

ILLINOIS
NATURAL HISTORY
SURVEY



CENTER FOR WILDLIFE ECOLOGY

Cooperative Upland Wildlife Research

Project W-106-R-1, 2, 3

Final Report

by

Richard E. Warner
Illinois Natural History Survey

1 July 1989 through 30 June 1992

State: Illinois
Project No.: W-106-R-1

Project Title: COOPERATIVE UPLAND WILDLIFE RESEARCH

Study No.: 1; **Title:** Effects of emerging farm programs and practices on habitat quality for upland game.

Job 1.1A (NHS) Upland Game and Habitat Associations.

Job Objectives: To put in place field inventories of upland wildlife abundance and habitat conditions that will (1) document the effects of land use changes (state-wide and regionally) on the abundance of pheasants, rabbits, and quail; and to (2) identify key land use practices that should be included in future farm programs and DOC habitat initiatives.

Progress: Long-term monitoring of pheasant demography and habitat conditions was instituted; sites include 2 areas in Ford County (Sibley Study Area (SSA) and Ford County Management Unit (FCMU)), and areas abutting transect pheasant census routes in Christian, Lee, and Ogle Counties. Maps and instructions were forwarded to Illinois Department of Conservation (IDOC) staff for monitoring of winter and summer habitat conditions along all pheasant census routes. IDOC staff cover-mapped the areas, and land use and habitat conditions have been figured for 43 census routes. The tabulations of habitat conditions were entered on a microcomputer data base and preliminarily analyzed for regional differences and associations with pheasant abundance.

Conservation Reserve Program (CRP) fields were mapped within a 0.5-mile radius of each route; a sample of CRP contracts was also spot-checked for seeding type in county Agricultural, Conservation, and Stabilization (ASCS) offices.

Data generated from Job 1.1A will be used in Phase II of the project (W-106-R-4,5,6) to develop habitat models, describe regional habitat management priorities, and to write articles describing the impacts of set-aside programs on upland wildlife habitat in Illinois during the past 3 decades.

Study No.: 2; Title: Ecology and management of ring-necked pheasants in relation to farm programs and land use practices.

Job 2.1A (NHS) Pheasant Management Strategies.

Job Objectives: To (1) describe the actual and potential impacts of farm programs and policies on pheasant abundance in Illinois and (2) identify cost-effective DOC habitat initiatives that can be integrated with farming practices to improve habitat conditions for pheasants.

Progress: Acreages enrolled by county in annual set-aside programs were acquired from the state ASCS office. County level data describing participation (acres enrolled) in farm programs diverting cropland from production were entered on computer for 1961-72 and 1983-91. Data for the 1980s and early 1990s include both annual and long-term (CRP) contracts. Computer maps were generated to compare temporal trends in cropland diversion programs in relation to other agricultural land use practices.

Parcels enrolled in diverted acres programs were identified and mapped for the SSA and FCMU in 1991 and 1992. Descriptive information about each contract (field) was obtained from the Ford County ASCS office. Vegetation composition and disturbances were monitored seasonally in order to determine habitat quality for pheasants and other upland wildlife. The numbers of fields that persisted from one growing season to the next were also monitored, since multiple year tracts are particularly important to nesting upland wildlife. The importance of set-aside programs to grassland

habitat on the SSA will be compared for 1962-63 and 1991-92 during Phase II of the project.

Since fall of 1989 about 65 hen pheasants have been radio-tracked on the FCMU. This radio-tracking effort is focusing primarily on (1) factors affecting survival, and (2) seasonal movements and changes in range use relative to habitat conditions--especially agricultural disturbances in fall and spring. To date the radiotelemetry information has only been superficially analyzed.

Trends in the abundance of pheasants were monitored seasonally on the SSA and FCMU. Land use was also cover mapped during the growing seasons (1990, 1991, 1992) on each area. The progressions of spring and fall field disturbances were also monitored on the FCMU in conjunction with radiotelemetry studies.

As part of the radiotelemetry efforts, several microcomputer software programs that analyze and plot animal locations were evaluated. Various microcomputer functions were programmed specifically for the FCMU studies.

The efforts initiated in Job 2.1A will be continued as part of Phase II of the project (W-106-R-4,5,6). Eventually up to 90-100 hen pheasants will be radio-monitored on the FCMU.

Study No.: 5; **Title:** Ecology and management of cottontails in relation to farm programs and land use practices.

Job 5.1A (NHS) Ecology and Management of Cottontails.

Job Objectives: To (1) characterize relatively good rabbit range in Illinois; and (2) describe the importance of small natural areas (habitat islands) for rabbit survival, dispersal, and abundance at local scales.

Progress: Most of the rabbit studies are part of a Ph.D. dissertation project for Phil Mankin, University of Illinois, with R.E. Warner as research advisor. The trapping of cottontails on the FCMU was initiated in March 1990. Trapping (7-10 trap nights/month) has been conducted primarily on or near 10-12 farmsteads. Over 400 individuals have been trapped and marked. Blood samples are being taken from a subsample of rabbits for analysis of physiological condition and ingestion of insecticides.

A sub-sample of the rabbits captured was also fitted with radio transmitters. However, commercially available radio collars for rabbits were rejected because they were considered to be too heavy. Thus, various experimental designs were field tested during 1990 and early 1991. Over 40 rabbits have been fitted with radio transmitters to date. Rabbits have typically been radio-tracked 2-3 times/week.

Changes in the relative abundance of rabbits have also been considered at the county level for Illinois. Average rabbit kill statistics per county for 1956-69 were compared with statistics for the 1980s. Statistical analyses were initiated to determine (1) regions in Illinois where rabbit abundance has changed, and (2) land use and other habitat conditions that have in part caused changes in abundance.

The efforts initiated in Job 5.1A will be continued as part of Phase II of the project (W-106-R-4).

Study No.: 6; **Title:** Analysis of data and reporting.

Job 6.1A (NHS)

Job Objectives: To (1) computer-analyze and store important data sets and (2) report the findings associated with Studies 1-5.

Progress: Analysis of county- and state-level patterns in the

distribution of diverted acres were analyzed for Illinois for the past 3 decades. Preliminary multivariate analyses were completed for trends in the kill of upland game in relation to land use and other habitat conditions over the past 35 years. These analyses included farmland diverted under annual and long-term contracts (e.g., the CRP).

This job was also directed to regional analyses of the Illinois pheasant range. The pheasant range was delineated by response region; i.e., counties were categorized according to 3 regions based in the index of relative pheasant abundance (Rural Mail Carrier Census data), and divided by the amount of grassy habitat in each county. These response regions were compared for changes in numerous habitat related factors over time (1963-1988). This approach may offer a means for identifying habitat priorities for different parts of the state, and for predicting pheasant responses to management, as well as related costs and returns.

The usefulness of this methodology will be further tested using data collected from the 1993 Rural Mail Carrier's Census, which will be conducted as part of Phase II of the project (W-106-R-4,5,6).

Data pertaining to over 6,000 radio locations (triangulations) of pheasants and rabbits on the FCMU since fall, 1989, were entered on computer, and verified for accuracy. Coordinates of animals locations have been calculated via main-frame computer.

Three published articles developed as part of W-106-R-1,2,3 and earlier (W-66-R) projects are appended. These include:

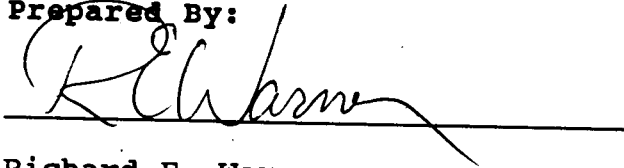
Warner, R.E. 1992. Nesting by grassland passerines on road rights-of-way in central Illinois. *Biological Conservation* 59:1-7.

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and returns of roadside management for ring-necked pheasants in Illinois. Wildl. Soc. Bull. 20:279-285. In press.

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Prepared By:



Richard E. Warner
Principal Investigator

Date: 27 August 1992

Distribution List:

Larry David
John Buhnerkempe