



Cover: The diamond dove exhibits an aerodynamically active upstroke, improving force production during slow flight. Crandell and Tobalske (pp. 2518-2527) examined avian force production mechanisms with high-speed kinematics and particle image velocimetry. For birds with long, pointed wings, including the dove, induced velocities during the downstroke (inset) are aided by an interaction between the left and right wing during upstroke. This is a novel example of an evolutionary convergence among insects, bats and birds that joins leading-edge vortices and rotational circulation as significant biological solutions to meet the considerable challenges of slow flight. Photo credit: Robert Niese and Kristen Crandell (inset).

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