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Protecting Canada Geese on a Wildlife Management Area in East-Central Nevada

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ABSTRACT: In early 2003, at the request of the Nevada Department of Wildlife (NDOW), Wildlife Services (WS) conducted wildlife damage management (WDM) activities to protect nesting waterfowl within the Key Pitman Wildlife Management Area (KPWMA) in east-central Nevada. The WDM activities were aimed primarily at protecting Canada geese from predators, primarily coyotes and common ravens. The KPWMA (approximately 2,000 hectares) provides important habitat for the nesting and rearing of Canada geese in a predominantly desert area. Although the KPWMA's habitat has been judged by biologists to be adequate for successful waterfowl nesting, the number of gosling geese hatching and surviving to flight stage in recent years has been considered by NDOW biologists to be unacceptably low. Predatory mammalian and avian species seen concentrated around water areas of the WMA were believed to be a primary factor in the low survivability. WS was contracted by NDOW to conduct WDM activities during the period of the goslings' greatest vulnerability to predation, March through June. As per directions from NDOW, WDM activities targeted only coyotes and common ravens found within, or immediately adjoining, waterfowl nesting areas. A significant increase in the number of goslings surviving to flight stage was set as the measure of whether the project was a success. WS used DRC-1339-treated chicken eggs placed in close proximity to waterfowl nesting areas to reduce raven numbers at these specific sites. To remove offending coyotes, WS utilized leghold traps, trail snares, and calling and shooting. NDOW reported a significant increase in Canada goose goslings surviving to flight stage following the 4-month treatment period, and deemed the project a success.

KEY WORDS: *Branta canadensis*, Canada goose, DRC-1339, Nevada Department of Wildlife, predation, predator control, wildlife damage management, Wildlife Services

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INTRODUCTION

The Key Pitman Wildlife Management Area (KPWMA), located approximately 115 miles north of Las Vegas, consists of two reservoirs (Nesbit Lake and Frenchy Lake) and adjacent fields planted with crops beneficial to waterfowl. The surrounding areas of Pahrangat Valley are used primarily for farming and ranching. Situated in one of the most arid regions of Nevada, KPWMA is a true oasis for wildlife including nesting waterfowl, upland game, and a variety of large and small mammal species. The KPWMA, although small in size, is important to waterfowl as many species of ducks and Canada geese (*Branta canadensis*) utilize this crucial habitat to nest and rear their young to flight stage.

From 1985 to 2003, the Nevada Department of Wildlife (NDOW) kept records on the number of broods and surviving young for each individual species of waterfowl. The habitat has been judged adequate, yet the number of gosling geese surviving to flight stage has been excessively low in recent years (Bart Tanner, NDOW, pers. commun.). KPWMA water levels are managed by irrigation water, so the low precipitation during this time period was ruled out as a causative factor (Russel Woolstenhulme, NDOW, pers. commun.). The manager of KPWMA, Bart Tanner, told the author that on several occasions he had observed coyotes (*Canis latrans*) chasing down and killing goslings, and this led him to conclude that coyotes were a primary culprit responsible for the low survival rate of Canada goose goslings.

In 2002 following the nesting season, NDOW requested that USDA Wildlife Services (WS) implement wildlife damage management (WDM) activities on the KPWMA prior to the 2003 nesting season. The WDM activities were to be conducted primarily for the protection of Canada geese and other nesting waterfowl from excessive predation. In March of 2003, WS initiated WDM activities within the KPWMA targeting the primary mammalian predator, coyotes, and the primary avian predator, common ravens (*Corvus corax*).

SURVEYS

Prior to WDM activities being initiated, WS conducted mammalian and avian surveys to determine the number of coyotes and ravens present in the area. To estimate the number of coyotes, howling surveys were conducted at locations in or immediately adjoining the WMA at night, when coyotes are more likely to respond to howling. It was determined that a small population of coyotes resided in the immediate area. Although a large population of coyotes was not present, it was recognized that the presence of a single individual showing a propensity for predating on waterfowl could be responsible for drastically reducing the number of Canada goose goslings that reach flight stage. For example, in an experiment conducted at the Bear River Migratory Bird Refuge, Brigham, Utah, a pair of penned coyotes consumed 34 of 36 available chicken eggs within an hour's time (Sooter 1946). WS found Canada goose neck collars and leg bands at coyote den sites, which

confirmed that offending coyotes were proficient at preying on Canada geese relocated from urban areas.

To estimate the population of ravens in the waterfowl nesting area, line transect avian surveys were conducted in the morning and evening hours when ravens were most active. Travel corridors such as roads, power lines, and fence lines were selected as transects. It was determined that 38 to 46 ravens were present in the waterfowl nesting area. The negative effect raven predation can have on various nesting bird populations has been a growing concern for wildlife biologists and wildlife management agencies who recognize the increase in the raven population (Spencer 2002).

RAVEN REMOVAL

To remove offending ravens from waterfowl nesting areas, WS constructed dummy nests along travel corridors within the WMA. No attempt was made to hide or obscure the dummy nest sites. Ravens were then pre-baited with 2 untreated chicken eggs placed in each of the dummy nests. Pre-baiting is a vital element of any effective raven avicide action as it helps the wildlife specialist determine a number of important factors relative to a successful raven removal operation. These factors include number of ravens present, location of ravens, number of treated eggs required, whether targeted ravens are likely to feed on treated eggs, and that no non-target species are involved. Also, during the pre-baiting period the chicken eggs serve as a lure crop, luring the foraging ravens away from goose nesting locations (Spencer 2002).

DRC-1339

After the ravens had consumed the pre-bait, treated soft-boiled chicken eggs were placed in the same dummy-site locations used for pre-baiting. Each soft-boiled chicken egg was stamped with the "skull and crossbones" symbol to serve as a warning to any human who might encounter the treated chicken eggs (Spencer 2002). Each treated egg was injected with 0.5 ml of 4% DRC-1339 solution. DRC-1339 is an avicide that affects the renal and circulatory systems of the target species. Once consumed by the raven, DRC-1339 is broken down by its kidneys into a non-lethal material that is excreted by the raven prior to its death. Consequently, ravens that die from DRC-1339 do not represent a secondary poisoning threat. Ravens that consume treated eggs die within 24 - 72 hours.

After the initial DRC-1339 treatment only 2 ravens were observed in the area. However, because the ravens were within the "zero tolerance" nesting area, WS conducted a follow-up application of DRC-1339-treated eggs. Following the second treatment, no ravens were observed in the area where WDM activities had occurred. The lack of ravens seen during monitoring activities confirmed that WDM activities had been successful at removing local offending ravens.

COYOTE REMOVAL

After examining the area, WS determined that it was likely that the WMA had an older-aged population of coyote pairs maintaining territories encompassing the

nesting areas. These older, aggressive coyotes were experienced "birders" that were responsible for the excessive predation on waterfowl, with emphasis on Canada geese. Coyotes of this nature can be very efficient at reducing waterfowl production success. To remove coyotes from nesting areas, WS used several methods, including soft-catch leghold traps, decoy dogs, calling, shooting, and snaring.

Soft-Catch Traps

Soft-catch traps are constructed with padded jaws and pawsi-trip pan tension devices. These modifications serve two important purposes: 1) the padded jaw holds the coyote with minimal foot injury, and 2) the pan tension device minimizes the risk of capture of non-target species.

Trail Snares

Trail snares are constructed with 1/16-inch 1×19-strand crucible cable. This is a braided cable that combines great strength with the benefit of small size. It is important to keep snare visibility to a minimum because coyotes are extremely wary of foreign devices. Snares also consist of a "wammy" and a cam-lock. The wammy is a small coil that allows the Wildlife Specialist to secure the snare to the #9 support wire. The cam-lock locking mechanism keeps the snare from re-opening when the targeted coyote is caught. Customized trail snares were strategically placed around known waterfowl nesting areas.

Other Methods

WS also used other standard methodologies such as calling and shooting, decoy dogs, aerial hunting, and opportunity shooting.

Table 1. Canada goose and mallard brood counts at Key Pitman Wildlife Management Area, Nevada, conducted by Nevada Department of Wildlife.

	Canada Goose Broods	Canada Goose Young	Mallard Broods	Mallard Young
1985	17	77	2	16
1986	6	62	5	32
1987	14	97	2	10
1988	13	80	6	38
1989	14	92	1	7
1990	14	104	2	16
1991	13	79	7	36
1992	23	143	1	6
1993	*	*	6	37
1994	9	52	*	*
1995	14	88	2	15
1996	12	86	5	28
1997	*	*	3	21
1998	11	68	5	27
1999	15	106	3	25
2000	12	45	3	18
2001	13	67	1	6
2002	2	5	*	*
2003	18	130	13	87

* No data recorded

RESULTS

WS removed 43 ravens and 16 coyotes from KPWMA's nesting areas in Spring 2003. During the 2003 nesting period that followed, 130 Canada goose goslings reached flight stage, as compared to only 5 goslings in 2002. There was also a significant increase in the number of ducklings surviving to flight stage after WDM activities at KPWMA in 2003. Table 1 shows NDOW brood counts at KPWMA from 1985 to 2003. These counts indicate an increase in waterfowl production in 2003 resulted after WDM activities had been conducted.

DISCUSSION

Observations at KPWMA indicated that excessive predation was the main factor in Canada goose goslings not surviving to flight stage (Bart Tanner, NDOW, pers. commun.). In areas similar to KPWMA where habitat has been deemed adequate, waterfowl production continues to be unacceptably low and there is evidence of excessive predation, wildlife damage management should be considered as a corrective management practice. Although some biologists commonly overlook WDM, it is hard to ignore the positive results of the 2003 WDM program at KPWMA.

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