



# DUCKS UNLIMITED WRAPS UP 10-YEAR DUCK NESTING STUDY

*Story and Photos by Allison Hesford*

The Missouri Coteau, a large plateau that runs along the east side of the Missouri River through North Dakota and South Dakota, is home to some of the most fertile waterfowl breeding grounds in North America. However, over the years this expanse of pothole wetlands and native grassland has changed due to increased conversion of grasslands to agriculture, causing duck nesting success to vary.

Since 2000, Ducks Unlimited, a national waterfowl conservation organization, has conducted nesting research up and down the Coteau to determine what habitats and landscapes are more conducive to successful nesting.

Initial research for the project began after a three-year study conducted by the U.S. Fish and Wildlife Service, which ended in 1995. This study focused on determining nesting success rates in Conservation Reserve Program fields. CRP was part of the 1985 Farm Bill and it allowed farmers and landowners to idle marginal cropland or environmentally sensitive land for conservation in 10- or 15-year increments. At one point CRP covered 3.4 million acres in North Dakota, about 2 million of that in the Missouri Coteau region.

The CRP nesting study showed a positive relationship between nest success and the amount of

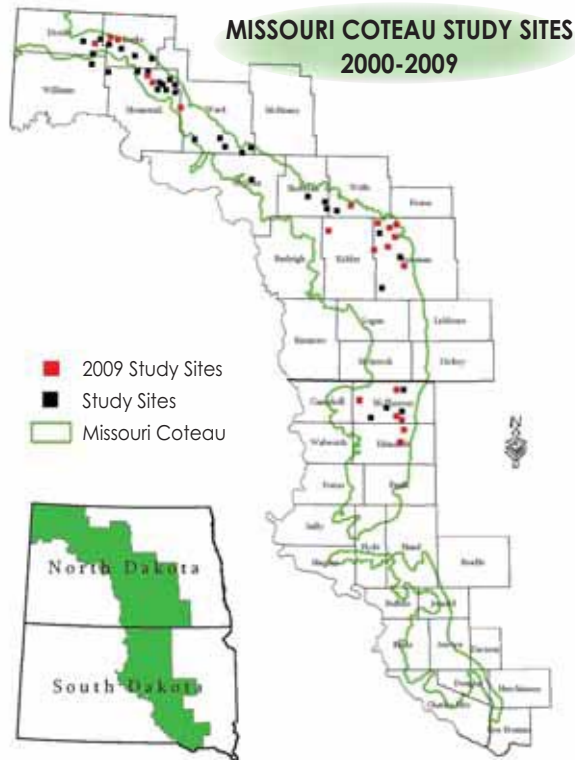
grassland in the surrounding area. DU was involved in the study and was also working with the Fish and Wildlife Service to purchase easements on native grassland from willing landowners. After seeing the higher nesting success in CRP fields that had large amount of grass, DU wanted to know if this also

held true in the native grasslands they were investing in and protecting, said Scott Stephens, DU director of conservation programming, who started the research as part of his doctoral thesis. "And generally there was the desire to understand what the factors are that influence nest survival through the landscape scale factors," he said.

When Stephens finished his Ph.D., he discovered that not only did the amount of surrounding grassland play an important role in determining nest success, but also the wetland basin count on the land. "We continued to select sites across a gradient of the proportion of grassland

in the landscape from very low grassland, around 10 to 13 percent, all the way up to 90 or 95 percent grassland," said Johann Walker, DU manager of conservation programs. "Also, within that axis we were selecting our basin count. So, we were looking for combinations of low grassland, high basin count and high grassland, low basin count and everything in between."

DU has not been flying solo in its effort to study





*Scott Stephens is candling a duck egg to determine its stage of development.*

nest success and protect the landscapes and habitats where nests are most productive. Several other partners helped with manpower and funding. "We've had lots of different partners on this project. We've collected information on nongame species, like shorebirds and ground nesting raptors, with partners like the North Dakota Game and Fish Department," Walker said. "The Fish and Wildlife Service has helped us out every year either at the wetland management district scale or Prairie Pothole Joint Venture level, and we have had help from the South Dakota Game, Fish and Parks, so it's definitely a cooperative effort."

In spring 2009, the nesting research entered its 10th and final year, and teams were out combing the prairies for nests. "I have three crews and each crew is responsible for six to nine sites depending on where they're at. They make it to each site about every week and they start searching in April and they finish up in early July," Walker said.

Each site was 4 square miles and the teams moved back and forth through the fields on two four-wheelers with a 200-foot chain attached between them. The chain ran over the grass and when it passed over a nesting female, she flushed, usually after the chain passed, and the team was able to locate the nest.

Once the nest was located, information was recorded such as habitat type, number of eggs and the incubation period. The incubation period was obtained by a process called candling, or looking at an egg through a piece of radiator hose. Duck eggs are translucent, so the stage of development can be determined by looking at the egg through the hose, facing a light source. A Global Positioning System recorder


was used to locate the nest's exact coordinates so the satellite imagery of the surrounding landscape could be viewed. The nest was marked and the team returned later to check its progress.

By mid-June, the first half of the 2009 season, the teams found at least as many nests as they did all of last year, Walker said. "It's hard to say what that'll mean come fall," he said. "There are a lot more ducks out there and they're nesting a lot more vigorously than they were last year."

The ducks were nesting in full force and conditions were ideal, due to the exorbitant amount of precipitation that fell in North Dakota this past winter. "One of the things that happens when it's wet like this is there's a lot of food that the birds can easily access," Stephens said. "So, if they lose a nest they can quickly eat enough food to build up their body reserves to lay another clutch. What we see in years like this, where wetlands are so good, the birds will just keep trying and trying. Even if nest survival is similar to what we had last year, we'll have more ducklings produced because of more renesting attempts."

Many different factors influence nesting success other than weather. Unsuccessful nests are also caused by predators such as the red fox, coyote, skunk, mink, or raccoon, which all eat duck eggs and, if given the opportunity, will eat ducklings or a nesting hen. Small, fragmented blocks of grassland also lead to lower success rates because nests are clustered together and are easier for predators to find.

To maintain populations, ducks must have a 15-20 percent nest success rate, depending on the species. Since the study began, the state has seen record-setting wet periods and researchers noticed that nesting



*Stephen Adair and daughter, Ellie Adair, watch the grass between the four-wheelers to see if the chain will flush a nesting duck.*



success continued to be highly variable, Walker said. “Throughout our 10 years, nesting success averages only about 14 percent, but the sites with the best habitat can experience nesting success as high as 54 percent, yet duck populations continue to grow,” he said.

The research has consistently shown that more nests hatch in areas with large amounts of grassland. However, if fields containing large amounts of grass are lost, the duck population will most likely suffer. A significant amount of CRP grassland – more than 500,000 acres – was converted back to cropland in the past two years and it is expected that an additional 500,000 acres will be lost in the next two years, said Mike Johnson, North Dakota Game and Fish Department game management section leader. “Nesting ducks do much better in large continuous blocks of grass than they do in fragmented habitats,” he said. “We continue to lose grassland, which is critically important for nesting ducks.”

Based on DU research, the loss of this land, even if it isn’t a field that’s under study, will have an effect because it will decrease the amount of grassland in the surrounding area. “All our information that we have to date says that will decrease the survival of nests in those areas,” Stephens said. “So, production will decline and the birds won’t be as successful, and if that continues over a number of years that means, ultimately, we’ll end up with lower populations.”

As grassland is lost the data collected will help determine the effects on duck populations and also

help to manage and protect them. “With those nest records and information on the landscape, we can actually model and make predictions of annual duck production and what the impacts of various management strategies would be,” Johnson said. “When that all comes together, it improves greatly our ability to effectively protect habitats, manage habitats and conserve habitats.”

While 2009 was the final season that the DU teams searched the Missouri Coteau for nests in this particular study, their research isn’t over. “This year we’re going to wrap up this phase of the field work and sit down and try to analyze 10 years of data,” Walker said. “When we come out the other side we’ll probably have some new questions and then formulate a study that might be a continuation of this one, but might take us in a slightly different direction. We’re kind of at a turning point now.”

The information about duck nesting success in various habitats and landscapes has already yielded some useful planning tools for conservation and helped determine where nests have the best chance of survival, Stephens said. “In the end, I think some of the things we’ve learned point us to the fact that it is really important that we keep grassland of all types out there,” he said.

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*From left to right: Scott Stephens, Ellie Adair, and Stephen Adair search the grass for a nest as blue-winged teal drakes fly by.*

## Duck Nesting Research Partners and Contributors

- North Dakota Game and Fish Department • Crosby/Lostwood Wetland Management District (USFWS)
- Audubon Wetland Management District (USFWS) • Chase Lake Wetland Management District (USFWS)
- Sand Lake Wetland Management District (USFWS) • Habitat and Population Evaluation Team (USFWS)
- The Nature Conservancy • South Dakota Game, Fish and Parks