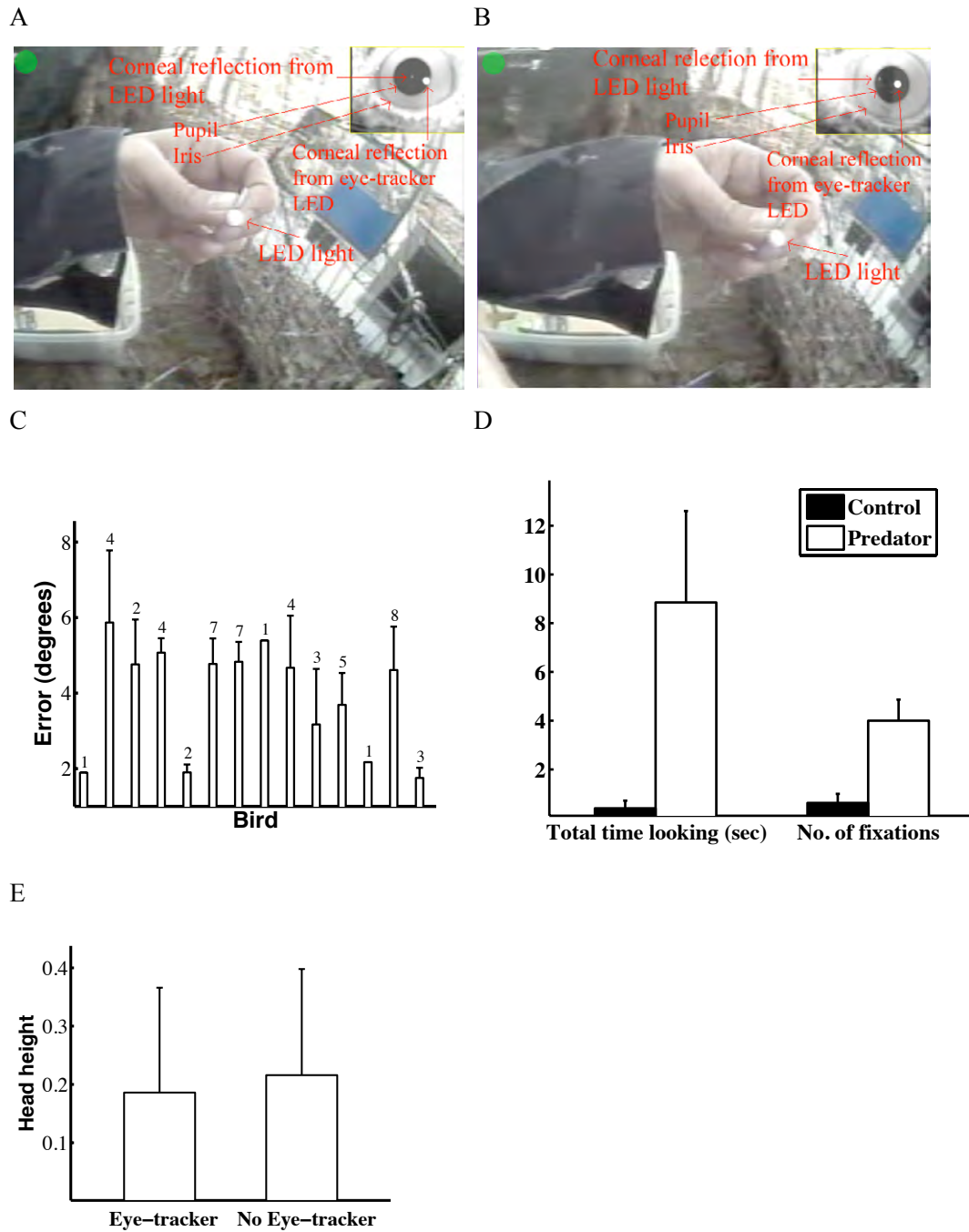


1 Fig. S1.



2

**Fig. S1.** (A,B) The eye-tracker was calibrated using an oculometric approach. An LED light (visible in the scene camera of the eye-tracker) was directed toward the bird's eye so that it created a corneal reflection (the eye camera of the eye-tracker is shown in the upper right of each image). When the corneal reflection (created by the LED light) was in the center of the pupil (A), the visual and optic axis were aligned and the peahen was looking at the LED light; when the corneal reflection (created by the LED light) was not in the center of the pupil (B), the visual and optic axis were not aligned and the peahen was not looking at the LED light. (C) Peahens ( $N=14$ ) oriented their gaze directly toward specific stimuli (such as small food objects) in non-mating contexts with minimal error (error bars represent standard errors). Numbers above error bars indicate the number of trials performed. (D) Peahens ( $N=8$ ) spent more time looking at the predator and made more fixations on the predator compared with the control region. (E) Peahens that were ( $N=12$ ) and were not ( $N=12$ ) wearing the eye-tracker held their heads up at similar heights when they were evaluating displaying males (see Materials and methods for explanation of head height metrics).

1 Fig. S2.

A



B



C



D



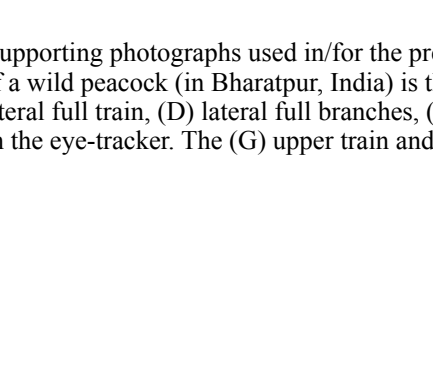
E



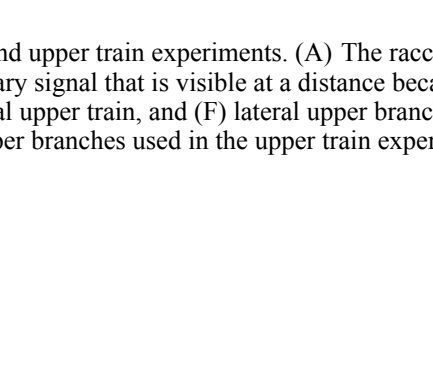
F



G

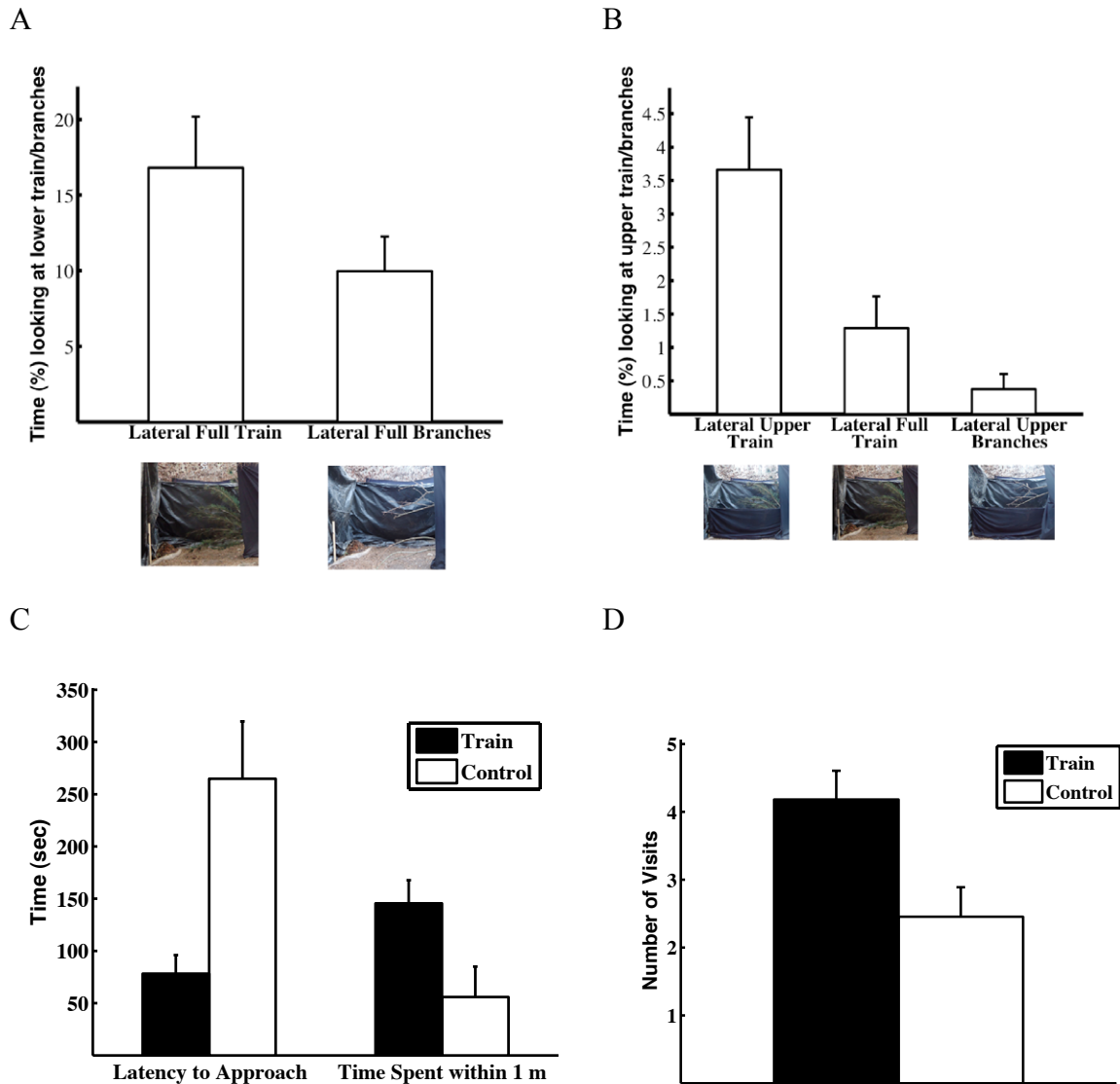


H



**Fig. S2.** Stimuli and supporting photographs used in/for the predator and upper train experiments. (A) The raccoon on a skateboard. (B) The upper train of a wild peacock (in Bharatpur, India) is the primary signal that is visible at a distance because of thick vegetation. The (C) lateral full train, (D) lateral full branches, (E) lateral upper train, and (F) lateral upper branches used in the upper train experiments with the eye-tracker. The (G) upper train and (H) upper branches used in the upper train experiments without the eye-tracker.

1 Fig. S3.



2

**Fig. S3.** (A) Peahens spent more time looking at the lower region of the lateral full train compared with the lower region of the lateral full branches and (B) spent more time looking at the lateral upper train compared with the upper region of the lateral full train; they also spent more time looking at the lateral upper train compared with the lateral upper branches ( $N=17$ ). (C) Peahens approached the upper train with a shorter latency and spent more time near the upper train, and (D) made more visits to the upper train compared with a control (upper train:  $N=11$ ; control:  $N=11$ ) when the peahens were initially relatively far from the artificial train.

1 Table S1. Model coefficients and confidence intervals for the generalized linear mixed  
 2 model using male as the sampling unit. Coefficients are contributions of each ROI to log  
 3 fixation rate, controlled for ROI area and total looking duration. Values reported are  
 4 median, 2.5%, and 97.5% quantiles of the posterior distribution of each coefficient.  
 5 Positive coefficient estimates represent increases in fixation rate (above that predicted by  
 6 the overall mean rate, adjusted for surface area); negative rates represent decreases. We  
 7 omitted head/crest and black feather ROIs from our frontal and backside display models,  
 8 respectively, because peahens never looked to these regions.

ROI		Both Eyes		
		B Coefficient (median)	2.50%	97.50%
Frontal				
	Body	1.59	0.93	2.36
	Head/crest	-	-	-
	Scale			
	feathers	0.16	-0.68	0.95
	Legs	1.74	1.02	2.47
	Dense			
	feathers	1.30	0.51	2.07
	Lower			
	eyespot	0.73	0.01	1.50
	Lower			
	fishtails	0.94	0.27	1.70
	Upper			
	eyespot	-2.83	-3.51	-2.09
	Upper			
	fishtails	-3.61	-4.44	-2.83
Backside				
	Black			
	feathers	-	-	-
	White			
	feathers	-0.59	-2.82	1.56
	Wings	1.75	-0.28	3.82
	Tail	-4.1	-7.24	-1.82
	Legs	-0.39	-2.69	1.95
	Dense			
	feathers	3.09	1.05	5.22
	Lower			
	eyespot	2.56	0.64	4.76
	Lower			
	fishtails	2.98	1.1	5.16
	Upper			
	eyespot	-2.05	-4.1	-0.01
	Upper			
	fishtails	-3.17	-5.68	-1.15

Table S2. Variation in female gaze patterns with respect to male display regions of interest (ROIs) during the frontal (n=12) and backside (n=11) male display. Mean percentage of time that peahens gazed at different male ROIs are displayed.

Bird ID	# clips	Body	Head/crest	Scale feathers	Legs	Dense feathers	Lower eyespots	Lower fishtails	Upper eyespots	Upper fishtails	
Frontal											
1	10	2.10	0.00	1.94	3.25	16.68	55.24	18.61	2.18	0.00	
3	2	0.00	0.00	0.00	9.38	48.74	21.81	20.10	0.00	0.00	
5	21	1.13	0.00	1.64	4.50	11.83	53.30	26.87	0.74	0.00	
6	10	1.68	0.00	0.00	6.46	35.93	32.32	23.42	0.00	0.20	
8	2	0.00	0.00	1.63	4.66	2.73	61.84	26.94	0.00	2.20	
26	12	10.96	0.00	0.00	1.55	10.13	54.31	8.36	6.49	8.19	
27	3	1.35	0.00	0.00	0.00	0.85	70.30	21.90	5.58	0.00	
28	2	0.00	0.00	0.00	0.00	3.61	84.40	12.00	0.00	0.00	
31	12	1.06	0.00	0.33	6.87	7.35	61.67	18.07	3.02	1.64	
32	5	2.82	0.00	0.00	0.54	16.42	60.80	17.67	1.79	0.00	
34	22	0.86	0.00	0.00	4.37	15.07	40.62	30.21	4.93	3.93	
35	4	22.50	0.00	0.00	17.50	6.74	27.50	25.40	0.42	0.00	

Bird ID	# clips	Black feathers	White feathers	Wings	Tail	Legs	Dense feathers	Lower eyespots	Lower fishtails	Upper eyespots	Upper fishtails	Black feathers
Backside												
1	8	0.00	0.82	20.22	0.00	0.77	13.40	32.00	31.90	0.93	0.00	0.00
5	21	0.00	0.73	13.46	0.00	0.00	17.02	35.56	26.54	4.00	2.70	0.00
6	8	0.00	0.00	1.34	0.00	4.38	34.50	34.80	25.01	0.00	0.00	0.00
8	1	0.00	0.00	42.73	0.00	0.00	0.00	57.27	0.00	0.00	0.00	0.00
26	14	0.00	0.38	6.46	0.00	7.15	25.04	51.27	8.46	1.24	0.00	0.00
27	4	0.00	0.69	3.82	0.00	0.00	8.02	60.80	26.70	0.00	0.00	0.00
28	3	0.00	0.00	0.00	0.00	36.20	2.61	34.20	14.50	6.36	6.14	0.00
31	9	0.00	0.00	19.50	0.00	4.35	30.90	24.30	20.95	0.00	0.00	0.00
32	2	0.00	0.00	13.40	0.00	0.00	13.40	68.90	4.26	0.00	0.00	0.00
34	38	0.00	0.67	14.29	0.83	0.31	8.21	41.55	22.02	10.66	1.46	0.00
35	6	0.00	0.00	0.39	0.00	0.00	22.30	56.00	18.21	2.85	0.29	0.00



**Movie 1.** A peahen orients her gaze toward a mealworm (at time 2;12–3;03) that a researcher throws in front of her. In the slow-speed (25%) version of the clip, the mealworm is highlighted with a red ellipse. The female's estimated gaze (yellow dot) is approximately 4 deg from the middle of the mealworm.



**Movie 2.** A peahen directs her gaze toward a taxidermy raccoon that is elevated above the ground.



**Movie 3.** A peahen evaluates the backside and frontal male courtship display. The yellow dot indicates where the female is looking. The upper right inset video shows a simultaneous close-up of the female's eye movements: a green dot tracks the center of her pupil, which is shaded in red, and a yellow crosshair tracks her corneal reflection (the three colored squares are used by the software to locate the pupil center and corneal reflection). The female momentarily looks at a passing squirrel during the frontal display.