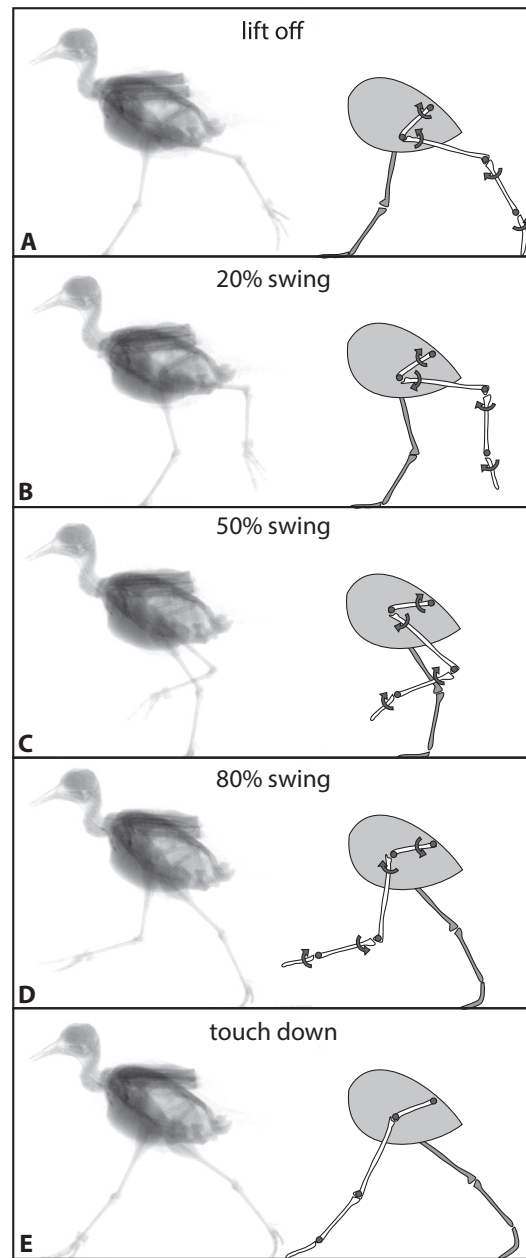
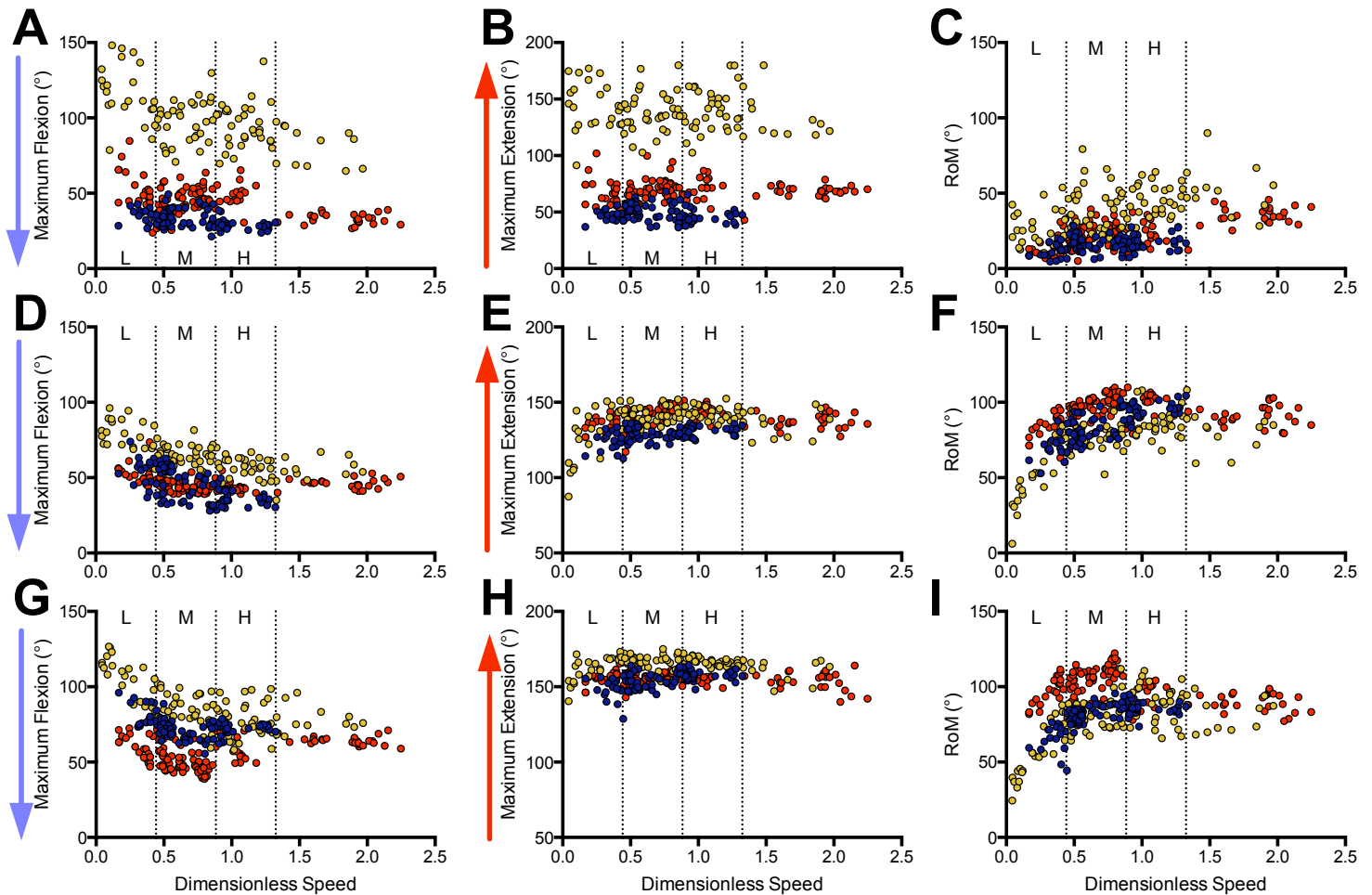


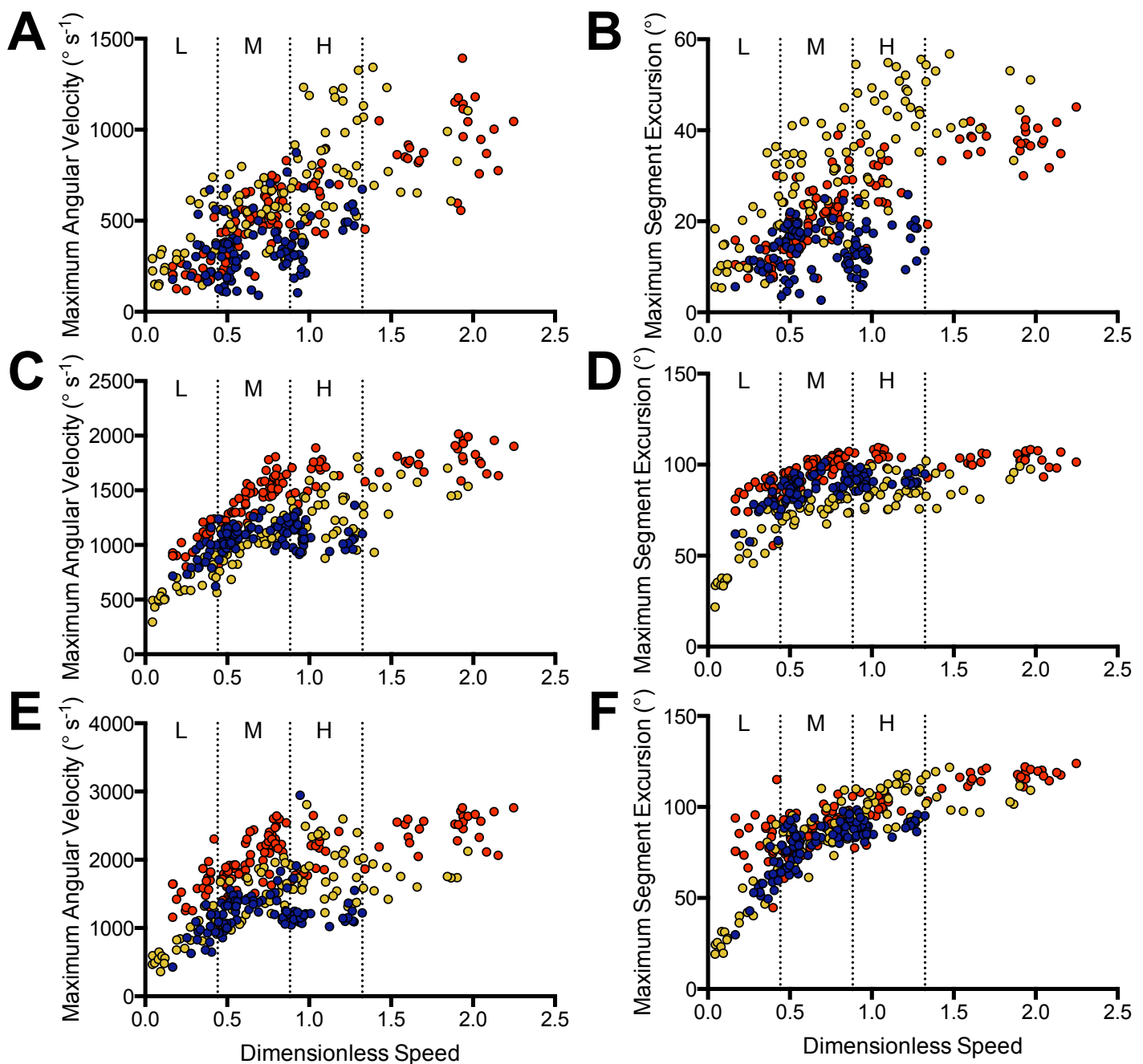
**Fig. S1. Temporal parameters of hindlimb kinematics vs. dimensionless speed.** Stride frequency (A), duty factor (B), and swing (C) and stance durations (D) are all plotted against speed. Data for oystercatchers, lapwings, and avocets are plotted in red, yellow, and blue, respectively. 'L,' 'M,' and 'H' respectively denote low, middle, and high speed categories.



**Fig. S2: Representative x-ray stills and schematic drawings of the swing phase during a grounded run of a Northern lapwing.** Arrows indicate segmental movement. Note that not all limb segments are rotated in the direction of movement at all times during swing. Initially, the knee undergoes flexion (A) before it extends throughout the rest of swing phase, at mid-swing (C) all segments are protracted, and well before touch down (D, E) the hip and intertarsal joint start to extend.



**Fig. S3. Maximum joint flexion, extension, and ranges of motion during swing phase as a function of dimensionless speed.** Hip kinematics are plotted in A to C, knee kinematics are plotted in D to F, and intertarsal joint kinematics are plotted in G to I. Blue arrows denote the direction of increasing flexion, whereas red arrows denote the direction of increasing extension. Data for oystercatchers, lapwings, and avocets are plotted in red, yellow, and blue, respectively. L, 'M,' and 'H' respectively denote low, middle, and high speed categories.



**Fig. S4. Maximum angular velocities and excursions of hindlimb segments during swing phase as a function of dimensionless speed.** Velocities and excursions of the thigh, shank, and pes are shown in A and B, C and D, and E and F, respectively. Data for oystercatchers, lapwings, and avocets are plotted in red, yellow, and blue, respectively. L, 'M,' and 'H' respectively denote low, middle, and high speed categories.

**Table S1.** Avocet speed, temporal, and joint angle raw data

[Click here to Download Table S1](#)

**Table S2.** Oystercatcher speed, temporal, and joint angle raw data

[Click here to Download Table S2](#)

**Table S3.** Lapwing speed, temporal, and joint angle raw data

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**Table S4.** AICc scores indicating relative quality of fit of linear and power functions to temporal kinematic parameters as they vary with speed. Scores for the better fitting function are highlighted in bold.

Parameter	Absolute Speed		Dimensionless Speed	
	Linear Fit	Power Fit	Linear Fit	Power Fit
<b>Stride Frequency</b>				
Avocets	-80.4	<b>-99.2</b>	-36.8	<b>-107.2</b>
Oystercatcher	-1.1	<b>-149.7</b>	153.3	<b>-101.9</b>
Lapwings	-8.9	<b>-116.7</b>	159.7	<b>-17.6</b>
<b>Duty Factor</b>				
Avocets	-397.8	<b>-403.1</b>	-340.7	<b>-386.1</b>
Oystercatchers	-429.5	<b>-441.2</b>	-380.1	<b>-436.9</b>
Lapwings	-251.3	<b>-326.8</b>		
<b>Swing Duration</b>				
Avocets	-468.2	<b>-468.7</b>	-466.7	<b>-467.5</b>
Oystercatchers	-623.8	<b>-643.8</b>	-607.0	<b>-643.8</b>
Lapwings	-496.6	<b>-505.9</b>	-494.2	<b>-505.9</b>
<b>Stance Duration</b>				
Avocets	-346.5	<b>-414.2</b>	-291.4	<b>-403.6</b>
Oystercatchers	-246.8	<b>-625.5</b>	-204.8	<b>-622.0</b>
Lapwings	-57.7	<b>-369.2</b>	-25.2	<b>-350.9</b>