Citizen science addresses Eastern Screech-Owl population

by Rob Sparks, Research Biologist and GIS Manager, Rocky Mountain Bird Observatory

Although the Eastern Screech-Owl is one of the most common owl species in North America, few estimates of population size exist.

There are no available population trends for Colorado, and scarce quantitative data has been gathered to inform the conservation of this species.

To address this need, Rocky Mountain Bird Observatory (RMBO) launched a citizen science project in March of 2013, with support from Denver Field Ornithologists, to monitor breeding Eastern Screech-Owls along the Cache la Poudre River in Fort Collins.

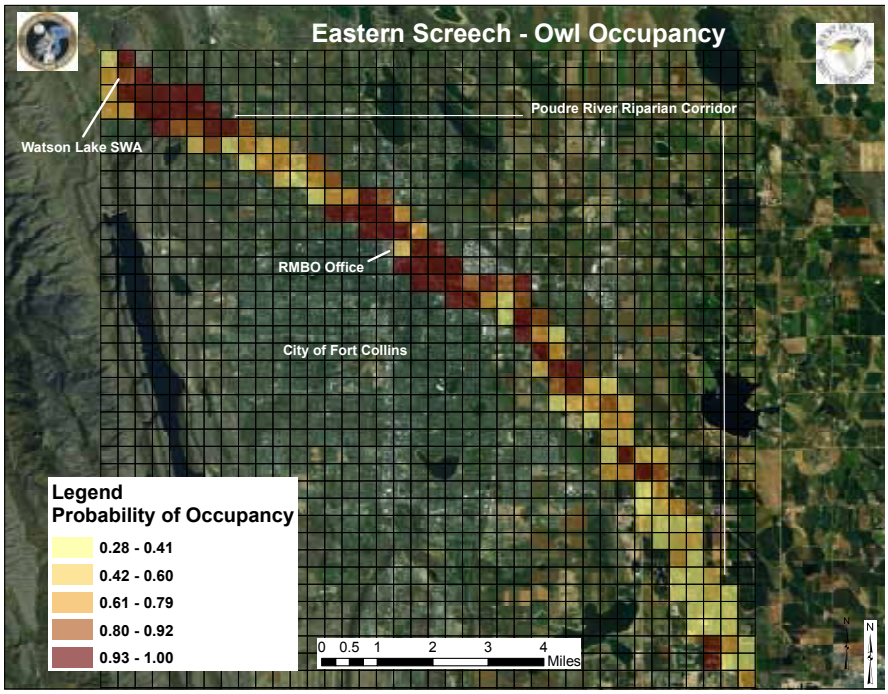

Figure 1. Estimated probability of Eastern Screech-Owl occupancy along 21 miles of the Cache la Poudre River in Fort Collins, Colorado.

About the Owl

In Colorado, Eastern Screech-Owls are found east of the Rocky Mountains.

They are very similar in plumage to their cousin the Western Screech-Owl, thus the best way to identify one species from the other where their range overlaps is by song.

The songs of the Eastern Screech-Owl are described as a tremolo and a shrill; this is where this genus, *Megascops*, received its common name.

The Eastern Screech-Owl is a master of disguise. With cryptic plumage, it is almost indistinguishable from the tree in which it is perched.

The owls are like sentinels watching over the forest keeping the system in balance. They nest in tree cavities, most commonly in cottonwood trees.

Eastern Screech-Owls are difficult to detect, making it important to include a detection component in the survey design to obtain unbiased estimates. This is accomplished by visiting sites multiple times.

This allows researchers to account for individuals that may be present but not detected or where individuals were not present during a survey.

A Look at the Data

Eighteen citizen scientists monitored breeding Eastern Screech-Owls along a 21-mile stretch of the Poudre River in Fort Collins from March to May.

The goals of the project were to estimate occupancy rates and create a predictive distribution map, as well as get citizens involved in science.

Volunteers visited 35 survey sites along the Poudre River three times at night.

Following a set protocol, they alternated between call playback of an Eastern Screech-Owl breeding song and silent periods at the site and documented any owls detected. Volunteers also collected data on the noise level, wind speed, time, moon phase, and other variables, as well as other owls present.

Using this data, an occupancy model was created from the 35 randomly selected sites (500 meters^2) to determine where Eastern Screech-Owls were most likely to live.

A mean occupancy of 59% across the total 69 available sites in the study area was estimated, with 40 breeding pairs. The best variable for detection included moon phase.

Detection probability ranged from 9% to 30%. The predicted occupancy of Eastern Screech-Owl was estimated using percent forest cover (Figure 1).

The map shows areas of high occupancy in the northwestern part and in the central part of the study area.

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What Bird Is This?

Kay Niyo and Mary Cay Burger

Ira Sanders remarked in his article in this issue that very few Hudsonian Godwits (Figure 1) are seen migrating through Colorado. So, why do we see quite a few Marbled Godwits (Figure 2) and rarely see Hudsonians?

The four godwit species of the world are distinctive, large shorebirds with long, slightly upcurved bills.

The Marbled Godwit at 18 inches is the larger of the two that traverse our area; the Hudsonian is 15.5 inches. Both species rely on a diet of plant tubers and invertebrates.

The Marbled Godwit breeds mainly in the northern prairies from Montana east into Minnesota and north into southern Canada with small isolated nesting populations in southwestern James Bay and Alaska.

It winters along both coasts of the southern U.S., Mexico, and Central America, hence, a short migration. The population is estimated at 140,000–200,000.

In contrast, the Hudsonian Godwit population is 50,000–70,000. After breeding along the shores of western Alaska to James and Hudson bays, Hudsonian Godwits undertake a migration of nonstop, several-thousand-mile flights from the subarctic to southern South America where they overwinter in the coastal mudflats in Argentina and Chile. Almost the entire eastern breeding population winters along the Atlantic coast of South America. Most of the Alaskan breeders are found in coastal Chile.

Migration of the Hudsonians follows an elliptical route in North America, with the northbound route located west of the southbound route.

In spring, most Hudsonians pass through the Great Plains between 90° and 100°W, arriving in Cheyenne Bottoms, Kansas in early April to late May with 50% seen during the last two weeks of April.

Large concentrations can be seen at Eastern Rainwater Basin, Nebraska and Lake Thompson, South Dakota. The Hudsonians are extremely rare in most interior states in the spring; fall passage in Kansas occurs early August to late September.

Good luck spotting a Hudsonian Godwit this spring! Check the 28 Colorado records on <http://coloradobirdrecords.org/Reports/SpeciesDetail.aspx?id=137>. Read more at <http://bna.birds.cornell.edu/bna/species/629>.

Figure 1. Hudsonian Godwit at Burchard Lake SRA in southeastern Nebraska, May 14, 2006. *Stephen J. Dinsmore*

Figure 2. Marbled Godwit in North Park, Colorado, July 2013. *Lee Farrell*

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The Eastern Screech-Owl is an indicator species of riparian forest health for the city of Fort Collins, and knowing where areas of high occupancy are will help guide conservation efforts.

Plans are being made to restore areas for the benefit of owls and other wildlife in the spring of 2014 and beyond using information gathered as part of this project.

It is hoped to continue this citizen science project to estimate colonization and extinction patterns over time. These occupancy dynamics will help researchers understand the mechanisms and patterns that drive colonization and extinction.