Using Double-observer Surveys to Estimate Detection Probability of Upland Nesting Ducks

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Numerous studies suggest that nest success is the most important predictor of population growth in prairie-nesting ducks, which has led waterfowl managers to focus considerable effort on finding duck nests to estimate nest survival. However, managers also need to understand nest density, because the effectiveness of alternative management actions is the product of nest density and nest success. We conducted double-observer surveys in conjunction with ATV-towed nest drags to estimate the probability of observing flushing female ducks during a two year nesting study conducted in northeastern North Dakota. When a nest was located, we recorded whether the flush was observed by one or both ATV-operators, and we used logistic regression to determine what factors affected detection probability of each observer, and to help determine what proportion of nests went undiscovered because they were missed by both observers. We found 1957 duck nests, including 1484 detected by both observers, 273 detected only by the primary observer, and 200 detected only by the secondary observer. The primary and secondary observers detected 88.1 and 84.5% of available nests, leading to a joint detection probability of 98.1%. We found that detection probability varied among observers and increased throughout the nesting season, presumably because observers got better at monitoring the nest drag while driving the ATVs. We conclude that ATV-towed nest drags are effective at detecting the majority of flushing female ducks.