

FINAL ENVIRONMENTAL IMPACT STATEMENT ON LIGHT GOOSE MANAGEMENT

Questions and Answers

1. What does the Service mean when we refer to "light geese?"

There are eight distinct species of geese in North America, each of which has multiple separate populations. The "light" geese referred to in the Final EIS include greater and lesser snow geese and Ross' geese that nest in Arctic and sub-Arctic regions of Canada and migrate and winter throughout the United States.

Greater snow geese nest in the eastern Arctic and winter in the mid-Atlantic states. Lesser snow geese breed from the eastern to the western Arctic and sub-Arctic portions of Hudson and James bays. Ross' geese nest primarily in the central Arctic and winter in western and central portions of the United States, though their wintering grounds have been spreading eastward. Ross' geese are commonly mistaken for lesser snow geese because of their similar appearance. However, Ross' geese are smaller and have a shorter bill. Ross' geese mix extensively with lesser snow geese on the breeding and wintering grounds and on stopover areas along migration corridors. Both Ross' geese and lesser snow geese nest in colonies along the Hudson Bay Lowlands, which are experiencing severe habitat degradation.

2. What is the problem with light geese?

Scientists and managers from across North America agree that some populations of light geese have become so numerous that their Arctic and sub-Arctic nesting habitats cannot adequately support them. In addition, greater snow geese are degrading natural habitats and causing agricultural damage on migration areas in the St. Lawrence Valley in Quebec and in some mid-Atlantic states. In other words, light geese are literally eating themselves out of house and home.

The breeding population of mid-continent light geese exceeds 5 million birds, an increase of more than 300 percent since the mid-1970s. The population has increased more than 5 percent per year. Non-breeding geese (juveniles or adults that fail to nest successfully) are not included in this estimate, so the total number of geese is even higher. Light goose population indices are the highest they have been since population records have been kept and evidence suggests that large breeding populations are spreading to previously untouched sections of the Hudson Bay coastline.

Although anecdotal historical records refer to large concentrations of light geese, they do not indicate that the populations have ever been higher. The unprecedented numbers are a problem for the light geese themselves and also for other wildlife and plants that share their habitats. At these high population levels, parts of the fragile tundra habitats where light geese traditionally nest are being seriously degraded and/or destroyed. In addition, complaints about geese damaging agricultural crops are on the rise in states and provinces between the nesting grounds and the wintering grounds.

3. How do these geese cause damage?

Snow geese and Ross' geese are colonial birds: they do everything in large groups. When groups arrive in an area to feed, they remove an immense amount of plant material simply because of their large numbers. On the breeding grounds, snow geese use a feeding behavior called "grubbing," in which they probe their bills below the ground surface and turn the soil over in search of high-energy roots and tubers. They denude feeding areas of all edible plant material. Ross' geese also consume belowground plant material, but because of their shorter bills, they spend more time grazing and graze shorter stands of vegetation than snow geese.

Plants grow slowly in the cold sub-Arctic and Arctic nesting areas, and large numbers of geese remove more plant material than can be regrown or regenerated before the next nesting season. When this happens year after year, plant communities in these areas are unable to recover and may be totally destroyed.

When plants are removed by geese the soil is exposed and salts in the subsoil layers begin to accumulate at the ground surface, creating a saline environment where regrowth of most plants is virtually impossible. In addition, without root systems to hold it in place, the thin layer of topsoil is then easily eroded away by wind and other climatic conditions. On migration and wintering grounds, snow geese are causing damage to crops in farm fields. The number of depredation complaints has risen steadily in the past few years.

4. How are the geese affected by the habitat destruction?

Snow geese in the mid-continent region are showing signs of overpopulation in lower-than-normal body size in both juveniles and adults. There also has been a decrease in gosling survival. Some areas along west Hudson Bay no longer provide suitable habitats for feeding, nesting or brood rearing. Over time, scientists expect populations to decline to very low levels if action is not taken to reduce goose numbers and restore habitat.

5. Are light geese the only wildlife affected?

Indications are that goose overabundance is already affecting other sub-Arctic and Arctic wildlife. Initial studies suggest that some species of nesting birds in the areas where severe damage has occurred have experienced direct loss of nesting habitat, and the drastic declines in native plant communities have likely caused significant changes in the food base, as well. There are also indications that local populations of a number of bird species that nest in the same areas as the geese are declining, including the semi-palmated sandpiper, red-necked phalarope, dowitchers, Hudsonian godwit, whimbrel, stilt sandpiper, yellow rail, American wigeon, northern shoveler, oldsquaw, red-breasted merganser, parasitic jaeger and Lapland longspur, among others. The Southern James Bay population of Canada geese has also been affected, possibly as a result of habitat degradation caused by light geese.

In addition to problems on sub-Arctic and Arctic nesting grounds, high numbers of light geese could pose a health threat to other birds as they migrate. Specifically, lesser snow and Ross' geese are suspected carriers of avian cholera, although most of the time it does them no harm on a population level. However, under certain circumstances when populations are under stress due

to high densities, the disease erupts. Because light geese often congregate with other waterfowl populations along migration corridors, an outbreak of avian cholera could spread beyond goose populations, thus affecting other species of waterfowl and wading birds.

6. Where is the ecological damage being done?

Traditionally, snow geese have nested along the coastal lowland areas along west Hudson Bay and other northern regions in Canada. Ecological damage associated with overabundant light geese has been extensively studied and documented along west Hudson Bay. However, there is evidence of habitat damage in some of the more northern breeding colonies, as well, especially in the Queen Maud Gulf region. As the populations along west Hudson Bay have increased, geese have expanded their nesting range inland and along the coastline, and the belt of damaged habitat is widening. In addition, many geese that nest in the salt marshes now lead their goslings farther inland on foot in search of food, compounding problems there.

In 1996, along a roughly 1,200-mile stretch of coastline along west Hudson Bay and James Bay, scientists estimated that 35 percent of the original habitat had been destroyed, 30 percent had been severely damaged and 35 percent overgrazed. The situation is particularly serious in many of the sub-Arctic nesting and staging areas. Thousands of geese nest at places like La Perouse Bay, Manitoba; thousands more also use it as a staging area a place to rest and feed while they wait for the ice to melt in their nesting habitat to the north. Thus, habitats in such areas receive a double dose of hungry geese before nesting has even begun in the northern colonies.

7. Is environmental change responsible for declining breeding habitat?

It's true that the arctic breeding grounds are slowly changing due to a process known as isostatic uplift. As glaciers have continued to recede from the last ice age, the land mass is rising slightly. As a result, wetland habitats and vegetation will eventually give way to plants that can survive in a drier environment. At the same time, however, new saltmarsh habitat is created as new sediments become exposed. But isostatic uplift occurs almost imperceptibly over centuries while the destruction of wetland breeding habitat from snow geese has happened in a matter of years. The rate of creation of new habitat is greatly exceeded by the rate of habitat destruction by geese.

Climate change cannot completely explain the habitat degradation, as has been clearly demonstrated by the construction of fenced enclosures that prevent geese from feeding on selected plots. Both the enclosures and adjacent areas exposed to goose feeding are experiencing the same climatic conditions, but the vegetation composition in the two areas is markedly different. Vegetation has been almost completely destroyed in areas around the enclosures where geese were allowed to grub and graze. Inside the enclosures, however, scientists have documented healthy plant growth. Therefore, there is no indication that climatic change has caused habitat degradation.

8. Why are light geese so abundant?

There are many reasons why light goose populations may have expanded so dramatically.

Scientists believe five primary factors together have led to the unprecedented populations. There may also be more factors that scientists do not yet understand.

-An increase in food available to the birds as they migrate and winter allows higher survival and reproduction. Historically, snow geese spent the winter in wetland areas on or adjacent to the Gulf of Mexico. As humans occupied this region, many coastal wetlands were drained and developed and the surrounding countryside was put into agricultural production. Because of these changes, geese began spending the winter farther inland. The change suited them quite well because in the farm fields they found a new supply of nutritious food. Furthermore, waste grain in farm fields up and down the flyway keeps them well fed as they migrate. Good nutrition allows more geese to survive migration and winter and return to the northern breeding grounds in good physical condition to begin the cycle again.

-An extensive network of state, provincial, federal and private wildlife refuges has been established for the primary purpose of conserving migratory waterfowl populations. Refuges throughout the flyways provide closed areas for light geese and other waterfowl as they migrate and spend the winter. Although the acreage of refuges is dwarfed by the amount of available habitat on private lands, managers on some refuges are seeking ways to decrease the availability of food and sanctuary to light geese.

-Harvest rates for snow geese have not kept pace with population growth in past years. These birds tend to be difficult to hunt, which leads many hunters to pursue other types of waterfowl instead. Passage of congressional legislation in 1999 has permitted the use of electronic calls and unplugged shotguns, as well as the implementation of a conservation order that allows harvest outside of traditional migratory bird hunting season dates. As a result, light geese harvest has increased substantially, ranging from 1 to 1.5 million birds annually between 1999 and 2003 when the Canadian harvest is factored in. Some research suggests that this level of harvest may begin to bring the population down.

-Climate factors also helped snow geese and Ross' geese. A warming trend in some nesting areas during the late 1960s and 1970s allowed higher than normal reproduction.

-Decreased adult mortality means birds are living longer. The average adult lives 8 years and some may live to be 20. The average female will lay four eggs each year, meaning that if a female begins breeding at age 3, she could produce 24 goslings in an "average" life span, maybe twice that many if she lives a longer-than-average life.

9. Why don't predators keep light goose populations from growing?

Only a few predators kill and eat snow geese. On the sub-Arctic and Arctic breeding grounds, they include Arctic foxes, wolves and polar bears, although wolves are not very numerous and bears prefer to eat seals. Eggs and goslings are eaten by parasitic jaegers, herring gulls and ravens. Predators that eat snow geese on the breeding grounds do not migrate and aside from humans, there are few predators able to capture and kill geese along their migration routes or on their wintering grounds.

10. Why not just let nature take its course?

This is an option that has been considered. Arguments in favor of "letting nature take its course" rest on the idea that at some point the goose population will overwhelm the ability of breeding habitat to support it. As the theory goes, the resulting natural crash in population from starvation will bring goose numbers back down to levels that will allow the habitat, and the geese themselves, to recover. While this boom-and-bust cycle accurately describes many natural population dynamics, it fails to account for two significant differences when applied to light geese.

First, geese are highly mobile and can escape the effects of high density by moving on to other areas at most stages of the breeding period. In fact, evidence collected from 1985 to the present clearly shows that geese have been dispersing in vast numbers from the deteriorating habitat at La Perouse Bay to the east and south down the coast. Survival rates for geese that have adapted to new areas is significantly higher than for the remaining colony at La Perouse Bay, but there are now signs that the habitat in these new areas is beginning to degrade significantly. In effect, the geese invade previously undisturbed areas, destroy habitat to the point that they can no longer survive, and disperse. This pattern widens the scale of destruction and invalidates the concept that bird density alone will control the population. The standard density model also assumes that the habitat can recover in a relatively short period of time, restarting the population cycle after a crash. But the short growing season and fragile condition of the arctic habitat means that much of this habitat could be lost if wildlife managers wait for a large-scale population correction.

Light geese are causing ecological damage that extends far beyond just their own populations. The tundra plant and animal communities where light geese nest are being destroyed and changed. Scientists believe that the new mix of plants and animals that will be able to live in these new conditions will be much less diverse than what was there before. Even on the areas that are not yet totally destroyed, habitat recovery will take decades or centuries, if it recovers at all, in the fragile Arctic ecosystem.

In addition, nature's mechanisms for curbing populations that are out of control could include the starvation of millions of goslings and the outbreak of disease (e.g., avian cholera), which could impact populations of many other bird species in addition to light geese.

11. Who is responsible for solving the problem?

The federal governments of the United States and Canada have primary responsibility for managing migratory birds. Federal, state and provincial natural resources management agencies are required by law to manage the health and well-being of wildlife populations within their respective jurisdictions. Because geese are migratory birds that cross international boundaries, cooperation is required among the federal, state, and provincial resource management agencies of the United States, Canada, and Mexico. Aside from compiling a Final EIS, the Service has also been working with Canadian wildlife officials for many years to develop a multinational strategy to address the problem.

Whatever course of action is ultimately approved by the EIS process, State wildlife agencies will have, and have always had via the regular season hunting frameworks, the ultimate decision as to which, if any, parts of federal light goose regulations they will implement in their states.

12. Why hasn't something been done before now to address the problem?

Efforts have been made to address the problem for decades. The first liberalization of light goose hunting regulations in the Central Flyway occurred in 1980. The length of the hunting season has been increased to 107 days -- the maximum allowed by the Migratory Bird Treaty Act. Daily bag limits (number of geese a hunter can take in a single day of hunting) have been increased to levels beyond those allowed for any other waterfowl species and possession limits (number of geese a hunter may have in his/her possession) have been removed.

After an exhaustive study of arctic light goose populations completed in 1997 by the Arctic Goose Habitat Working Group, and in the wake of dozens of scientific papers describing the problem, the Service implemented two rules in 1999 designed to give 24 southern and midwestern states the opportunity to reduce mid-continent light goose populations. Though the rules were withdrawn after a court challenge, Congress passed legislation signed into law in 1999 that reinstated their provisions pending completion of the Final EIS. The provisions:

- Allow use of "unplugged" shotguns (increasing the limit on the number of shotshells that can be legally placed in the firearm's magazine) during the remaining days of regular light goose seasons after all other waterfowl and crane hunting seasons, excluding falconry, are closed.

- Allow use of electronic calls during the remaining days of regular light goose seasons after all other waterfowl and crane hunting seasons, excluding falconry, are closed.

- Authorize a conservation order that could take place inside or outside of the regular migratory bird season hunting frameworks. This would allow conservation actions to take place not only during the traditional hunting period of September 1 to March 10, but would also allow actions to be taken between March 11 and August 31. The Migratory Bird Treaty prohibits the setting of hunting seasons for migratory birds between March 11 and August 31. However, the treaty does allow management actions during this period to protect migratory bird habitats or populations. Furthermore, the treaty authorizes take of migratory birds that, under extraordinary conditions, have become seriously injurious to agricultural or other interests.

- Authorize use of unplugged shotguns and electronic calls during the conservation order. In addition, daily bag limits may be removed and shooting hours may be allowed until one-half hour after sunset.

12. What states are affected by these regulations?

The rules currently in effect apply to the Central and Mississippi Flyway states of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Mexico, North Dakota, Ohio, Oklahoma, South

Dakota, Tennessee, Texas, Wisconsin and Wyoming. If the Service's preferred alternative is implemented, these states would remain eligible to use the special regulations for light goose management.

Furthermore, Atlantic Flyway states may be authorized to implement such regulations if the population of greater snow geese exceeds the management goal of 500,000 birds. At this time, we are not advocating implementation of special light goose regulations in the Pacific Flyway.

13. Why did the Service withdraw the original light goose regulations in 1999?

The rules were withdrawn in June of 1999 to avoid further litigation after a court challenge from the Humane Society of the United States and others. U.S. District Court Judge Thomas Francis Hogan ruled in favor of the Service and denied a request by the group for a preliminary injunction blocking implementation of the rules. He found evidence that the Service had acted within its mandate under the Migratory Bird Treaty Act to take the emergency measures to protect migratory bird habitat in Canada.

However, Judge Hogan did find cause to believe that a full environmental impact statement (EIS), rather than the more concise environmental assessment (EA) performed by the Service, was likely required by the National Environmental Policy Act. Because the rules were implemented as an emergency response to the ongoing habitat destruction, the Service had planned for some time to compile an EIS to develop a long-term management strategy. Therefore, the decision was made to follow Judge Hogan's suggestion and accelerate development of the EIS, rather than pursuing litigation. The rules were withdrawn at the conclusion of the conservation order in 1999.

14. How was it possible that light goose conservation orders were authorized after the Service withdrew the regulations in 1999?

In November 1999, Congress passed the Arctic Tundra Habitat Emergency Conservation Act to ensure that special light goose regulations would remain in effect until the Service completed the EIS process and published new regulations. Following signing of the law by President Clinton, the Service reinstated the special light goose regulations.

16. What are the management goals for light geese?

The management goal for mid-continent light geese is to reduce the population by 50 percent. This suggests reducing the winter index from a high of 3.2 million to approximately 1.6 million. The management goal for greater snow geese is to reduce the population to 500,000 birds.

17. Have the new regulations been effective at reducing the number of light geese?

Yes. Prior to implementation of special light goose regulations in the Central and Mississippi Flyways, the annual harvest of light geese was usually less than 700,000 birds. The special regulations helped to increase total harvest ranging from one to 1.5 million birds from 1999 to

2003. The winter index of light geese in the mid-continent region peaked at 3.2 million in 1998. Following implementation of special regulations in 1999 the population began to decline, and was estimated to be 2.4 million birds in 2006.

18. What alternatives did the Service analyze in the Draft EIS?

The Draft EIS contained an analysis of a range of management alternatives. As required by the National Environmental Policy Act, the Service analyzed the effect of taking no action--continuing to manage light goose populations using conventional hunting seasons and practices (Alternative A). The Service's preferred alternative (Alternative B) would provide wildlife management agencies with greater flexibility to manage light goose populations through the use of electronic calls and unplugged shotguns, as well as through a conservation order permitting harvest outside of traditional hunting season frameworks. The proposed alternative also would alter management practices on some national wildlife refuges in order to reduce the availability of good and sanctuary to light geese. Other alternatives evaluated the impacts of direct population control activities on both wintering and migration areas in the United States (Alternative C) and on the breeding grounds in the Canadian Arctic (Alternative D).

19. Are any new management alternatives contained in the Final EIS?

Yes. As a result of public comments, especially by Flyway Councils and several state wildlife agencies, the Service developed and analyzed a new alternative for the Final EIS. New Alternative E analyzes a two-phased approach to light goose management. Phase one of Alternative E is identical to Alternative B and would implement new regulations and refuge management to reduce light goose populations. After no more than five years of implementation, the effectiveness of phase one in reducing populations would be evaluated. A determination would then be made whether it is necessary to implement phase two, which incorporates direct agency control of light goose populations as described in Alternatives C and D above.

20. Did the Service change its preferred alternative as a result of the public comment process?

No. The Service has retained Alternative B as its preferred alternative.

The Service received 414 comments on the draft EIS from private individuals, of which 57 percent supported some sort of goose control. All 24 federal, state or provincial agencies, one state representative, six tribal groups, and four flyway councils supported some sort of goose control. Eight of 11 non-government organizations were also supportive.

21. Why has the Service proposed hunting to address the problem?

From a biological perspective, the key to reducing the population of light geese is to reduce the survival rate of adult birds. The Service has relied on the assistance of hunters in its past efforts to address the problem for several reasons. Hunting has traditionally been used as an effective tool to manage migratory game bird populations. Without regulated hunting, resource

management agencies will have to spend significant amounts of money to control the populations directly on their breeding or wintering grounds. Such alternatives could also potentially result in massive waste of goose carcasses that otherwise would be consumed by hunters or donated to food banks. The Service has analyzed both options in the Final EIS.

22. Why not use non-lethal techniques to solve the problem?

Agencies have looked closely at the non-lethal options available and have found them insufficient for several reasons. First, some of the affected areas are huge – the 1,200 miles of affected west Hudson Bay coastline alone is about the length of the California and Texas coastlines combined. In addition, the affected areas are remote, difficult to access, subject to inclement weather, and shared by polar bears. Traditional non-lethal techniques such as harassment and disturbance would require repeated and nearly continual application to keep geese out of target areas. Getting people, dogs and machinery to these locations to create such disturbances would be difficult, expensive and dangerous.

Use of more mobile disturbance techniques such as aircraft is cost-prohibitive on the large scale of landscape that needs protection. In addition, once geese have established nests, they are relatively unaffected by aircraft disturbance. A vast fleet of aircraft, pilots and support equipment would be needed to protect a huge area over the narrow window of time when geese are trying to establish nests. Even if such an effort were successfully completed, the birds' longevity would require this type of effort to be repeated successfully for nearly a decade before the size of the existing population would be affected. Female geese only have to raise two broods in their lifetimes in order for the overall population to continue to grow.

These same logistical factors make "egging"--the large-scale destruction of goose nests and eggs--unfeasible as a stand-alone solution to the problem. Conservative cost estimates for destroying the nests and eggs in a single nesting colony run are high and egging does nothing to impact the existing overabundant populations. Adult birds would continue to destroy habitat for years before egging showed any impact on overall population size. Finally, non-lethal techniques alone won't solve the problem, only move it somewhere else. If light geese could be successfully frightened away from one damaged area, they would simply overgraze and grub another.

23. Could changes in agricultural practices reduce light goose populations?

Light geese are thriving in the agricultural landscapes across the country. There is no way to force the geese return to the salt marsh habitats where they historically spent the winter months. It would be impractical to make changes in agricultural practices and land uses that would be fundamental enough and on a large enough scale to impact light goose populations. Such changes would have huge impacts on the farm economy. Also, proposed changes in farming practices such as fall plowing to bury waste grain would reverse decades of efforts to inform landowners about good land stewardship, such as no-till farming techniques that have reduced erosion. For this reason, those changes have not been considered as an alternative in the Final EIS. However, under its preferred alternative, the Service would alter land use practices on some of its national wildlife refuges to reduce the amount of food and sanctuary available to

migrating and wintering light geese.

24. What happens next?

Public release of the Final EIS commences a public inspection period ending on August 18, 2007, during which the public can review the document to determine if any major un-resolved issues remain. The inspection period is not an invitation for general public comment.

Following the public inspection period, the Service will publish a Record of Decision in the Federal Register announcing which management alternative will be implemented. The Record of Decision will be accompanied by a final rule that implements the regulations governing the approved management strategy.

The document is available on the internet at <http://migratorybirds.fws.gov>. To obtain a copy of the Final EIS, write to the Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, Department of the Interior, MS 634 ARLSQ, 1849 C St., NW, Washington, D.C. 20240. For further information contact the Division of Migratory Bird Management at (703) 358-1714.

-FWS-