Supplementary Data 1.—An expression for the total drag, D_T, produced by the model is found by integrating Eq. 1 over the length of the arm, from 0, to h where y is the variable of integration:

$$\int_0^h \frac{1}{2} C_D \rho S U^2 \tag{5}$$

$$S = (b_0 + (b_1 - b_0)/h)y \tag{6}$$

$$U = (V/h)y \tag{7}$$

$$D_T = \frac{1}{2} C_D \rho \int_0^h ((b_0 + (b_1 - b_0)/h)y)((V/h)y)^2 dy \tag{8}$$

$$D_T = \frac{1}{2} C_D \rho \left(\frac{b_0 V^2 h}{3} + \frac{b_1 - b_0 V^2 h}{4}\right) \tag{9}$$

where variables are as stated in the text. A simplified form of Eq. 9 is provided in the text as Eq. 3. To determine the total drag produced by multiple arms in a power stroke the result in Eq. 9 must be multiplied by the number of arms.