Scientists around the world are investigating what is driving the decline of shrubland birds—including the yellow-breasted chat.

Silence of the Chat

Chats are identified by their yellow breast and white 'spectacle.' Males are distinguished from females by their all black bill.

Story By Mark Alessi and Michel Ward
Photos by Mark Alessi, Antonio Celis-Murillo, Kim Hazelwood and Kevin Sierzega.

The trio of wispy sounds is familiar to birdwatchers everywhere, especially birders in dense habitats such as shrubland brush:

Spisssssssssh! Spisssssssssh! Spisssssssssh!

Spisssssssssh! Spisssssssssh! Spisssssssssh!

Few people venture into these areas where poison ivy, multiflora rose, blackberries, ticks and snakes dominate, but shrubland birds choose to call this impenetrable habitat home.

Despite their efforts to conceal their nests, grassland and shrubland birds experience heavy nest predation by snakes and other predators.

Shrubland habitat, along with its resident birds, has been declining for some time because the natural disturbances that create these areas—fire, wind, beavers, flooding and Native American agricultural practices—have been suppressed.

As shrublands declined in number and size, dependent birds, such as yellow-breasted chats, Bell's vireos, prairie warblers and blue-winged warblers, have been forced to live in small habitats often heavily infested with invasive plants and saturated with predators. The probability that a bird will not successfully produce any young to replace themselves when they die results in dramatic declines in these species.

For decades, scientists have been catching shrubland birds with mist nets to band and take measurements of different body parts. But, because shrubland birds reside in impenetrable habitats, following these birds was a difficult task for a researcher.

Until now.

Radio transmitters, small devices attached to a bird, allow tracking individual birds while they navigate their habitat. Researchers locate birds by using receivers to detect the inaudible signal sent by these small devices. The only limitation on the process is the amount of time a person is in the field.

Michael Ward, an avian ecologist with the Illinois Natural History Survey in Champaign, has been using an Automated Radio Telemetry System to track northern cardinals for the past four years. The system automatically collects the location of radio-tagged birds every few seconds and greatly increases the

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(Photo courtesy John Schwartz, www.birdpix.com.)

Central Illinois shrublands (above) tend to be dominated by invasive shrub species, such as autumn olive. Researchers use a soldering iron (right) and heat-shrink material to attach a radio transmitter to a chat's tail.

amount of data collected. These systems have been used on a wide array of animals—owls, songbirds, cats, monkeys and ocelots, as well as on waterfowl on the Illinois River.

In the spring of 2008, University of Illinois master's student Mark Alessi joined Ward to deploy a system and track yellow-breasted chats (*Icteria virens*) during their breeding season (May-July). The research was conducted at Kennekuk County Park, near Danville, where multiple shrublands exist. In addition to tracking individual birds, nests were examined daily to determine the number of baby chats produced.

Six antennas were attached to the top of a tower to aid in locating radio-collared chats in the shrublands throughout the day and night.

The researchers found that chats—the largest of the wood warblers—move around much more than expected. It often is assumed that during the breeding season birds spend the majority of their time in, and rarely leave, their territory. Surprisingly, 25 percent of the radio-tagged chats actually left the park after a nest failed, or if they were unable to attract a mate. Amazingly, these birds emigrated at least 6 miles away from the park during the middle of the breeding season. Those birds remaining in the park often were observed visiting areas outside their territory.

Why would birds do this?

It turns out that only 12.5 percent of chat nests successfully produced at least one baby chat. Seventy-five percent of their nests succumbed to predators.

Moving to a new territory may benefit chats once their original nest is destroyed by attempting to avoid future predation. Nonetheless, without first visiting another location, the birds may not know where to go. By leaving their territory while nesting, they may be anticipating their nest being destroyed and the need to move to "greener pastures."

The Automated Radio Telemetry System at Kennekuk is a novel instrument that allows scientists to gain insight into the lives of these birds, and maybe one day will provide the data needed to understand why the birds are declining and how to mitigate this decline. Because these birds can now be successfully tracked through unfriendly habitat, researchers are more likely to discover unforeseen events.

The reason why these shrubland birds are declining is still unknown, but given the high rate of nests destruction, they may not be able to produce enough young to replace the adults that die every year.

But there is some potential good news: Given how much these birds move around, the creation of new shrublands would provide yellow-breasted chats new sites to quickly locate to.

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