

# Maps for the Military

## U of I Maps of Breeding Habitat Help Military Readiness and Bird Conservation

The U.S. Department of Defense (DOD) manages more than 500 installations across the continental U.S. — which may be important for certain elusive animals.

Secretive marsh birds are the hide-and-seek champions of wetlands.

“Biologists surveying these birds often play their distinct vocalizations in targeted wetlands and listen for a response, because they hide so well in the vegetation,” said [Courtney Conway](#), an ornithologist in the [College of Natural Resources](#).

With the disappearance of more than half of the original wetlands in the continental United States, numerous species of wetland birds — including secretive marsh birds — are struggling. Each species has particular preferences for breeding grounds, and some of their favorite marshlands overlap with DOD installations. With secretive marsh birds being so hard to spot, the DOD asked Conway to determine which of its wetlands would likely house these enigmatic creatures.

“The military doesn’t want an endangered species protection to thwart their ability to train troops,” Conway said. “If they know where the birds likely are and can incorporate that information into their management plan, the base can significantly reduce conflict with federal regulations.”

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## Conway Wetland Bird Map ☆

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DOD installations that were highly ranked for the most marsh bird species. These installations all ranked among the top five installations for two or more species.

## Bird Barracks

Conway has spent much of his career helping organize a monitoring program for secretive marsh birds across the U.S. The program, which includes biologists from academic institutions, state and federal agencies and nonprofits, has slowly compiled data on these birds, mostly bitterns, rails and gallinules. Many of these birds are considered endangered or national species of concern.

“We still know so little about this group of birds compared to other birds,” Conway said. “They are the forgotten children of the bird world, even of just the wetland bird world.”

Conway and [Bryan Stevens](#), a U of I research scientist, [developed computer models](#) to identify military installations that likely contain - and those that probably don't contain - habitat for 12 species of secretive marsh birds. They based their maps on marsh bird survey data from 1999 to 2012 gathered by Conway's monitoring program.

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— Richard Fischer, DOD

Of the more than 500 DOD installations, five installations contained nearly all the best habitat for nine of the 12 species (see our interactive map). And of the three remaining species, the best habitat was found at less than 10 installations. Most of the best habitat occurred along the eastern seaboard and in the Southeast with a smattering in the West.

“Even within these bases, the good habitat is sometimes really isolated,” said Stevens, who earned masters' degrees in wildlife ecology and statistics and a bachelors' in wildlife resources at U of I.

## Fit to Fly

The DOD owns roughly 29 million acres of land, and a substantial portion of that land is relatively wild as a byproduct of there being limited access to these bases, Conway said.

“Our primary mission is to prepare our military to defend the nation so we do a tremendous amount of training on these military bases,” said Richard Fischer, a research wildlife biologist with the Department of Defense, national coordinator for the DOD Partners in Flight Program, and ‘94 U of I alumnus. “We’ve learned that if we proactively manage these endangered and threatened species, we can balance their conservation with our training needs.”

The Department of Defense has more imperiled, threatened and endangered species per acre than any other federal agency. The DOD takes the stewardship of these species seriously, said Fischer, who received the CNR Mid-Career Alumni Achievement Award in 2013. This study provides the military with defensible science to support their conservation program, Conway said.

“This study was an important one for us,” Fischer said. “I think it’s the first time we’ve had a complete nationwide assessment of a taxonomic group of species. The modeling points us in the right direction for where to do our monitoring of these species.”

### **Courtney Conway, Ph.D.**

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## Map Extensions

Stevens's new models for translating field data to maps that show likely habitat has piqued the interest of other researchers including the U.S. Fish and Wildlife Service (FWS). The agency has proposed listing the Eastern subspecies of the black rail — one of the species mapped by Conway and Stevens for DOD — as threatened under the Endangered Species Act and asked the pair of scientists to create a likely-habitat map for the subspecies.

On their first go round, Conway and Stevens didn't differentiate between the two subspecies, California and Eastern. Field data suggests the two subspecies may have slightly different habitat preferences. The researchers are using an FWS grant and a dataset specifically focused on the Eastern black rails to create the tailored map.

"The U.S. FWS came to us and asked us to make best use of the limited data available," Stevens said. "That's exciting because I know it will directly benefit on-the-ground conservation."

Fischer is also following Conway and Stevens's work on the black rail, since a number of DOD's Atlantic Coast installations could be home to the birds.

"When we don't have sufficient monitoring data on imperiled species such as the black rail, it could put us in a reactionary rather than proactive posture with regulatory agencies," Fischer said. "That's where we can start to experience impacts to our ability to train and prepare for war."



Secretive marsh birds like this sora are hard to count when they hide in wetlands.

Article by [Leigh Cooper](#), University Communications and Marketing

Photo by [Joe Pallen](#). Photos provided by Courtney Conway.

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