

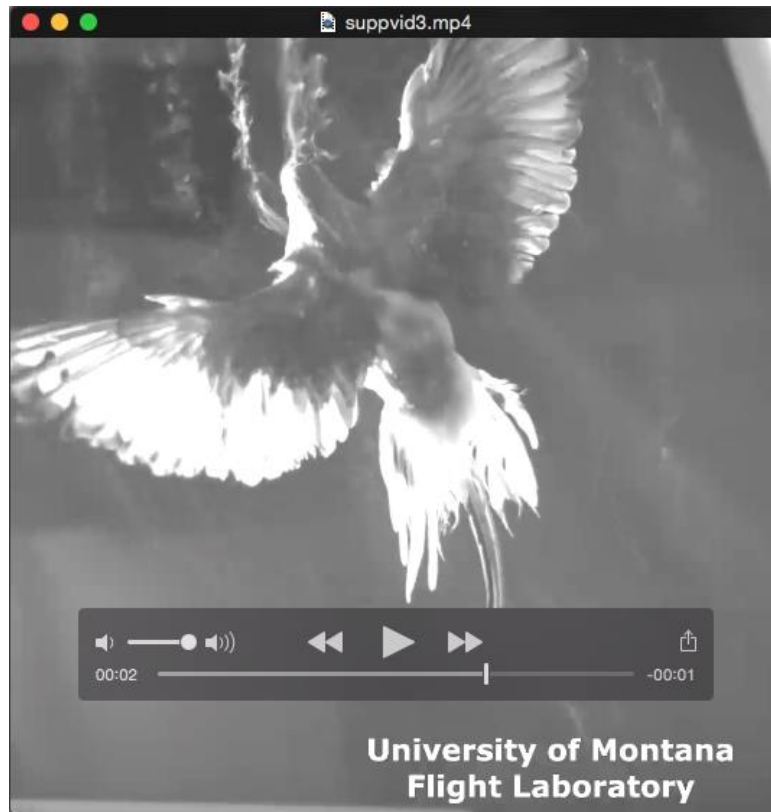
Fig. S1. Descriptors of variables measured in kinematic analyses. Red dots represent markers drawn on the bird with sharpie at the wrist, tip of the primary feather, and the first secondary feather. V_{tip} and V_{ang} required the use of two time intervals (represented as t_1 , light gray silhouette; and t_2 , dark gray silhouette).



Movie 1. Streamlines reveal smoke entrained on the distal primary feathers of the finch during upstroke. However, this minor induced momentum was not visible in PIV images.



Movie 2. Streamlines reveal entrained air during the wingtip-reversal in the diamond dove. During mid-upstroke, streamlines are disrupted by the wing.



Movie 3. Streamlines during the transition from upstroke to downstroke in the diamond dove. Induced momentum to the wake is visible behind the bird following the “clap” (dorsal contact between the left and right wing).