

# THE COMMUNICATOR

A QUARTERLY PUBLICATION OF UTAH'S COMMUNITY-BASED CONSERVATION PROGRAM



January 2011

Volume 7, Issue 1

## The Raven and the Sage-grouse

By Terry Messmer, Utah State University



Edgar Allen Poe

'Prophet?' said I, 'thing of evil! - prophet still, if bird or devil! -  
 Whether tempter sent, or whether tempest tossed thee here ashore,  
 Desolate yet all undaunted, on this desert land enchanted -  
 On this home by horror haunted - tell me truly, I implore -  
 Is there - is there balm in Gilead? - tell me - tell me, I implore!  
 Quoth the raven, 'Nevermore.'



The lines above were lifted from the poem entitled "The Raven" written by Edgar Allen Poe in 1845. As a school boy, it was one of my favorites. Little did I know that that the topic of the poem – the Raven – would become an identified conservation concern for another wildlife species – the sage-grouse.

In past decade the topic of ravens and their potential impacts on sage-grouse has been discussed range wide. In this issue of the Communicator, we explore some of the aspects of raven biology, research regarding potential impacts on sage-grouse, and how these impacts are being managed.



IN THIS ISSUE

THE RAVEN AND THE SAGE-GROUSE.....	1
RAVEN FAST FACTS.....	1
MANAGING RAVENS TO CONSERVE SAGE-GROUSE IN UTAH.....	2
COMMON RAVENS AND GREATER SAGE-GROUSE: ONGOING RESEARCH IN WYOMING.....	3
UPCOMING EVENTS.....	4
CBCP MISSION STATEMENT.....	4

### Raven Fast Facts

- Diet:** Omnivore, scavengers, and hunters
- Average life span in the wild:** 13 years
- Size:** 24 to 26 in (61 to 66 cm); wingspan, 3.8 to 4.7 ft (1.2 to 1.4 m)
- Weight:** 2.3 lbs (1.3 kg)
- Reproduction:** Monogamous, mate for life, laying 3-7 eggs each spring in constructed nests

Ravens are the largest passerine (perching) birds in North America. Known as scavengers, ravens are also effective hunters. Ravens have been known to team up to hunt down animals too large for a single bird. They also prey on eggs and nestlings of other birds, reptiles (to include young desert tortoise), rodents, grains, worms, and insects. Ravens relish carrion and forage on human garbage. In winter, ravens may gather in flocks to forage, often near livestock feedlots or areas of human activity, and to roost at night. During the rest of the year, they often form pairs or small groups. Once exterminated as pests, they are now one of the most common birds in the sagebrush steppe ecosystem. Since the late 1960s, populations increased throughout much of its range in North America; for example, in the Central Valley of California, raven sightings along roads increased by greater than 7,600% between 1968 and 1992.

# MANAGING RAVENS TO CONSERVE SAGE-GROUSE IN UTAH

By Todd Black, Utah State University, and Brook Zscheile, Wildlife Services



Biologists have previously documented the impacts high local densities of ravens can have on endangered species such as the desert tortoise. Increased raven populations, particularly in sagebrush steppe ecosystems also have increased biologist concerns regarding their effect on sage-grouse populations. Raven predation of sage-grouse eggs and chicks has been documented by many recent sage-grouse studies here in Utah and across their range. However, the effect on local populations has been largely unknown. A recent study conducted in Nevada reported increased common raven numbers had negative effects on sage-grouse nest survival, especially in areas with relatively low shrub canopy cover. The authors of the study encouraged wildlife managers to reduce interactions between ravens and nesting sage-grouse by managing raven populations and restoring and maintaining shrub canopy cover in sage-grouse nesting areas. Utah wildlife managers have been working with their partners to protect these areas and as such they recognize predation is part of the natural system.

However, excessive predation has been recognized as a conservation threat by each of Utah's 11 sage-grouse working groups. Excessive predation is defined as predation that impacts the ability of a population to sustain itself given desirable habitat conditions. These situations may exist when new predators occupy habitat at densities above historic levels due to anthropogenic activities. Such may be the case for ravens. If we know raven predation is a threat, even a limiting factor in some areas, what can and is being done to address the immediate threat?

Wildlife Services (WS) is authorized under Section 3 Registration with the U.S. Environmental Protection Agency to use lethal mechanisms to protect wildlife. Likely the most effective mechanism at their disposal to manage raven depredation is an avian toxicant called DRC 1339. DRC 1339 is a chemical compound that is 3-chloro-4-methylaniline (or 3-chloro-4-methylbenzenamine, 2-chloro-4-aminotoluene, or 3-chloro-p-toluidine). It is basically a toxicant that looks similar to a fine salt that is administered several different ways to target specific avian species to reduce locally overabundant populations.

Using DRC 1339 to address egg predation by ravens came at the request of Utah's sage-grouse Local Working Groups (LWGs) in early 2002. The methods are pretty simple but very time consuming. First a bunch of eggs have to be boiled, this in and of itself takes an inordinate amount of time. Then the eggs are injected with a mixture of distilled water and approximately 20mg of active ingredient into. Once they have a few dozen eggs, employees of WS are out and about placing them in and along road ways throughout sage-grouse nesting habitat. WS is working with almost all of Utah's sage-grouse Local Working Groups (LWGs) to determine when and where to place the eggs to concentrate their efforts on the ravens during their nesting period which precedes that of the sage-grouse. Many of these groups have actual 'raven' routes where the eggs are placed annually. Researchers survey these routes before eggs are placed and after these eggs have been out to document differences in raven numbers. We have noticed a difference pre- and post-treatment, but what effect it is having on the overall population is unknown.

We know that the ravens are taking the eggs, but we also know that ravens 'cache' these eggs to ingest later. The toxicant only lasts a couple of days, and we just don't know how many ravens we are removing from a given area. On subsequent follow-ups, we are finding that most of our eggs are gone. We also have actually watched the ravens take the eggs. We know from the research that if the raven ingested the egg it will eventually die from adrenal failure; the kidneys basically shut down. "What we didn't know until recently was," explained Kevin Dustin, District Supervisor WS in Utah, "does one egg equal one dead raven." A paper published in 2008 modeled the efficiency for baiting ravens with DRC 1339. The model showed that for every 100 eggs placed out, about 37% of them are actually ingested by ravens and that the colder it was (temperature) the more eggs were cached and the warmer it was, the fewer eggs were cached.

For the past couple of years, WS has started placing the eggs out during winter months in and around feed lots and calving/lambing areas, areas also inhabited by sage-grouse populations, where ravens and other corvids are concentrated because of the agriculture and livestock operations. In many of these areas WS was already doing other protective measures. Thus, it was a matter of economy of scale.

To determine if this approach is making a difference, the LWGs will continue to monitor both raven and sage-grouse populations. This information will be shared with our partners. Similar evaluations are being conducted in other states.

*We have noticed a difference after the treatments but what effect it is having on the overall population is still not known.*



*Photos courtesy of Brook Zscheile*

By Jonathan Dinkins, Utah State University

Greater sage-grouse (*Centrocercus urophasianus*) distribution and abundance in western North America have declined over the last century. Many factors have been implicated for this decline including: predation, habitat loss, and habitat fragmentation. Densities of common ravens (*Corvus corax*) have increased throughout the historic range of sage-grouse. Raven depredation of sage-grouse nests has been implicated as a potential factor limiting sage-grouse productivity in fragmented habitats. Raven depredation on sage-grouse nests is a common occurrence in north-east Nevada based on infrared video cameras set up at nest sites.

Utah State University (USU) has studied the effects of removing ravens on sage-grouse nesting success in southwest Wyoming during the summers and falls of 2008 through 2010. Sage-grouse nest success was examined at eight different 5-mile radius study sites centered around sage-grouse leks in Lincoln, Sweetwater, and Uinta counties. USU monitored 50 to 110 sage-grouse hens per year in these study sites between 2008 through 2010. Raven and avian predator densities were also monitored near sage-grouse nests and at random locations along roads within each study site.

In addition to studying sage-grouse nesting success and raven densities in Lincoln, Sweetwater, and Uinta counties, USU recorded raven densities at random locations in the Atlantic Rim Project Area (ARPA) and Stewart Creek (SC)—in between Baroil and Baggs, WY—during the summers of 2008 and 2009. Sage-grouse nesting success and raven densities at sage-grouse nests were also recorded by the University of Wyoming (UW). UW collected these data while conducting an ongoing sage-grouse habitat study in ARPA and SC. In ARPA and SC, UW monitored approximately 80-120 sage-grouse hens per year between 2008 and 2009. UW recorded sage-grouse nest success and raven densities at sage-grouse nests in the same manner as USU did in Lincoln, Sweetwater, and Uinta counties. USU monitored 60 sage-grouse hens in ARPA and SC and recorded raven and avian predator densities in 2010.

During the first field season (2008), raven control efforts of varying intensity occurred around lambing and calving grounds throughout some of the Lincoln, Sweetwater, and Uinta county study sites; however, no intense raven removal (i.e., constant removal effort throughout a study site) occurred, which provided a unique opportunity to study the potential effects of raven removal on sage-grouse nest success. Thereafter, the United States Department of Agriculture, Animal and Plant Health Inspection Service/Wildlife Services (WS) removed ravens in Lincoln, Sweetwater, and Uinta counties within four of eight study sites. ARPA and SC study sites did not receive any raven removal in 2008; one study site in ARPA received raven removal in 2009 and 2010.

We hypothesize that the reduction in sage-grouse nesting success and productivity can be mitigated by controlling (removing) ravens. To test this hypothesis, we are examining the impact of raven removal on sage-grouse by monitoring: sage-grouse nesting success, raven densities, raven removal effort, DRC-1339 (chemical used to remove ravens) distribution at study sites, and WS mammalian predator removal. We will compare sage-grouse nesting success and productivity between removal and non-removal study sites for 4 consecutive years (started in 2008 and will be completed in 2011). We will also address several other questions related to sage-grouse nesting and raven removal. These additional questions include: do sage-grouse avoid nesting in areas with high densities of avian predators, is sage-grouse nesting success correlated to distance from human development areas that have food available, and is survival of sage-grouse hens correlated to avian predator density?



*Photo courtesy of Todd Black*



*Sage-grouse nest. Photo courtesy of Todd Black*



*Photo courtesy of Jack Spencer*

*If it's not good for communities, it's not good for wildlife.*

**Utah's Community-Based Conservation Program Mission**

Utah's Community-Based Conservation Program is dedicated to promoting natural resource management education and facilitating cooperation between local communities and natural resource management organizations and agencies.

Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions.

Utah State University employees and students cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and students also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities.

This publication is issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Noelle E. Cockett, Vice President for Extension and Agriculture, Utah State University.

[www.utahcbcp.org](http://www.utahcbcp.org)

**UPCOMING EVENTS**

Parker Mountain LWG meeting February 8 beginning at 10 AM in the County Building in Loa.

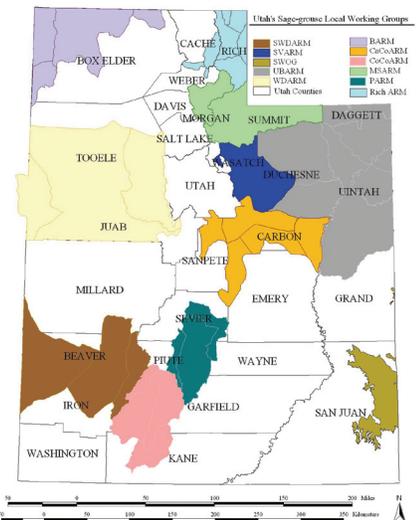
West Desert LWG meeting February 23 beginning at 1 PM in the Tooele County Health Building.

Strawberry Valley LWG meeting March 2 beginning at 10 AM in Heber.

Rich County CRM meeting scheduled for March 3 beginning at 6 PM in the Randolph Senior Center.

Monticello / Dove Creek LWG meeting scheduled for May 17 in Monticello.

Check our website for current schedule or meeting changes:  
[www.utahcbcp.org](http://www.utahcbcp.org)



Map and photo courtesy of Todd Black

