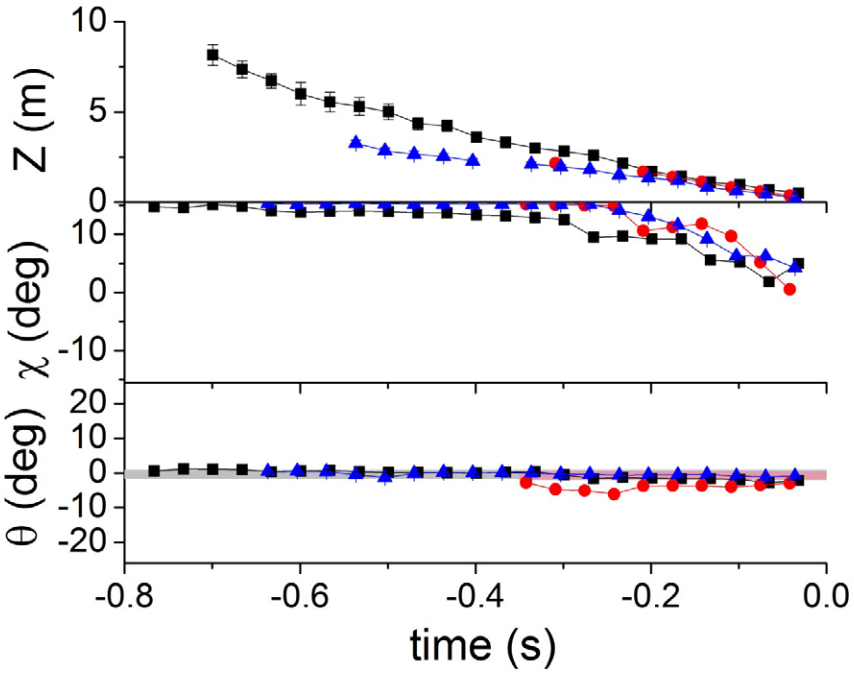

Fig. S1. Data for horizontal and vertical (θ and χ) camera angles and Z (Goshawk-prey)distance vs. time for all three lure datasets. Line and symbol colors and type: LR1 black squares, LR2 red circles, LR3 blue triangles.

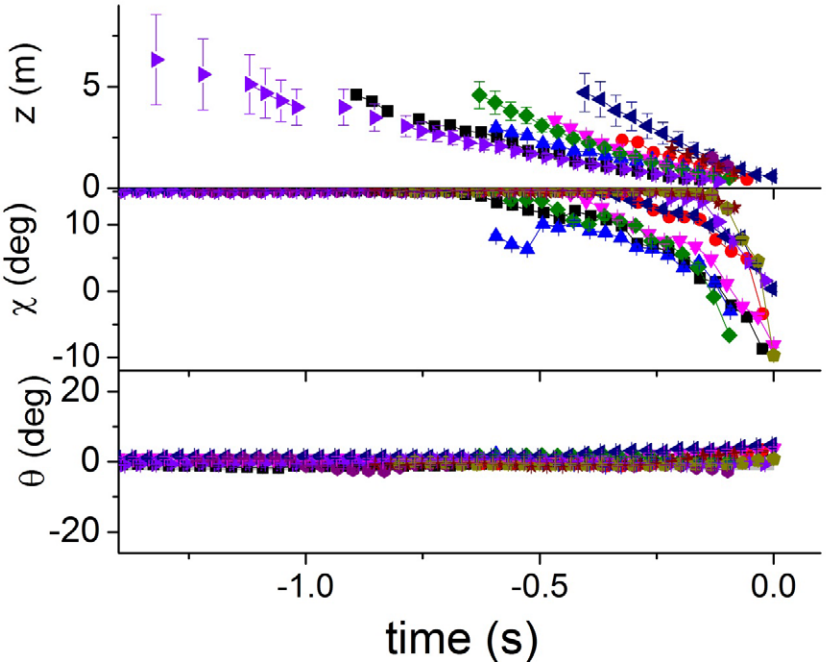

Fig. S2. Data for horizontal and vertical (θ and χ) camera angles and Z (Goshawk-prey)distance vs. time for all ten perch landing flights. Colors of lines and symbols and symbol type: L1 black squares; L2 red circles, L3 blue triangles; L4 magenta inverted triangles, L5 green diamonds, L6 left dark blue triangles, L7 violet right triangles, L8 purple hexagons, L9 dark red stars, and L10 olive pentagons (no *Z* data).

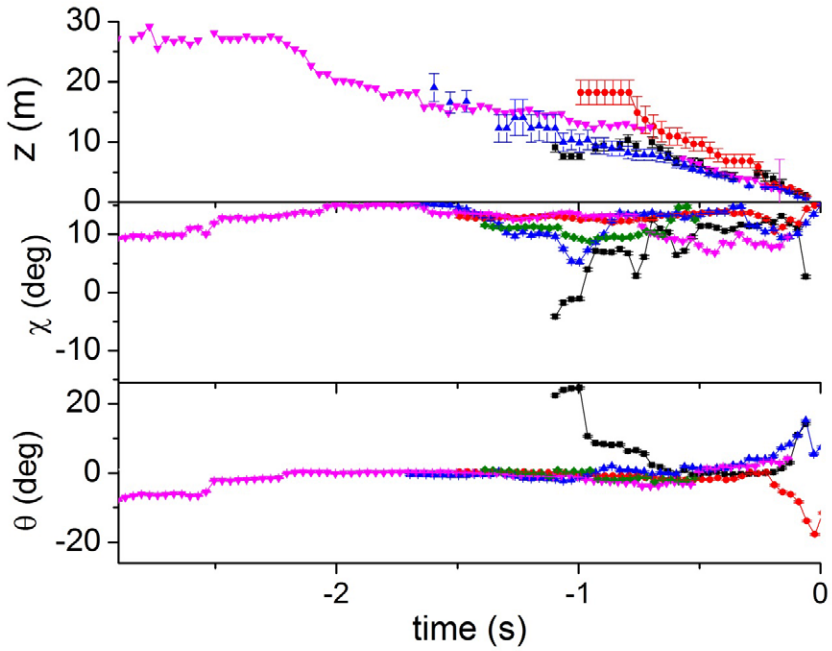

Fig. S3. Data for horizontal and vertical (θ and χ) camera angles and Z (Goshawk-prey distance) vs. time for all five pursuits of primarily stationary pheasants. Deviations from the average θ of approximately zero deg close to 0 s were due to the prey beginning to move. Colors of lines and symbols and symbol type: P1a black squares; P2 red circles, P3a blue triangles; P4a magenta inverted triangles, P5 green diamonds (no *Z* data).

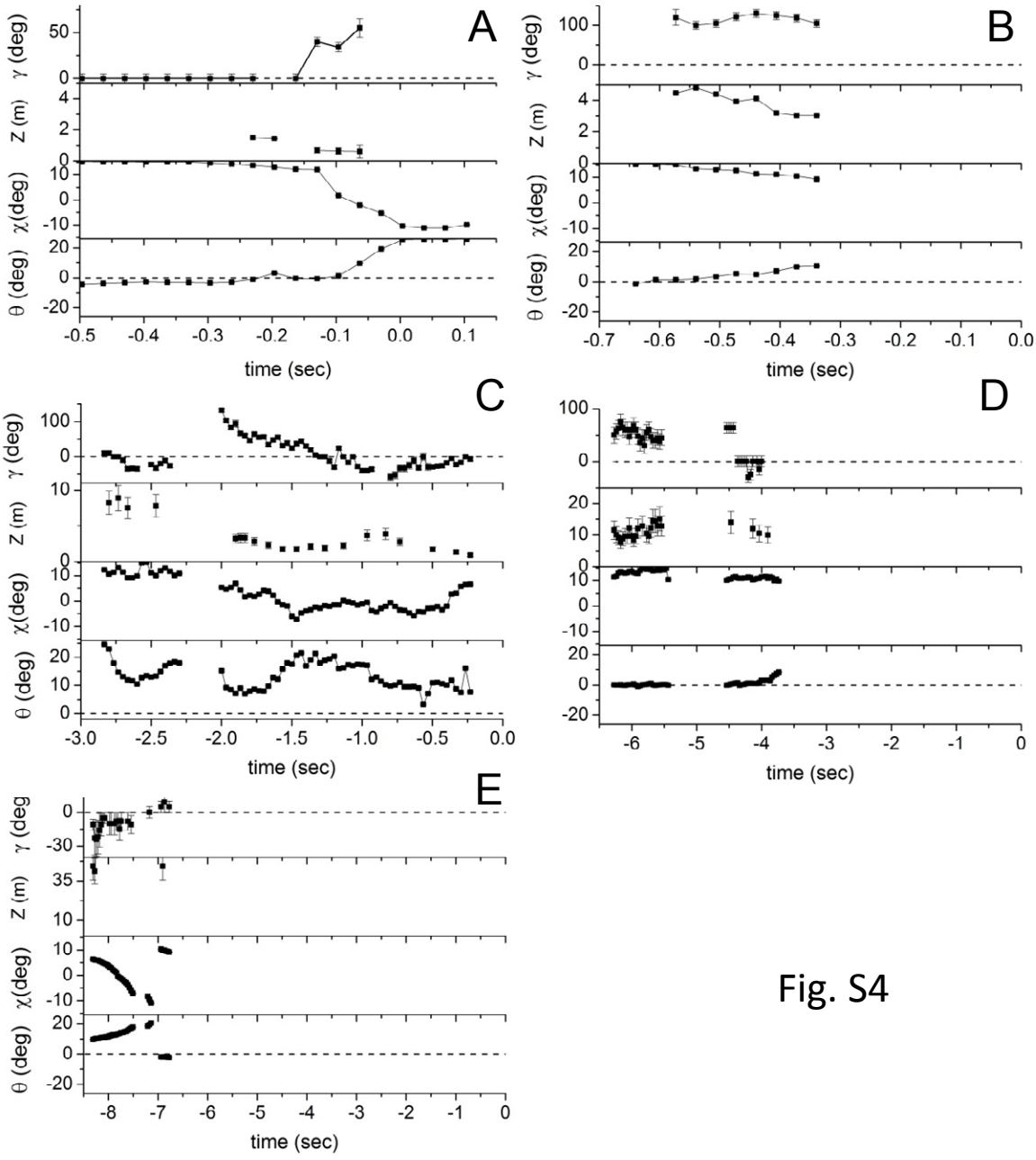

Fig. S4

Fig. S4. Data for horizontal and vertical (θ and χ) camera angles, Z (Goshawk-prey distance) and γ angle vs. time for moving rabbit pursuits (A) R1, (B) R2, (C) R4, (D) R5 and (E) R6.

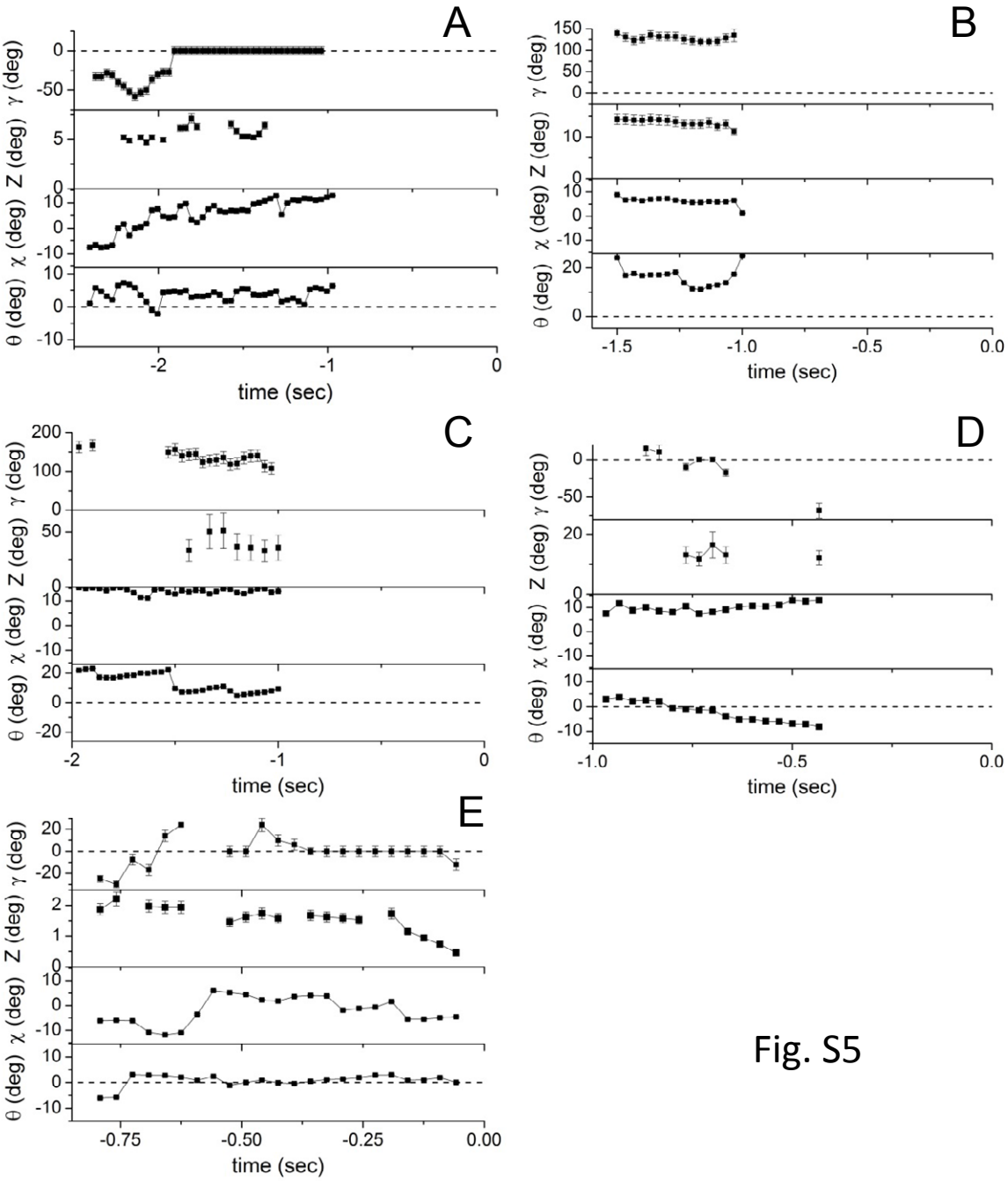

Fig. S5

Fig. S5. Data for horizontal and vertical (θ and χ) camera angles, Z (Goshawk-prey distance) and γ angle vs. time for pursuits of moving pheasants: (A) P1b, (B) P3b, (C) P4b, (D) P6 and (E) P7.

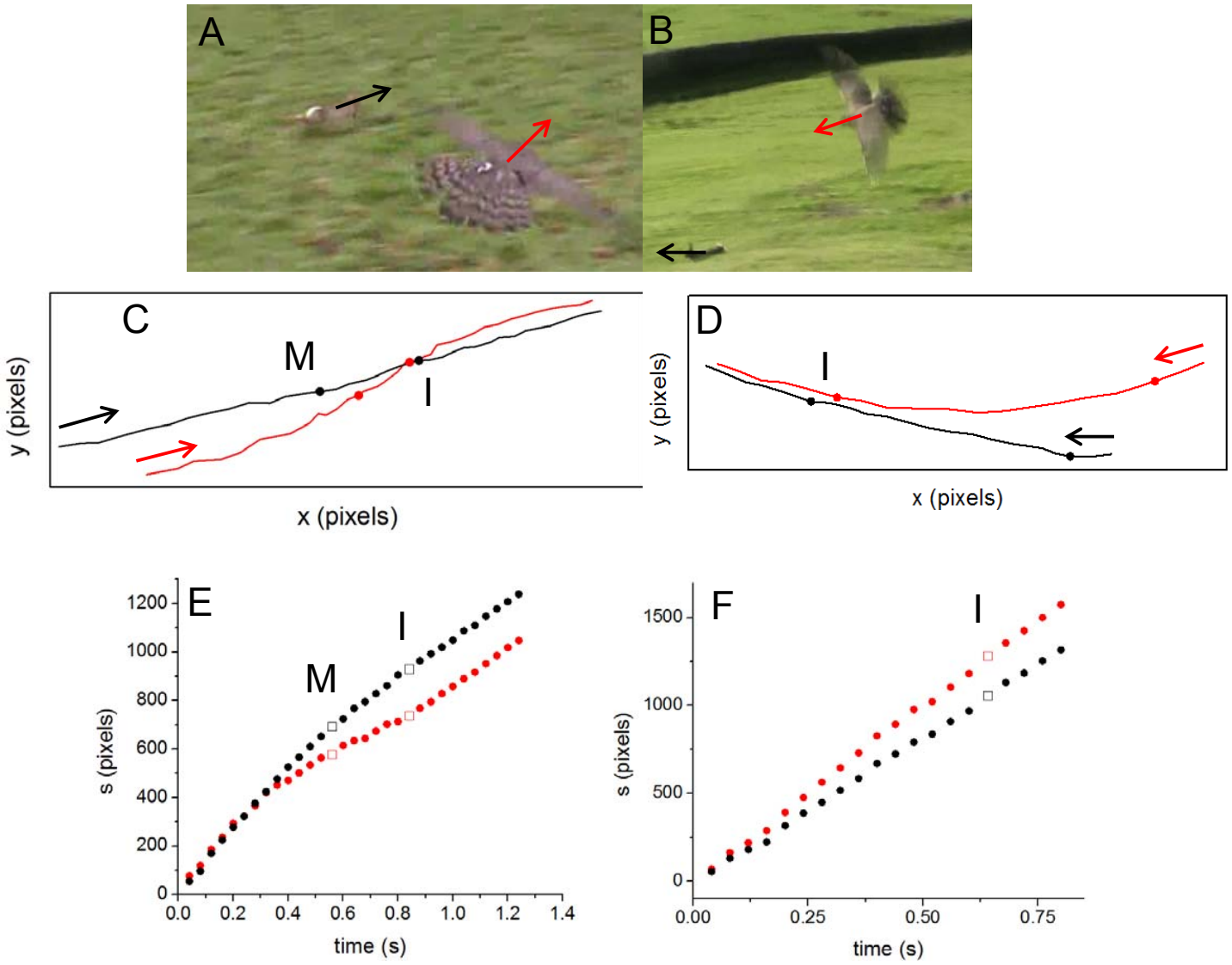

Fig. S6. Still images, tracks on video and plots of *s*, arclengthalong the trajectory, vs. time for two videos filmed from the ground in which the Goshawk used CATD then CPE (A,C,E) or a gradually arcing non-CATD trajectory (B,D,F) to pursue a rabbit. Goshawk data are in red, rabbit data in black. Points labeled M indicates points where at least one of the animals maneuvered and I indicates the point of first interception. Arrows indicate their directions and starting positions. (Image credit: David and Adam Burn)

Fig. S7. Still images from a video sequence in which the Goshawk flies to land on the falconer's glove. (A) The Goshawk is visible just above the glove at large distances (red circle) as it turns to fly toward the falconer. (B) It remains concealed by the falconer's glove until immediately before landing (C). (Image credit: Robert Musters)