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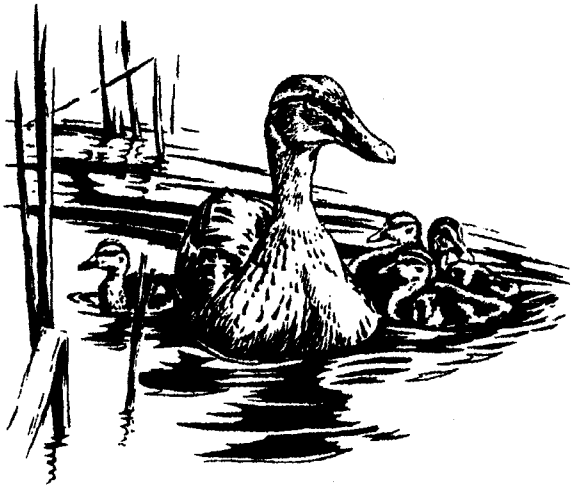

Mallard Investigations

W-130-R-3

Quarterly Federal Aid Performance Report

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Submitted by:

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14 September 1999

QUARTERLY FEDERAL AID PERFORMANCE REPORT

Mallard Investigations W-130-R-3

Stephen P. Havera--Illinois Natural History Survey, Havana

1 July through 30 September 1999

STUDY I: NESTING BIOLOGY OF MALLARDS IN ILLINOIS

JOB NO. I.1. Nesting History and Reproductive Success of Mallards in Illinois

During this quarter, the 1999 fieldwork was completed. Mallard hens (Anas platyrhynchos) were radio-tracked ≥ 6 days/week until hens entered molting flocks, raised a brood to 20 days posthatch, emigrated, or died. The 1999 nesting and brood rearing season (first egg laid to last brood surviving to 20 days posthatch) at the Metropolitan Water Reclamation District of Greater Chicago (MSD) spanned April 6th to August 6th.

Following the 1999 field season, all data were entered into a Lotus spreadsheet and summarized in the 1999 Annual Report (Yetter et al. 1999). Survival estimates were generated for mallard hens equipped with radio transmitters and comparisons were made between the 1998 and 1999 nesting and brood rearing seasons.

Methods

Female mallard survival rates were calculated for hens monitored at the Banner Marsh State Fish and Wildlife Area (Banner) (1998) and MSD (1998-1999) study sites (Hine et al.

1998, Yetter et al. 1999) using the Kaplan-Meier product-limit estimator modified for the staggered entry of animals (Kaplan and Meier 1958, Pollock et al. 1989, White and Garrott 1990). For determining survival, hens were censored the day following the last radio contact, the day following loss of a transmitter, the day of brood loss, or the 20th day posthatch (Paquette et al. 1997).

Differences in survival rates of mallard hens between the age classes, study sites, and years were tested using log-rank tests. The most conservative of the three χ^2 tests was used to detect differences in hen survival between the study sites (White and Garrott 1990:241). Significance levels were set at $P \leq 0.05$.

Results

Thirty-six and 41 mallard hens were radio-tracked for ≥ 5 days to determine survival during the 1998 and 1999 breeding seasons. Six (16.7%) and 12 (29.3%) hens perished during 1998 and 1999, respectively.

The survival rate of mallard hens at Banner (n=11) during 1998 was $\hat{s}=0.438$ (SE=0.315); due to a limited sample size at Banner no age class comparisons were made. In 1998 at MSD, adult hen survival (n=16) was $\hat{s}=0.831$ (SE=0.110) and yearling hen survival (n=9) was $\hat{s}=0.667$ (SE=0.192). No differences were detected in the survival rates between the age classes ($\chi^2=0.361$, 1 df, $P=0.548$); therefore, the pooled hen (n=25) survival rate at

MSD was 0.777 (SE=0.099). No differences were detected in the survival rates between the study sites (χ^2=3.239, 1 df, P=0.072), and the combined survival estimate for mallard hens (n=36) during 1998 was $\hat{s}$=0.673 (SE=0.140).

Mallard hen survival at MSD during 1999 was $\hat{s}$=0.568 (SE=0.241, n=17) for adults and $\hat{s}$=0.571 (SE=0.110, n=24) for yearlings. Hen survival did not differ between the age classes (χ^2=3.11, 1 df, P=0.078), and the pooled hen survival rate was $\hat{s}$=0.554 (SE=0.139, n=41) for the nesting and brood rearing season.

Because the Kaplan-Meier survival estimate for all birds was higher in 1998 than 1999 (log-rank χ^2=6.30, 1 df, P=0.012), hen survival could not be pooled across years for analysis.

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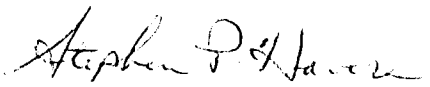

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DATE: 14 September 1999