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AN EXPERIMENTAL DESIGN FOR INVESTIGATING WINTER BIRD DEPREDATION AT SOUTH TEXAS FEEDLOTS

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INTRODUCTION

Large aggregations of birds concentrating around livestock feedyards during fall and winter months have been a common occurrence in many parts of the country (Besser et al. 1968; Dolbeer et al. 1978; Levingston 1967; Palmer 1976; U.S. Fish and Wildlife Service 1976). Extensive utilization of livestock feedyards by these flocking birds has been reported to result in economic losses to the feedyard operator due to feed consumption. In Colorado, seasonal feed losses to starlings obtaining 50% of their daily food at feedlots were calculated to be \$84 per 1,000 birds; seasonal losses to red-winged blackbirds (*Agelaius phoeniceus*) obtaining 10% of their daily food at feedlots were calculated to be \$2 per 1,000 birds (Besser et al. 1968). In Texas, Coon (1974) estimated seasonal feed losses to cowbirds (*Molothrus ater*) obtaining 30% of their daily food at feedlots to average \$35 per 1,000 birds. In California, Palmer (1976) suggested winter losses due to blackbird depredation at an average 10,000-head cattle feedlot to be nearly \$5,000 per year. In an earlier California study, Levingston (1967) reported that one million starlings (*Sturnus vulgaris*) in a California feedlot resulted in losses of \$1,000 per day.

Williams (1975) reported that redwings, starlings, and cowbirds consume an average of 16.1%, 11.4%, and 20.5% of their respective body weights daily, or about 10.5g, 9.6g, and 9.9g per bird of each species, respectively, per day (avg.=10.0g/bird). Based on these findings, a mixed-species flock of 50,000 birds obtaining 10-50% of their daily food in feed bunkers might consume 50-250kg (110-550lb) of feed per day, or 9,000-45,000kg (10-50 tons) in a 6-month winter period. Either a greater concentration of birds or a greater percentage of their daily food being cattle feed would result in even greater losses. In Idaho, for example, the U.S. Fish and Wildlife reported that starlings alone consumed about 900kg (1 ton) of cattle feed an hour, or about 13,600-18,200kg (15-20 ton) per day.

Many questions concerning the utilization of livestock feedlots by winter bird populations as yet need answering. This, then, has resulted in the development of a two-year study just underway in South Texas. The purpose of this study is two-fold: first, to investigate the ecological and economic relationships involved in the daily utilization of South Texas cattle feedlots by several gregarious bird species; and second, to study the effect on daily and seasonal bird population behavior from stress of various bird management tools and strategies. This study is being made possible by partial funding from the Caesar Kleberg Research Program in Wildlife Ecology through the Department of Wildlife and Fisheries Sciences at Texas A&M University; individual support provided by the Texas A&M Agricultural Experiment Station in Uvalde, Texas; the Texas Cattle Feeders Association; and the private cattle feedlots involved.

OBJECTIVES

The objectives of this study are: 1) to examine both temporal (daily and seasonal) and spatial patterns of utilization of South Texas feedlots by the various winter flocking bird species; 2) to assess economic impacts (e.g., feed consumption) associated with tem-

poral and spatial activity patterns of these birds; 3) to evaluate the effect of various bird population management tools and techniques on the temporal and spatial activity patterns of the bird species associated with economic impacts; and 4) to propose an applied management strategy for South Texas feedlots integrating avian ecology feedlot cultural practices (e.g., sanitation and feeding schedules), and bird population management tools and techniques.

STUDY AREA

The study area will concentrate around one 25-30,000-head cattle feedlot and one 40-50,000-head cattle feedlot. Both feedlots are located near Eagle Pass, Texas and are within 20km (9 mi) of the Rio Grande River, the international border between the U.S. and Mexico. Each feedlot consists of over 120 cattle pens averaging approximately 0.25ha (0.50A) each. Each pen is equipped with an average 5m wide by 5m high cattle shade extending the length of the pen, a 3m water trough along one fence line, and an open concrete feed bunker extending the length of another fence line (30-50m). Both feedlots have their own feed mill operation, and the filling of the several kilometers of feed bunkers is almost continuous from 0600h to 1800h. Both feedlots are surrounded by open pasture and irrigated alfalfa fields. Both feedlots have a history of heavy utilization by winter-flocking bird populations.

DESIGN

This study is divided into two phases: an observational phase and an experimental phase. The two phases will be conducted during the six-to-eight month winter periods (approximately September-April) of two consecutive winters, beginning with the 1979-80 winter season. The observational phase is designed to investigate blackbird ecology relative to feedlot habitat utilization and to identify critical aspects as they relate to standard feedlot operations (e.g., sanitation and feeding schedules). The experimental phase is designed to evaluate pest bird management strategies (e.g., Avitrol and sound devices), integrating standard feedlot operations, and critical aspects of blackbird ecology relative to feedlot habitat utilization.

During both phases of this study, daily bird activity will be monitored at the feedlots using visual and camera observations. Visual observations will be made using portable bird blinds located in randomly selected cattle pens. Several daily observation periods will be scheduled from these blinds between 0630h (before sunrise) and 1800h (after sunset). Each of the several daily observation periods will be at a different, randomly chosen, cattle pen. Total population size and species composition estimates will be made between each of the daily bird-blind observation periods. The number and species of birds present at a designated number of daily randomly selected cattle pens will be recorded.

Camera observations will be made from several fixed 8-mm movie cameras supplemented by a 35-mm SLR camera. The movie cameras will continuously monitor selected sections of feed trough within several cattle pens. These pens and trough sections will be randomly chosen each day. The monitoring frequency of each camera will be at one frame per 15 seconds from 0630h to 1800h. Supplemental camera data on bird numbers and species throughout the feedlot will be obtained from selected use of a SLR camera.

Live birds will be obtained using traps and nets located in and around the feedlots. All captured birds will be banded with U.S. FWS bands. Some birds will be marked with colored and numbered back tags for ease in future visual observations of daily activity around the feedlots (see Coon 1974). Other birds will be equipped with back-saddle radio transmitters for daily radio-tracking observations of movements around the feedlots and movements relative to other feeding areas and to the roosts (see Martin and Bider 1978).

Assessment of economic impact of wintering blackbirds at the feedlots due to feed loss and feed contamination will be concurrent with daily bird activity evaluations. An

estimate of feed loss and feed contamination will be made from several randomly located feed-measurement stations, each being approximately 1.5m of feed trough. Access to these stations by cattle will be restricted, while access by birds will be unlimited. A comparison of the weight of feed in the feed-measurement stations at the end of the day with the pre-measured feed weight at the beginning of the day will provide feed-loss weight values. The weight of fecal material at the end of the day will provide feed contamination values. Control stations, inaccessible to both birds and cattle, will provide values of normal daily feed weight fluctuations due to variables such as moisture variations. Some of the feed-measurement stations will be monitored continuously by movie cameras while all others will be monitored periodically by direct observation to record type and intensity of daily utilization by birds or other animals (e.g., rodents). Supplemental information on species-specific feed depredation will be obtained from stomach content analyses of bird specimens collected in and around the feedlots by shooting (see Williams 1975). A dollar loss per 1,000 birds of each species present per day will be calculated by integrating current cost of feed, estimated feed consumption and contamination, and stomach content analyses.

Each feedlot will be monitored as described above on alternate days, two days per week, every other week. One day of each alternate week will be devoted to observations of daily flight lines and general bird activity outside each feedlot. Daily bird activity records will include date, time of day, general weather conditions (e.g., temperature, relative humidity, wind velocity and direction, cloud cover, and rainfall), numbers and species of birds, type of activity (e.g., feeding, loafing, and staging), and duration of activity.

OUTCOME

The findings from this study should provide some insight into the utilization of South Texas cattle feedlots by several over-wintering, gregarious, bird species. The economic considerations of feed loss and contamination and the relative effectiveness of various bird control techniques should provide valuable information to the feedlot operator for his understanding of daily and seasonal depredation pressures and necessary population management expenditures. Ecological and economic findings will be combined to provide a framework for an integrated bird population management program for South Texas feedlots. This integrated program should assist feedlot operators in the understanding of their winter bird population management strategies.

LITERATURE CITED

- Besser, J.F., J.W. Degrazio, and J.L. Guarino. 1968. Costs of wintering starlings and red-winged blackbirds at feedlots. *J. Wildl. Mgmt.* 32: 179-180.
- Coon, D.W. 1974. Daily movement of the brown-headed cowbird in south-central Texas during winter. Ph.D. Dissertation, Texas A&M University. 126 pp.
- Dolbeer, R.A., P.P. Woronecki, A.R. Stickley, Jr., and S.B. White. 1978. Agricultural impact of a winter population of blackbirds and starlings. *Wilson Bull.* 90:31-44.
- Levingston, P.E. 1967. Winter starling control with DRC-1339. *Proc. Vert. Pest Conf.* 3: 100-103.
- Martin, M.L. and J.R. Bider. 1978. A transmitter attachment for blackbirds. *J. Wildl. Mgmt.* 42: 683-685.
- Palmer, T.K. 1976. Pest bird damage control in cattle feedlots: The integrated systems approach. *Proc. Vert. Pest Conf.* 7: 17-21.
- U.S. Fish and Wildlife Service. 1976. Final Environmental Statement: The use of compound PA-14 Avian Stressing Agent for control of blackbirds and starlings at winter roosts. U.S.D.I., Fish and Wildl. Serv. 232 pp.

Wetmore, A. 1964. Song and Garden Birds of North America. National Geographic Society, Washington, D.C. 400 pp.

Williams, R.E. 1975. Comparative food habits study among red-winged blackbirds, brown-headed cowbirds, and European starlings in relation to agricultural production in north-central Ohio. M.S. Thesis, Bowling Green State Univ. 83 pp.