

Abstract Submitted
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Drag Coefficients of Drifting Waterbirds¹ KARL VON ELLENRIEDER, Florida Atlantic University, KEVIN KENOW, U.S. Geological Survey, HUAJIN (ARIEL) QU, TSUNG-CHOW (JOE) SU, Florida Atlantic University — A series of towing tank experiments has been performed to support the development of a probabilistic source tracking model that can be used to estimate the origin of waterbird die-offs. While monitoring the appearance of waterbird carcasses on beaches provides the primary means of assessing the magnitude, as well as the spatial and temporal patterns of die-offs, interpreting the actual site of exposure to toxins is hampered by a lack of information on the drift patterns of carcasses and the confounding influences of wind/current. In this work, a series of experimental measurements were conducted on Common Loon and Lesser Scaup carcasses to obtain steady drag coefficients of representative waterbird species. The tests were designed to capture the drag coefficients associated with current speeds of between 0.2 and 0.8 meters per second and wind speeds of up to 10 meters per second at different levels of carcass submergence. Using the submerged frontal area of an ellipse, together with the frontal area of any submerged portions of the head and neck gives good similarity across the ranges of speeds and submergence levels tested. An example approach to determining waterbird drift velocity and direction from knowledge of the drag coefficients, wind and current is provided.

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