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REMOVAL OF NESTING STARLINGS
WITH DRC-1339
by Douglas I. Hall*

ABSTRACT

DRC-1339-treated crickets (*Gryllus* sp.) were utilized in an attempt to remove starlings (*Sturnus vulgaris*) nesting and rearing young in the aircraft hangars at the Little Rock Air Center, Little Rock, Pulaski County, Arkansas. Bait ratio of 1 treated to 5 untreated crickets was used. They were placed under airport night lights where foraging birds naturally gathered to feed on insects attracted to these lights. Adult starlings consumed the crickets as well as fed them to their young. Lethal control was achieved on both age classes of bird. Field test results show promise for the development of a management tool to remove unwanted birds rearing young in and around man-made structures.

INTRODUCTION

With the introduction of the European starling into New York in the 1890's (Pearson 1917) and subsequent rapid range expansion, this pest species has been responsible for a myriad of problems detrimental to man. Starlings have conflicted with agricultural crop and livestock production, helped spread disease and parasites to man and domestic animals, created a nuisance through noise, filth and odor in rural and urban roosting concentrations, competed with native species for food and nesting sites and have been responsible for the loss of human life and property in bird-aircraft conflicts.

In the Spring of 1983, starlings were nesting and rearing young in the aircraft hangars at the Little Rock Air Center, Little Rock, Pulaski County, Arkansas. The birds were destroying the styrofoam and fiberglass insulation in the hangars as well as creating problems from the daily build-up of corrosive bird droppings on the airplanes.

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Additionally, the concentration of birds at the facility constituted an airstrike potential. Unsuccessful attempts to solve the problem led to a request for assistance from the U.S. Fish and Wildlife Service, Wildlife Assistance Office, Stuttgart, Arkansas.

Field observations verified that starlings had indeed invaded the hangar system. Pyrotechnics, or any other scaring apparatus would not have been effective in this case as many young had already hatched and the rearing-nesting instinct would be too strong to overcome. Thus, it seemed that the only short-term viable solution was to eliminate as many starlings as possible with lethal methods. Physical barriers were recommended as a permanent solution to prevent a recurrence of the problem.

The use of a .22 caliber rifle with No. 12 rat shot was also recommended for killing as many adult starlings as possible. Shooting took place during the daytime, but should also have been done with a headlight at night. Success was marginal.

During the evaluation, I observed that the fledgling diet supplied by the parents appeared to be predominately insect material, an important protein source for young birds. June beetles (*Phyllophaga* sp.) comprised a large portion of this prey food. These insects were attracted to night lights, and during the daytime, many dead insects were available for foraging adult starlings under the lights of the facility.

To capitalize on this adaptive feeding behavior of the starlings, I treated insects with 98% active ingredient DRC-1339 (3-chloro-p-toluidine hydrochloride) and placed them on the concrete and grassy areas under the night lights. Adults, as well as the young birds, would thus be consuming treated insects.

I wish to thank the personnel at the Little Rock Air Center for their participation in testing a new control technique for starlings at their facility.

METHODS

Crickets were chosen as a bait be-

cause they could be easily obtained from a local fishing bait supply store. DRC-1339 was the selected toxicant because it is a good, species-specific, poison, has a low toxicity to mammals and has a reduced secondary hazard to scavengers (Decino et. al. 1966). Pre-baiting under the night lights was accomplished with untreated, dead crickets.

Crickets were prepared for treatment by placing them in hot water. Following death, they were removed from the water and treated with 1 gm of DRC-1339 dissolved in 10 ml of warm water and 5 ml of Rhoplex AC-33 solution (Rhom and Haas Chemical Co.). This was a sufficient amount of chemical to treat 175 crickets with a 5.7 mg dose per cricket. The acute oral LD₅₀ for starlings is 3.8 mg/kg (Decino et. al. 1966).

The use of the Rhoplex AC-33 solution was modified after Simpson and Palmer (1970), to serve as a sticker to assure that a lethal dosage would adhere to the crickets. Warm water facilitates more rapid dissolution of the toxicant.

Following application of the poison, the treated crickets were placed in a shallow metal container and allowed to air-dry in the sun for three hours.

A bait ratio of approximately 1 treated to 5 untreated crickets was placed under the night lights early in the mornings since these areas comprised the earliest feeding sites for the birds.

RESULTS

Starlings readily consumed the bait. Sick and dead birds were found around the complex. Within approximately two weeks, the nesting problem in the hangars was eliminated (Harris, H.M., personal communication, June 26, 1983, Little Rock Air Center, Little Rock, AR). Although starlings normally rear at least two clutches per season (Kessell 1957), no further nesting attempts were noted in 1983.

The only non-target species observed eating the crickets were house sparrows (*Passer domesticus*). Unlike the dead starlings found in the typical DRC-1339 death posture described by De-

cino et. al. (1966), no dead sparrows were located. The LD₅₀ of DRC-1339 is 320-448 mg/kg for this species.

Although high levels of DRC-1339 were utilized, no bait aversion was noted. All dead starlings that were located were retrieved and discarded. No secondary poisoning was observed.

DISCUSSION

The most cost-effective, permanent solution for controlling the problem of birds nesting and roosting in hangars is the utilization of physical bird barriers. Because this was not a viable alternative in 1983 at the Air Center, and because the starlings were midway through their first nesting period, the use of poison-treated insects as a means of lethal control was an excellent alternative. DRC-1339 was used under the supervision of a U.S. Fish and Wildlife Service biologist. No Federal or Arkansas State law prohibits the killing of starlings.

Population reduction of starlings at the Air Center occurred. The technique required a minimum of manpower and material costs were less than \$10.00. The use of treated crickets is a good short-term solution that can be implemented where funds are limited and other control measures have not been utilized.

However, it should be emphasized that this technique was only used after damage had already been allowed to occur. The following two nesting seasons (1984 and 1985), the Air Center experienced additional problems. Approximately \$3,000.00, excluding labor costs, has been spent on repairing damage and installing visual and auditory scaring devices to minimize the nesting problem (Hyde, M. personal communication June 19, 1985, Little Rock Air Center, Little Rock, AR). Until such time that physical exclusions can be installed to prevent nesting and roosting in the hangars, the problem will not be resolved. Lethal control with DRC-1339 throughout the year with treated insects, grain and/or french-fried potatoes (Johnson and Glahn 1983) may be an acceptable alternative.

This field test shows promise using

DRC-1339-treated insects as a management tool for removing unwanted starlings rearing young in and around man-made structures. Treated insect baiting capitalizes on the food preferences and needs of the young birds by providing a high protein food source. In this case, the baiting was extremely cost-effective and poisoning of non-target species was not observed. It is hoped that more testing and refinement of this technique may lead to a broader use of DRC-1339 in bird problem management.

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