



Waterfowl managers now believe that the continental lesser snow goose population may exceed 15 million birds.



Light Goose Dilemma

Despite increased harvests,
populations of these Arctic-nesting
geese continue to grow

BY DALE D. HUMBURG

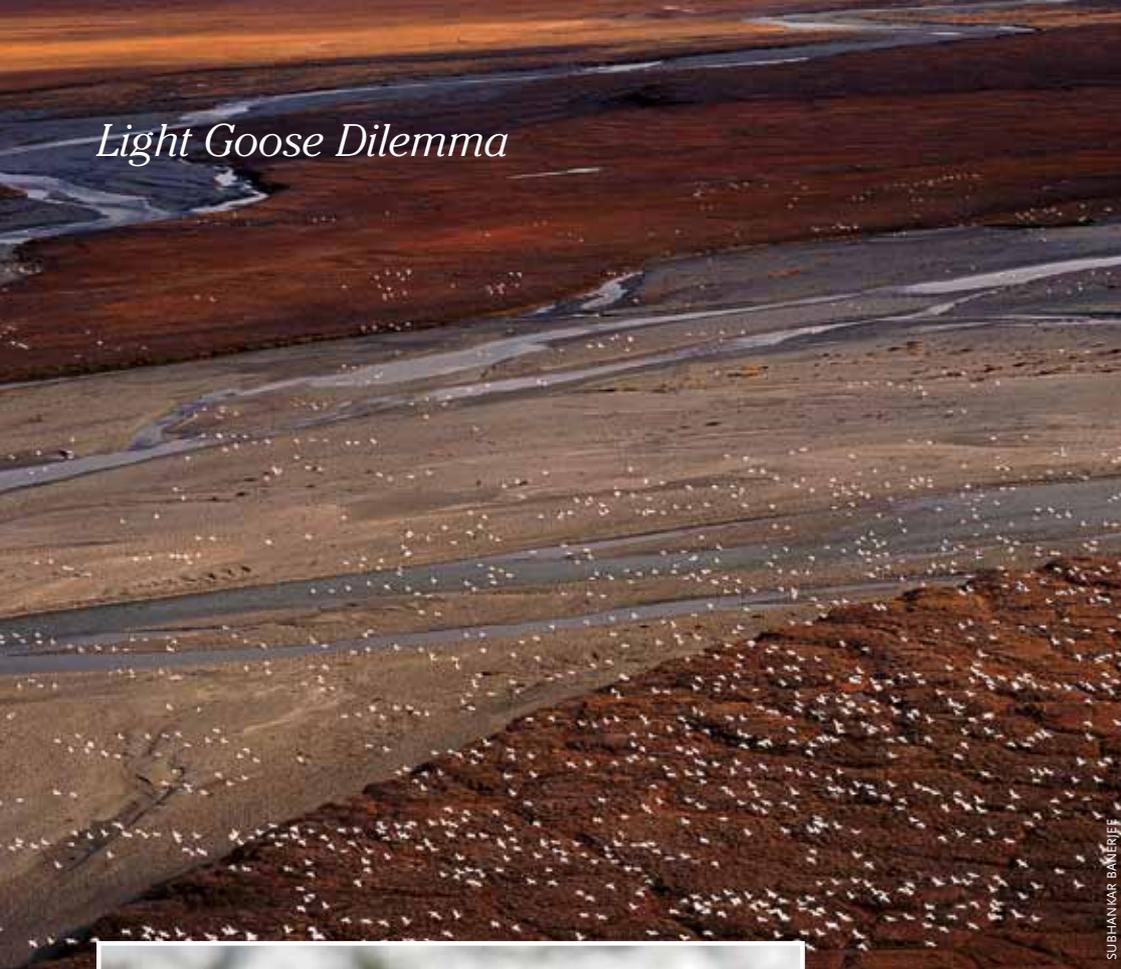
Since the Migratory Bird Treaty Act was signed in 1918, the main objective of North America's waterfowl management community has been to maintain or increase duck and goose populations. In recent decades, however, waterfowl managers have faced a new challenge as populations of lesser snow, greater snow, and Ross's geese—collectively known as light geese—have soared to alarmingly high levels.

In 1997, Ducks Unlimited was instrumental in producing the report *Arctic Ecosystems in Peril*, which documented the widespread degradation of coastal salt marsh habitat in Canada's Hudson Bay Lowlands by growing numbers of lesser snow geese. When this report was released, habitat along 700 miles of coastline from southern James Bay to the west coast of Hudson Bay—encompassing more than 130,000 acres—had already been destroyed and a similar-sized area had been severely degraded. In addition, lesser snow geese had also begun to damage adjacent freshwater habitats as the birds expanded their staging areas in search of food. In following years, impacts from ever-increasing numbers of light geese have claimed even more coastal salt marsh and freshwater habitat along James and Hudson bays.

In an effort to save these fragile habitats, waterfowl managers acted decisively during the late 1990s to increase light goose harvests in hopes of reducing the birds' populations. In the United States, the Light Goose Conservation Order significantly liberalized harvest regulations, eliminating daily bag limits in most states and allowing hunting after March 10. It also allowed the use of electronic calls and unplugged shotguns, and permitted shooting until one-half hour after sunset. Spring conservation seasons for lesser and greater snow geese were likewise implemented in Canada, along with greatly liberalized regulations during general waterfowl seasons in both countries. Although these actions have succeeded in doubling harvests continentally, they have failed to check either the growth of many light goose populations or the subsequent adverse effects on the birds' habitats.

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Light Goose Dilemma



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Light Goose Populations and Distribution

Prior to the 1960s, light geese were largely confined to a few relatively small colonies in the Canadian Arctic and subarctic. Light goose breeding colonies have since expanded in size, and new colonies have been established as populations have increased exponentially. Based on migration and wintering population surveys, lesser snow and Ross's goose numbers in the Mississippi and Central flyways have increased threefold over the past five decades, from fewer than 1 million birds in the late 1960s to about 3 million birds today. However, recent breeding ground surveys and population estimates using banding and harvest data suggest that light goose numbers are many times larger than these counts indicate. In fact, waterfowl managers now believe

that the total light goose population exceeds 15 million lesser snow geese, 1.5 million Ross's geese, and 1 million greater snow geese.

Why have light goose numbers increased so dramatically over the past half century? In simple terms, the birds have benefited from the expansion of agriculture on their migration and wintering areas, which has provided them with an almost unlimited food supply. This has increased survival, allowing more young birds to reach breeding age and more adults to return to the breeding grounds in better condition, which has increased productivity.

Changes in land use have also altered the migration and wintering distribution of light geese. Historically, these birds made direct migrations from staging areas along the James and Hudson Bay coasts to wintering areas on coastal marshes of the Gulf of Mexico and the Atlantic Ocean, and from western staging areas to the Central Valley of California. In recent decades, light geese have become more widely distributed as the birds have shifted to a diet largely consisting of waste grain and other agricultural foods during migration and winter. Lesser snow geese are now wintering farther north and over a much greater area than ever before, and Ross's geese have steadily expanded their range eastward over the past few decades. Along the Gulf Coast, decreasing rice production and severe drought in Texas have resulted in declines in the number of light geese wintering in this region. Many of the birds that once gathered on the rice prairies of southeast Texas are now wintering in eastern Arkansas and adjoining states where rice production has increased and water is more plentiful.



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Light goose populations have soared in response to an abundance of agricultural foods on migration and wintering areas. Waterfowl researchers have documented the adverse effects that increasing numbers of feeding geese are having on fragile tundra habitats.

Impacts on Habitat and Other Wildlife

The effects of light goose overabundance were initially documented on breeding areas in the central and eastern Arctic and subarctic, but recent surveys indicate that population growth of lesser snow geese could also be occurring in the western Arctic at a similar pace. Although waterfowl managers believe existing breeding habitats can support light goose populations at current levels, the point at which continued population growth will exceed the capacity of the landscape to sustain the birds has yet to be determined. When traditional breeding habitats are degraded, light geese

simply shift to different habitats or move to new areas where conditions are more favorable. No one knows how much potential breeding habitat exists in the Arctic and subarctic, or the proportion of current light goose breeding habitat that has been damaged or destroyed. In addition, more research is needed to determine light goose impacts on migration habitats during spring and fall.

Biologists expect habitat degradation on Hudson and James bays to increase as midcontinent populations of lesser snow and Ross's geese continue to grow. In fact, as light goose numbers increase, their impact on habitat and other wildlife is expanding. Breeding and staging habitats used by light

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Light Goose Dilemma



The Light Goose Conservation Order, first implemented in 1999, has provided waterfowlers with unprecedented hunting opportunities.



geese are important to millions of shorebirds, waterfowl, and other migratory birds. Research has revealed that habitat degradation by light geese has negatively impacted species as diverse as savannah sparrows, semipalmated sandpipers, brant, and Canada geese. Changes in abundance of amphibians and small mammals (lemmings and voles) as well as declines in spiders, beetles, and larval midges have also been documented in areas degraded by feeding light geese.

Increasing Light Goose Harvests

Defining a problem is not nearly as difficult as solving it, and so far the primary means of light goose population control has been through harvest management. The U.S. Fish and Wildlife Service (USFWS) and the Canadian Wildlife Service (CWS) have the shared responsibility of conserving waterfowl under the Migratory Bird Treaty Act in the United States and the Migratory Birds Convention Act in Canada. State and provincial wildlife agencies are also partners with significant management authority and operate within harvest frameworks established by federal agencies.

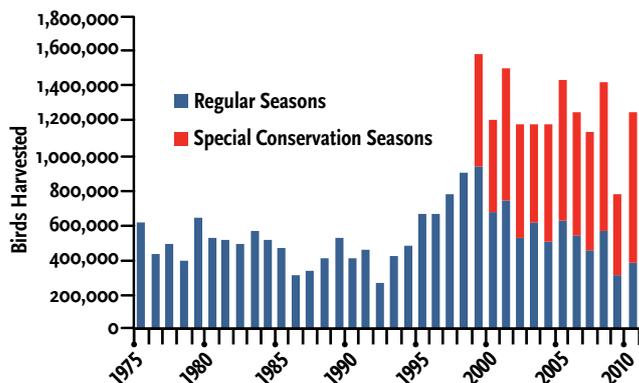
Waterfowl managers have gradually liberalized light goose hunting regulations as the birds' populations have increased. Hunting season lengths of 70 to 93 days and daily bag limits of five birds or less were the rule for light goose species until the late 1980s. Maximum allowable seasons of 107 days and bag limits of up to 20 birds were the norm by the late 1990s. The pace of regulations, however, was not fast enough to keep up with the increase in light goose populations. Even the unprecedented liberalization of hunting regulations allowed by the Light Goose Conservation Order has failed to achieve the objective of tripling the harvest rate of midcontinent lesser snow geese, though efforts to stabilize numbers of

greater snow geese through harvest management appear to have been more successful.

The liberalization of hunting regulations has certainly had a positive impact by increasing light goose harvests, and waterfowl managers believe that without the conservation order, light goose populations would be even larger than they are now. But recent evaluations indicate that midcontinent lesser snow and Ross's goose populations—and therefore the magnitude of the problem—are much larger today than previously thought. Despite increases in harvests due to the conservation order and other regulations changes, the overall harvest rate (the proportion of population harvested) of midcontinent

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MIDCONTINENT LIGHT GOOSE HARVESTS



Harvests of midcontinent light geese have doubled since the late 1990s, but overall harvest rates (the proportion of the population harvested each year) have actually declined during the same period.

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light geese has actually declined since hunting regulations were liberalized.

While conventional harvest management and the conservation order have been only marginally successful in slowing light goose population growth, the continuation of these measures is certainly justified, and efforts to monitor the status of light goose populations and habitats must continue. What else can waterfowl managers do? The sale of migratory birds for consumption is prohibited in the United States and Canada, and changing this policy would be a significant departure from long-held principles of waterfowl management. In addition, direct control measures, such as culling large numbers of birds on breeding, migration, and wintering areas, would likely



MICHAEL PETERS

As light goose numbers continue to grow, waterfowl managers expect habitat degradation to continue on the birds' breeding grounds.

be expensive and difficult to implement, not to mention controversial among sportsmen, the wildlife management community, and the general public.

Despite strong evidence of the adverse impacts of light geese on subarctic habitats, the evidence is less clear to the north, and additional research will be required to determine the carrying capacity of Arctic habitats and the extent of habitat degradation in that expansive region. Implementation of direct control measures would require unequivocal scientific

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evidence that the damage to the environment is severe and extensive enough to justify such unprecedented measures.

Perhaps the easiest course of action would be to simply let nature take its course and allow light goose populations to continue to grow and impact Arctic and subarctic habitats indefinitely. Most wildlife managers have rejected a do-nothing approach for two reasons. First, without continued management, the ecological damage could be catastrophic, not only for waterfowl but also for a host of other wildlife species. Second, since the overabundance of light goose populations is a human-induced problem, responsibility for addressing it lies with wildlife managers and the public.

Looking Ahead

While it would be easy to view light goose management efforts as not entirely successful, the application of years of research in the Arctic and subarctic was instrumental in identifying both the light goose overpopulation problem and

a range of potential solutions. Supporting and implementing spring conservation harvests was no easy task for elected officials and waterfowl managers. And waterfowl hunters have done their part by increasing light goose harvests, employing new and innovative approaches to ensure the effectiveness of this important management action.

Looking ahead, waterfowl managers need a better understanding of the availability of suitable light goose staging and breeding habitat, as well as the extent of habitat loss and degradation in the Arctic and the magnitude of impacts on other wildlife species that share the same landscapes. Assessing public sentiment will also be essential before more aggressive control measures can be seriously considered. In 1997, the best available science strongly supported the need for management control of light goose populations. The science must be equally strong before a decision can be made to pursue a new phase of intervention. ☞

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