snow GOOSE synopsis

By Craig Bihrle

JOE FLADELAND

Snow geese staging at Des Lacs National Wildlife Refuge near Kenmare in November 2007. In the last decade, snow geese have changed their migration pattern so the majority have not moved into North Dakota's northern tier refuges until late October or early November, narrowing the window of peak hunting opportunity by a couple of weeks compared to the previous decade.

Researcher Gives Update on Breeding Ground, Population Changes

To waterfowl hunters, it's not good news that this year's snow goose reproduction effort on arctic breeding grounds was well below average. While millions of snow, blue and Ross's geese will still come bustling down the Central Flyway this fall, the swirling flocks will not include many juvenile birds that are typically less wary and more readily decoyed than their well-traveled and well-educated adult counterparts.

This short-term loss for hunters, however, is not necessarily a bad thing for the Mid-continent Light Goose Population as a whole. In fact, continental waterfowl managers might like another year or two of low reproduction to help with an effort to reduce the Mid-continent population that now spans nearly two decades.

Most goose hunters are familiar with the progression of management actions designed to slow or reverse population growth of Mid-continent snow geese. These are the birds that migrate through North Dakota each spring and fall and nest along the southern and western shorelines of Hudson Bay and farther north in the arctic.

Dr. Robert Rockwell, an ornithologist and biology professor at City University of New York, who since 1982 has directed snow goose research at La Perouse Bay, a nesting colony along the southwestern part of Hudson Bay, gave presentations in North Dakota last spring that included updates on snow goose population dynamics. It's an interesting story that emphasizes this species' ability to adapt and even thrive in a changing environment.

"For years, we've been telling our hunters about the overabundance of snow geese and the problems they are causing," said Mike Johnson, North Dakota Game and Fish Department game management section leader. "Dr. Rockwell's research shows the real consequences of too many geese and

their damage to the tundra, and also how efforts to control or reduce the Mid-continent population are working."

Population Background

In the early 1970s, the Mid-continent Light Goose Population numbered about 1.5 million birds, according to annual mid-December surveys conducted on the birds' wintering grounds. In the late 1990s the population was estimated at 3 million, and today it's probably still around that mark, though waterfowl managers have several different measurements to use and they don't all yield the same population estimate.

"So, how many are there, we don't know," Johnson said at the spring presentation in Bismarck. "The important thing is that all the trends of these birds … all the population curves look the same. Formerly the population growth was 5-to-6 percent annually. Since the (spring light goose) season, it's 2-to-3 percent."

The goal, Rockwell said, is zero or less.

La Perouse Bay alone had about 1,200 nesting pairs in 1968. In 1991 the pair count was about 7,000, and in recent years it's closer to 50,000.

As an aside, this year the number of breeding birds at La Perouse was basically zero, as for the first time snow did not melt off the breeding ground until it was too late for geese to initiate a breeding effort. While other nesting colonies generally had at least some reproduction, La Perouse Bay had a complete reproductive failure in 2009.

In years when breeding efforts take place, pressure on the fragile arctic tundra and delta areas occurs in two waves. The first is when adult birds arrive on the breeding grounds, some that will stay, others that will continue north to other areas when the snow clears. In 2009, because of the extensive snow cover, adult snow geese concentrated on areas where some open ground occurred, and Rockwell estimated several million birds amassed in one area some 100 miles south of La Perouse Bay.

It's such concentrations of birds, feeding heavily before they disperse to breeding colonies far and wide, that do the most damage to breeding grounds.

What little vegetation that remains is then targeted by newly hatched goslings foraging for tender green shoots. Because of the constant pressure and a short growing season, arctic vegetation doesn't grow back quickly … and sometimes not at all. Young birds at many colonies have a hard time finding anything to eat after they hatch, reducing their survival. Productivity of adult pairs is reduced.

Remarkable Adaptations

At one time, most snow geese in the Mid-continent population wintered along the Texas and Louisiana Gulf Coast. Throughout the 20th century, but mostly in the last half, Rockwell said human development of the coastline basically removed the snow goose winter habitat.

However, instead of population declines that many species experience because of loss of habitat, snow geese adapted. They gradually started wintering north of the coast, in the rice prairie region of southeastern-Texas, switching their diet from marsh vegetation to rice and other waste grains. Today, snow geese may winter several hundred miles north of the Gulf Coast, as long as they can find open water and a plentiful food source.

"A species that was once winter-habitat-limited, changed its habitat because we destroyed what it used to live on … we forced it out," Rockwell stated at his presentation in Bismarck. "This is a very adaptable bird. They can make a living in lots of places, and that's what they keep doing."

It's that same ability to adapt that is helping snow geese thrive in spite of the habitat degradation on their nesting grounds. While some historical colonies on coastal salt marshes are no longer productive, the geese have simply moved their nesting sites farther inland along rivers – sometimes 6-10 miles – into freshwater habitat among willows and conifers bordering delta flatlands. "They're moving back into places they've never used before," Johnson said.

Snow geese also gradually changed their fall migration behavior in response to hunting pressure. In the last 50 years, their primary fall staging area in North Dakota has moved from the southeast, to the Devils Lake region, to the north central and even northwestern parts of the state. In recent years, the primary snow goose staging area has moved into southern Canada, where these birds can fill their food and water requirements with much less hunting pressure than on the North Dakota side.

The fall movement to the northern tier of North Dakota meant a good share of the snow geese were staging at several national wildlife refuges, feeding on waste grain left behind in harvested crop fields. Large concentrations of geese meant large flocks going out to feed, and in big bunches, snow geese became harder to hunt.

Putting the Pressure on

Because of this phenomenon, by the early 1980s, the annual snow goose harvest rate in the Central Flyway began to decline.

Efforts to reverse that began in 1990 when the daily limit increased from five to seven. The daily limit went from seven to 10 in 1992, and from 10 to 20, with no possession limit, in 1998.

The following year, many states were able to implement a spring snow goose conservation order, allowing

MIKE JOHNSON

Dr. Robert Rockwell (right) has spent every summer since 1982 researching the snow goose nesting colony at La Perouse Bay in northern Manitoba. Note the lack of green vegetation in background during the peak nesting period.

hunting of snow geese on their northward migration.

The spring season has been in place for a decade, and has accounted for a considerable additional harvest over and above what was taking place with fall/winter season that started around October 1 in northern states and ended in mid-February in southern states. The spring conservation order then kicks in and runs into early May in many states and Canadian provinces.

That added pressure has helped cut the Mid-continent Light Goose Population growth rate in half over the past several years, but it hasn't yet been enough to actually reduce the population. "I think without that (spring season)," Rockwell noted, "we would really be in trouble."

While the La Perouse Bay colony growth has stabilized, Rockwell says the area of habitat degradation still expands because the bulk of Mid-continent snow geese still stage in that area in spring before heading out to other nesting colonies farther north. Most of the damage, he added, comes from those staging birds, rather than actual breeding birds and their young.

It takes the fragile arctic coastal ecosystems a long time to recover. "In the absence of most geese, it took 20 years to get the beginnings of recovery, once you get the geese out of there," Rockwell said.

Where the geese are nesting farther inland, Rockwell said that some recovery is noted within three years, instead of 20 in the coastal salt marsh, but he emphasized that in either situation "the recovery only occurs when the abundance of snow geese is much less than currently encountered."

In 2009, the La Perouse colony got a break when a late spring meant snow still covered the ground when the first wave of migrants went through, so that initial foraging did not take place. Part of Rockwell's research is trying to mimic just that type of scenario, though on a much smaller scale.

Using sections of snow fence staked in the ground, goose researchers create snow drifts that cover parcels of ground longer, so that when migrants come through, there are places they can't get at. When the snow finally melts, nesting geese and broods can use the area for feeding.

But that's only scratching the surface of possibilities at one nesting colony out of dozens. And restoration progress is slow in the arctic environment. While habitat in one area is started on the road to recovery, geese simply move into another area, repeating the cycle.

"We're trying to understand what is it, about not just snow geese but all these other species, that has allowed them to, every time we think we understand the rules, they change them," Rockwell explained. "I think until we figure that out, in the long run, we're never going to get ahead of them."

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SUBMITTED PHOTO

Dr. Robert Rockwell is a research scientist at the American Museum of Natural History and a biology professor at the City University of New York. He has worked in the Canadian Arctic, near Churchill, Manitoba, for more than 40 years. While much of that effort has been focused on lesser snow geese and their impact on coastal tundra, he also studies eider ducks, savannah sparrows, arctic foxes and polar bears.

On the Web: *To watch Dr. Rockwell's presentation, or his interview on the Game and Fish Department's webcast, visit our website at gf.nd.gov.*