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LONG-TERM TRIAL OF AN INFLATABLE EFFIGY SCARE DEVICE OR REPELLING CORMORANTS FROM CATFISH PONDS

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Growing winter populations of double-crested cormorants (*Phalacrocorax auritus*) over the past decade have caused serious depredation problems for commercial channel catfish (*Ictalurus punctatus*) growers in the Mississippi Delta (Stickley and Andrews 1989). Stickley et al. (1992) found that cormorants allowed to feed without hindrance took an average of 5 catfish fingerlings per foraging hour, but at times took as many as 28 fingerlings per hour. Obviously, growers have to repel these birds or suffer heavy losses where the cormorants are feeding on catfish fingerlings and not gizzard shad (*Jorosoma Gredianum*) as they at times do (Stickley et al. 1992). Motionless scare devices tend to reduce cormorant depredations only temporarily (Feare 1988, Littauer 1990). However, a pop-up inflatable effigy device (Fig. 1) known as "Scarey Man" (\$595 available through R. Royal, P.O. Box 108, Midnight, MS 39115)¹ proved to be effective in reducing cormorant numbers on catfish ponds in 4 separate tests that ranged in length from 10 to 19 days. Cormorant numbers were reduced 71, 93, 95 and 99%, respectively, from pretreatment levels in these tests conducted in early 1991 in the Mississippi Delta (Stickley, pers. comm.). Success in these short-term tests prompted a longer term trial of Scarey Man. This paper describes such a trial conducted in the Mississippi Delta in early 1992.

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Fig. 1. Scarey Man scare device inflated to full height, Mississippi, 1992.

METHODS

The trial site was a catfish fingerling complex containing 141 ha of surface water in 25 ponds located in LeFlore County, MS. Pond size averaged 5.6 ha and ranged from 2.0 ha to 9.0 ha. The ponds contained an average of over 28,000 catfish per ha of surface water. The size composition of the fish population on the complex was approximately 50% "food fish" (110-220 gm), 30% large fish (over 220 gm), and 20% fingerlings (under 110 gm). Shad were present in at least 4 of

¹Reference to trade names does not imply U.S. Government endorsement of commercial products.

the ponds. The complex was located 19 km west of a large cormorant night roost in Carroll County, MS, and was the first complex cormorants encountered when flying due west from the roost. Most of the catfish complexes in the area lay farther to the west of the trial site. Accordingly, this study complex was generally subjected to high cormorant pressure from the large flights of birds passing overhead to and from the roost. Another contributing factor to high cormorant pressure on this complex was a nearly adjacent noncommercial pond where cormorants rafted up and rested during the day. This pond was screened from the complex by a woodlot. With the exception of a 25 ha 7-pond complex located approximately 4 km northwest of the trial site, no other catfish ponds were located within 10 km.

We ran the trial between 10 February and 29 March 1992. Cormorant harassment patrols (combined with censuses of

cormorants flushed) were conducted on 32 of the 49 days of the trial. At times when we did not run our patrols the grower assumed responsibility for cormorant harassment. On the days we ran the patrols, the number of patrols ranged from 1 to 5 and averaged 3.9 per day. These patrols consisted of driving over the entire complex and firing screamer-sirens from single-shot 15-mm pistol launchers (Reed-Joseph International Co., Box 894, Greenville, MS 38702)¹ at cormorants encountered on or attempting to land on the ponds. We counted the number of cormorants flushed from the ponds during these patrols.

After the first 3 days of the trial (the pretreatment period), during which harassment patrols were run each day, we superimposed the Scarey Man devices over the harassment patrols for the next 46 days by deploying 10 Scarey Man devices on the complex (an average of 1 for every 14 ha of surface water—Fig. 2).

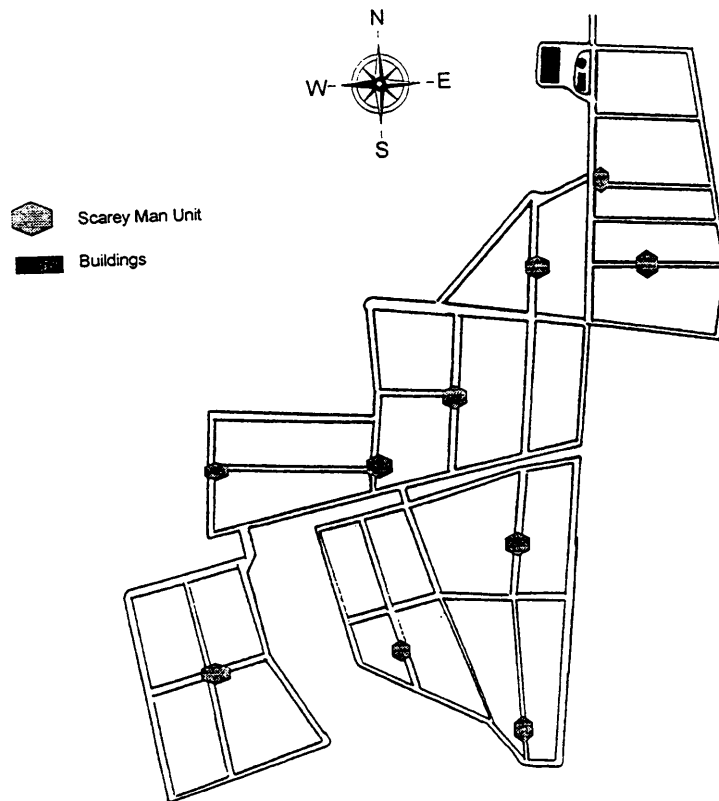


Fig. 2. Location of each Scarey Man device on the trial site, Mississippi Delta, 1992. Each battery-powered Scarey Man was programmed to inflate, bob up and down, and wail for approximately 1 minute out of every 12 before collapsing back to the ground.

Beginning on the 11th day of the trial (8th day of the treatment period), we attempted to enhance the Scarey Man devices in a number of ways. We placed hats and camouflage masks on all devices and even propped them up to make them more closely resemble a shooter squatting. We then replaced individual Scarey Man devices to which cormorants were beginning to habituate with a shooter (wearing a hat, camouflage mask, and orange poncho) for periods of time ranging from 1 to 3.5 hours and averaging 1.6 hours. We did this on 33 occasions for a total of 53 hours on 24 different days. The shooters fired 369 12-gauge shotgun shells and 149 .22 caliber rounds in attempts to kill birds that landed or tried to land on adjacent ponds. Ten cormorants were killed and an unknown number injured. We also used propane exploders in conjunction with the Scarey Man devices, stationing camouflaged exploders at as many as 6 of the 10 Scarey Man positions on 23 different days beginning on Day 18 of the trial for a total of 75 exploder-days. The exploder firings were not synchronized with the Scarey Man scare routine. On several occasions the shooter replacing a particular Scarey Man was used in conjunction with an exploder at the same site.

We judged the effectiveness of Scarey Man and the attempts to enhance it by comparing mean number of cormorants flushed per harassment patrol on the 3 pretreatment days with the mean number flushed on the 46 treatment days. Mann-Whitney U-tests were used to test for significance in reduction of cormorant numbers. Five evening counts of the Sharkey Bayou roost were made between 18 February and 25 March to verify the presence of cormorant pressure in the area of the trial site.

RESULTS

The use of the Scarey Man devices, bolstered after the first 7 days of the treatment period by enhancement efforts, resulted in an immediate, drastic, and permanent decrease in cormorants flushed per harassment patrol over the entire treatment period (Fig. 3). The average number of cormorants flushed per harassment patrol over the 3-day pretreatment period averaged 320 (SD=505) compared with 16 (SD=15) for the 46-day treatment period ($P=0.007$ —Mann-Whitney U-test). A residual population of 50-75 cormorants (including birds normally present on the day roost) that resulted in a comparatively low 1 bird for each 2.5 ha of surface water at any given time was present in the vicinity of the trial area from the beginning of Scarey Man deployment to the end of the trial.

Deployment of the Scarey Man devices resulted in an sudden and extreme drop in the number of cormorants flushed on the trial site in the first week of use (Fig. 3). The average number of cormorants flushed per harassment patrol for the first 7 days of the treatment period averaged 8 birds (SD=11).

This was a significant decrease over the 3 pretreatment days ($p=0.001$ —Mann-Whitney U-test). Efforts to enhance Scarey Man did not result in any further reduction in cormorant numbers on the trial site; in fact, the mean number of cormorants flushed per harassment patrol over the last 39 days of the test rose to 18 (SD=16). This increase was significantly different from that of the first 7 days ($P=0.001$ —Mann-Whitney U-test).

The 5 cormorant roost counts at Sharkey Bayou ranged from 2400 to 6600 birds (mean of 4660—Fig. 3). Roost size decreased by over half between Days 23 and 38 of the trial but recovered by the end of it.

The cost of attempting to enhance Scarey Man during this trial amounted to \$265 for 53 person hours of shooting @ \$5.00 per hour; \$185 for shotgun shells and .22 caliber ammunition; \$70 for use of 6 propane exploders for a 36-day period; and \$130 for caps, camouflage masks, and ponchos. These costs averaged \$18/day for the 39-day period. The 10 Scarey Man devices we deployed for a total of 490 Scarey Man days proved to be relatively maintenance-free with the exception of having to recharge batteries every 2 to 3 weeks.

DISCUSSION

Although the numbers of cormorants flushed per harassment patrol were minimal during the first 7-day period Scarey Man devices were deployed, incremental increases in cormorant pressure over that period (2, 6, 9, and then 11 cormorants flushed per patrol per day) led us to feel that the devices were beginning to lose some of their effectiveness. With that in mind, we initiated the enhancement activities that continued to the end of the trial.

But these activities failed to reduce cormorant populations below the level attained in the first 7 days. The lack of effectiveness of the use of shooters in place of Scarey Man may have been due to the few birds actually killed or perhaps to lack of enough shooting effort. However, the average of 88 minutes/day spent by shooters over the 39-day period is probably as much or more than most growers would want to expend. Propane exploders did not appear to help. The birds adjusted quickly to them even though they were used in conjunction with Scarey Man. Of course, we do not know if cormorant numbers would have remained at their comparatively low level throughout the treatment period had we not tried to enhance Scarey Man.

Overall, the use of Scarey Man plus enhancements (in combination with harassment patrols) drastically reduced the cormorant pressure on the trial site. Thus, we can recommend the use of the Scarey Man devices in cases where cormorant depredations are a serious problem.

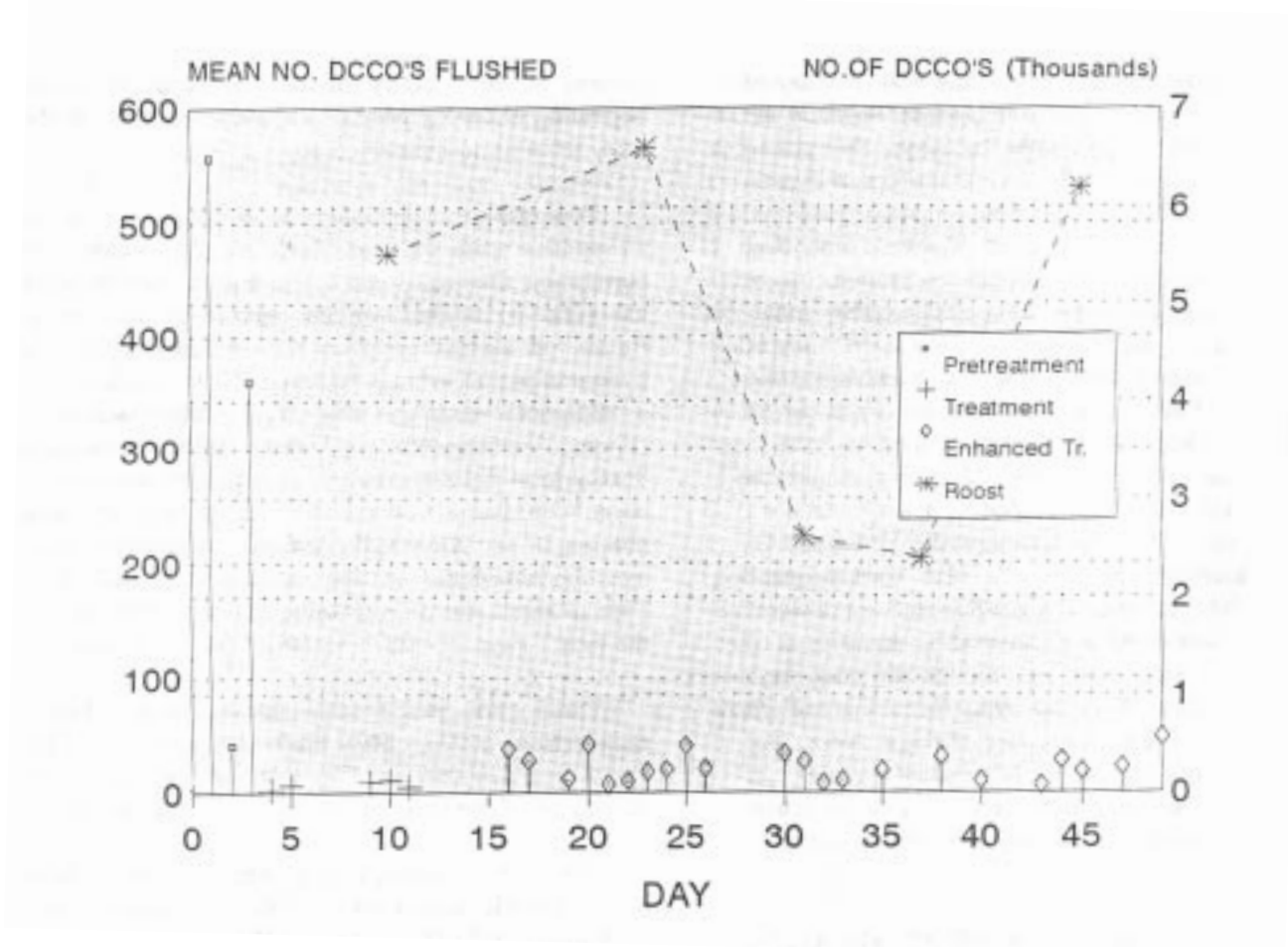


Fig. 3. Mean number of cormorants flushed during pretreatment period, treatment period, and enhanced treatment period compared with Sharkey Bayou roost populations, Mississippi Delta, 1992. (Harassment patrols were conducted throughout the trial during all periods.)

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