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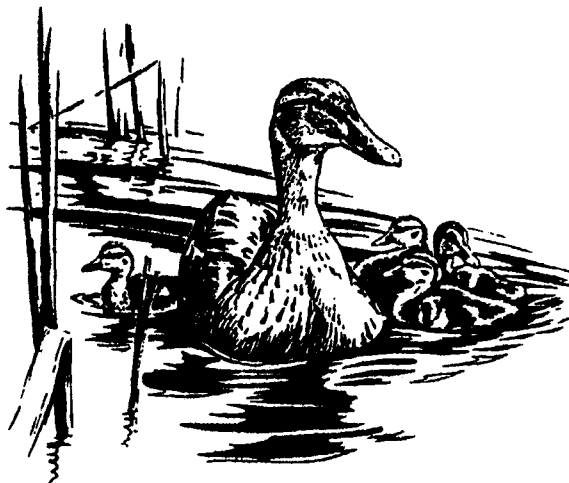
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ILLINOIS NATURAL HISTORY SURVEY

CENTER FOR WILDLIFE ECOLOGY



Mallard Investigations

W-130-R-2

Quarterly Federal Aid Performance Report

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10 March 1999**

QUARTERLY FEDERAL AID PERFORMANCE REPORT

Mallard Investigations

W-130-R-2

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

1 January through 31 March 1998

STUDY I: NESTING BIOLOGY OF MALLARDS IN ILLINOIS

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

During this quarter, Kaplan-Meier nest success estimates were generated for nesting mallard (Anas platyrhynchos) hens equipped with radio transmitters during spring 1998. Daily locations of hen mallards monitored during spring 1998 were entered into a geographic information system (GIS), and home range and other analyses are being conducted. A 30 ft. tower was erected at the Metropolitan Sanitary District of Greater Chicago (MSD) and fitted with a dual Yagi, null-antennae system to assist in the daily location of radio-marked hen mallards during spring 1999. Decoy traps were refurbished as needed, and general preparations for the 1999 field season were made.

Methods

Nest success rates of radio-marked female mallards monitored at the Banner Marsh State Fish and Wildlife Area (Banner) and MSD study sites during spring 1998 were calculated using the Kaplan-Meier product-limit estimator modified for staggered entry (Kaplan and Meier 1958, Pollock et al. 1989, White and Garrott

1990). Nests were considered successful if they hatched \geq one egg. Mallard nest success at Banner and MSD was compared using log-rank tests. The most conservative of the three χ^2 tests was used to detect differences in nest success between the study sites (White and Garrott 1990:241). Significance levels were set at $P \leq 0.05$.

Results

We determined nest success from 43 nest attempts by 27 radio-marked, mallard hens. Nest success at Banner ($n = 17$) was 0.202 (SE = 0.102) and nest success at MSD ($n = 26$) was 0.318 (SE = 0.099) (Figs. 1-2). No differences were detected in the survival rates between the study sites ($\chi^2 = 1.455$, 1 df, $P = 0.228$); therefore, the pooled nest ($n = 43$) success rate was 0.272 (SE = 0.073) (Fig. 3).

Literature Cited

- Kaplan, E.L., and P. Meier. 1958. Nonparametric estimation from incomplete observations. *J. Am. Stat. Assoc.* 53:457-481.
- Pollock, K.H., S.R. Winterstein, C.M. Bunck, and P.D. Curtis. 1989. Survival analysis in telemetry studies: the staggered entry design. *J. Wildl. Manage.* 53:7-15.
- White, G.C., and R.A. Garrott. 1990. Analysis of wildlife radio-tracking data. Academic Press, Inc., San Diego, CA. 383pp.

Kaplan-Meier Estimate of Mallard Nest Success Banner Marsh Spring 1998

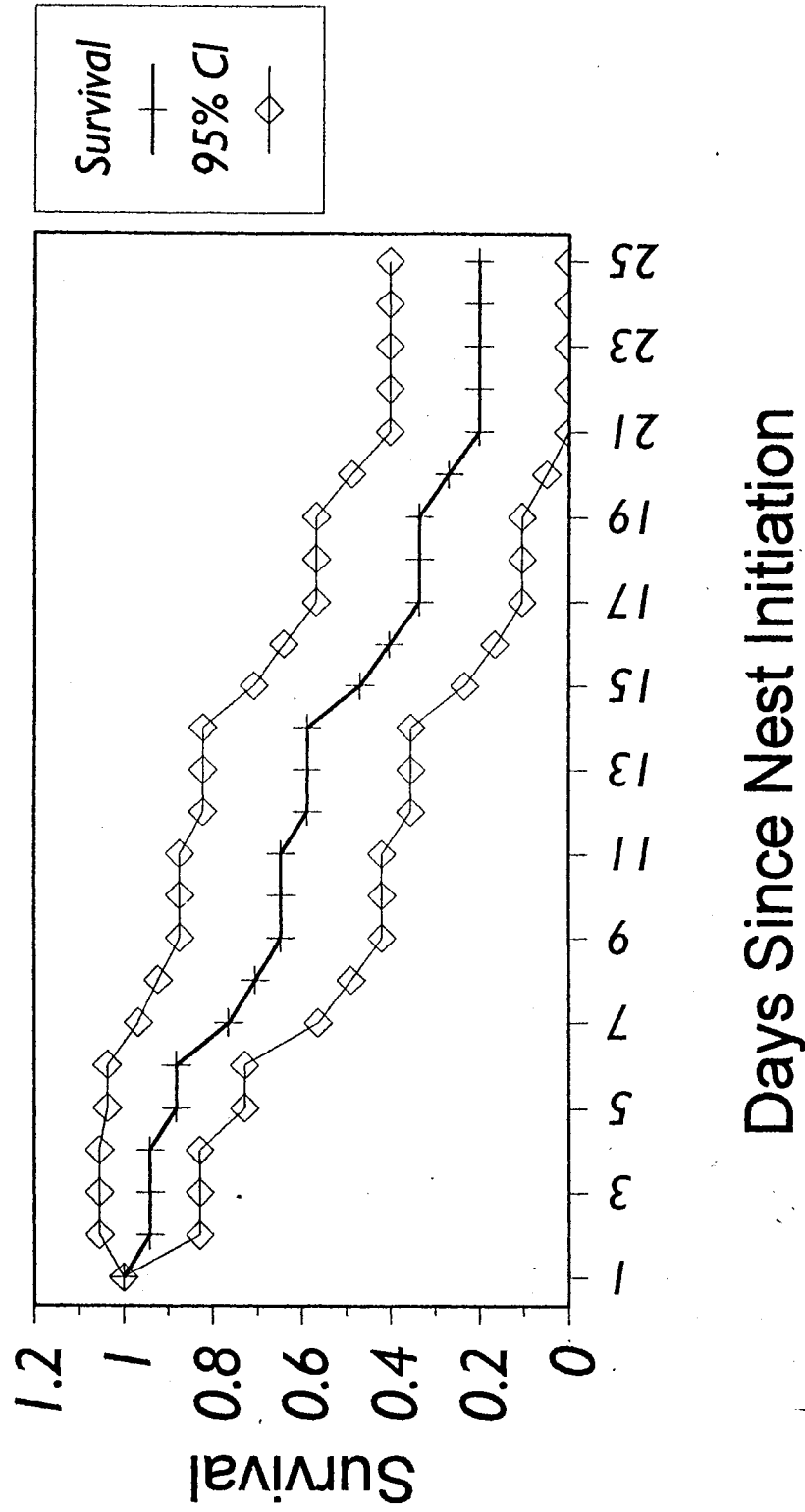


Figure 1. Kaplan-Meier nest success estimate for mallard hens at the Banner Marsh State Fish and Wildlife Area in westcentral Illinois during spring 1998.

Kaplan-Meier Estimate of Mallard Nest Success MSD Spring 1998

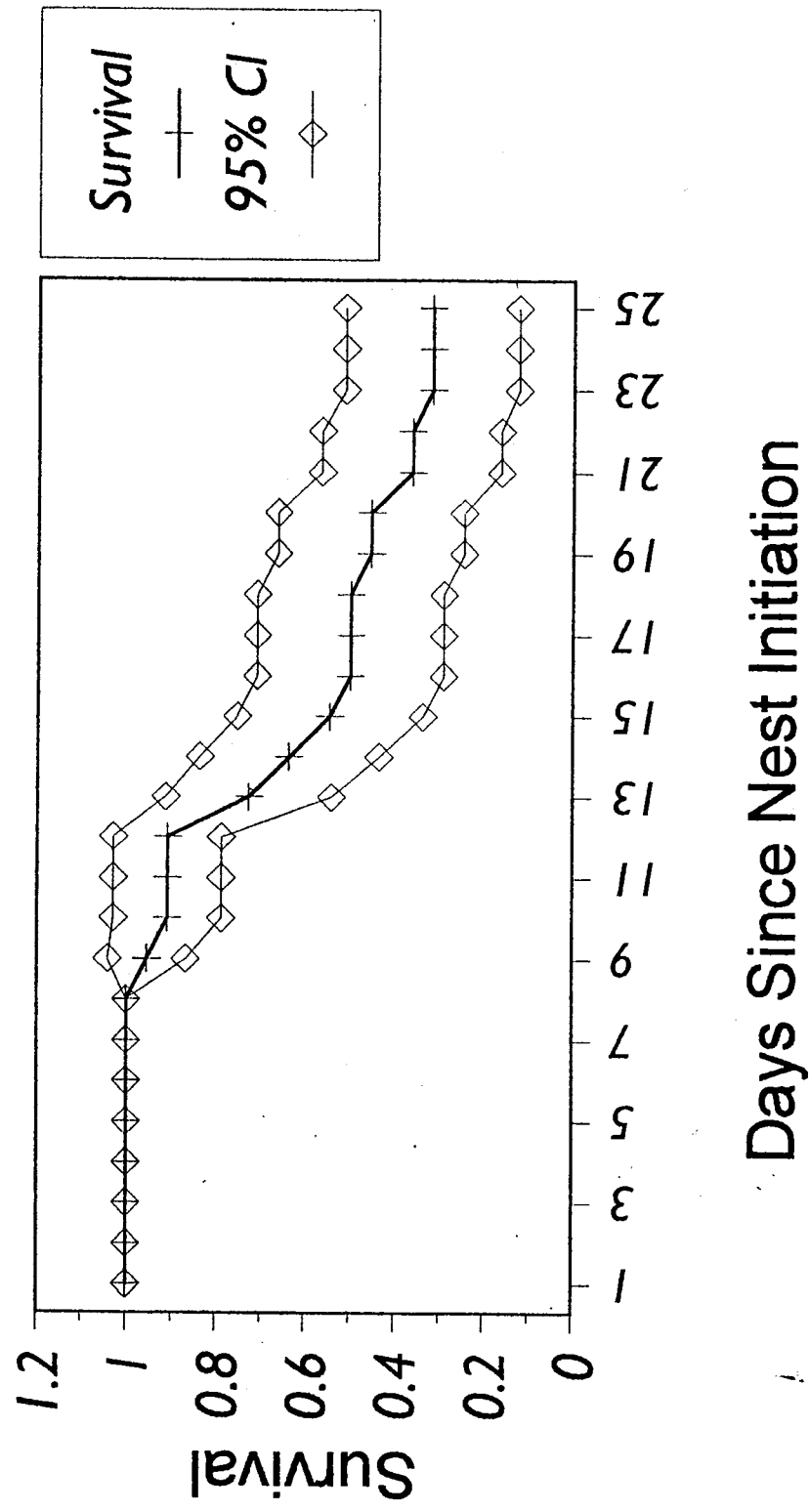


Figure 2. Kaplan-Meier nest success estimate for mallard hens at the Metropolitan Sanitary District of Greater Chicago (MSD) in westcentral Illinois during spring 1998.

Kaplan-Meier Estimate of Mallard Nest Success Spring 1998

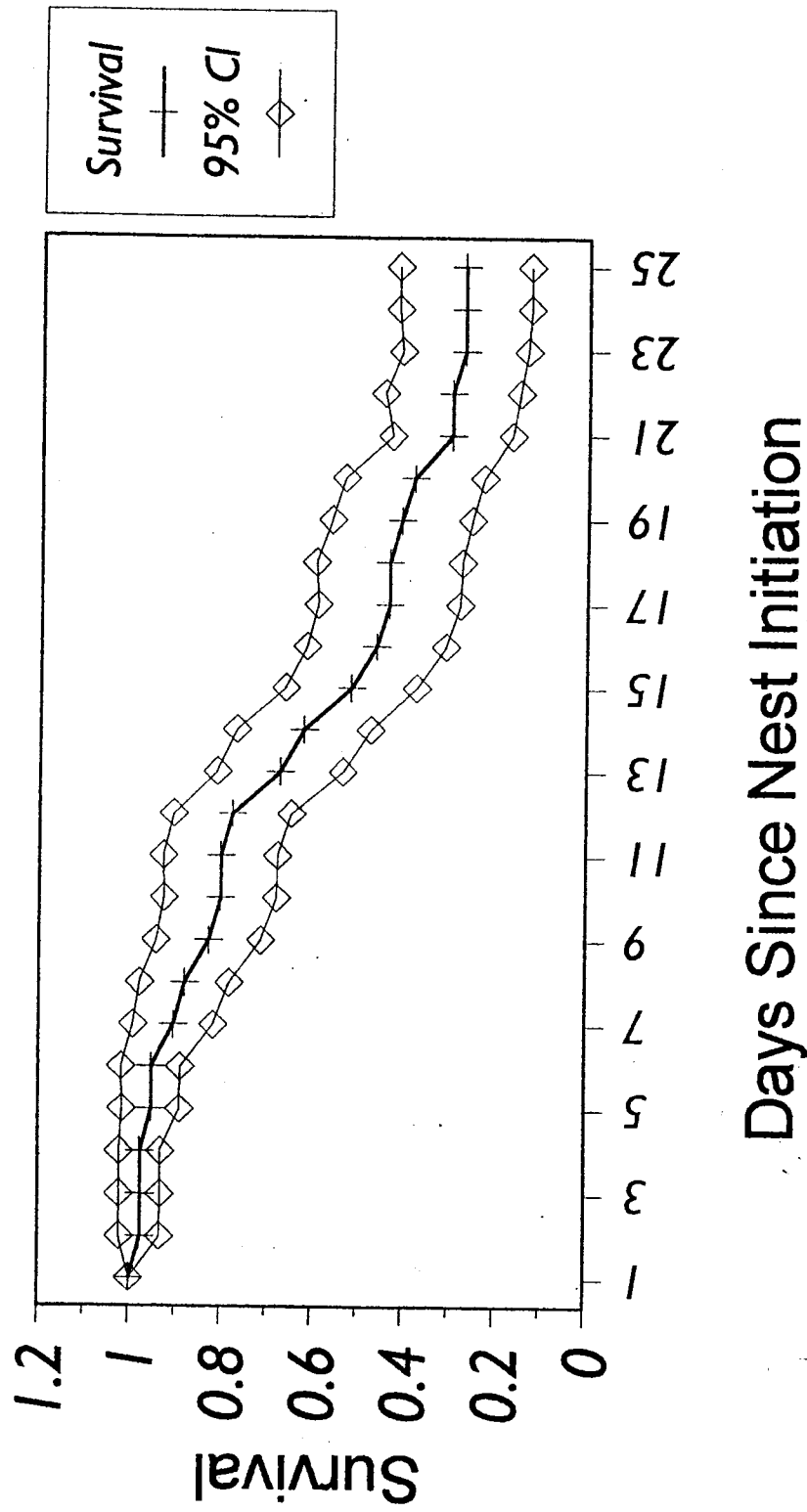


Figure 3. Kaplan-Meier nest success estimates for mallards in westcentral Illinois during spring 1998.

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