



PENNSYLVANIA GAME COMMISSION SUPPLEMENTS

By Emma Hamaker

The following content supplements the ***Wings Over Water Fly With Us*** lesson¹ created by Discovery Place Education Studio, which accompanies the *Wings Over Water* IMAX film². The film tells the compelling story of the epic journey of three amazing bird families with extraordinary footage of their fascinating behaviors.

FLY WITH US EXTENSION

Follow the **Fly With Us** lesson, created by Discovery Place Education Studio.

ADDITIONAL MATERIALS

- Additional Snow Goose data set

ADDITIONAL VOCABULARY

Flightpath — The path in the air of space made or followed by something in flight.
[Merriam-Webster]

Altitude — The vertical elevation of an object above a surface.
[Merriam-Webster]

Navigation — The act of finding a way from one place to another. [Cambridge Dictionary]

Dimorphic — Occurring in two distinct forms (generally size or color)
[Merriam-Webster]

ADDITIONAL EDUCATOR PREP

In addition to the graphic organizers and data sets for Mallard Duck, Yellow Warbler, Sandhill Crane, and Canada Goose, print the **Snow Goose data set** included in the supplemental materials from the Pennsylvania Game Commission.

ADAPTED EDUCATOR GUIDE

Follow Steps 1 thru 3 in the Fly With Us lesson. We believe birds use many means of navigation including: geomagnetism, stars, sun, memory, landmarks, and even smell.

Follow Steps 4 and 5. Split students into four or five groups, depending on which bird species you choose to use.

Complete Step 6 thru 8. Provide each group with a bird data set and a graphic organizer for their skit. Enjoy your students' creativity!



Snow geese, blue phase by Jake Dingel

FOOTNOTES

- 1 *Wings Over Water* Educator Guide, <https://wingsoverwaterfilm.com/education>
- 2 *Wings Over Water* Homepage, <https://wingsoverwaterfilm.com>



SNOW GOOSE

Anser caerulescens



Start and End Points: *Atlantic populations breed on the arctic tundra of Canada and migrate as far south as North Carolina in winter.*

Flightpath: *Snow geese fly in narrow flight lanes, heading due south from the breeding grounds to a wintering site at roughly the same longitude. Snow geese migrate through the Finger Lakes and the Hudson River Valley to reach the coasts of the Delmarva (Maryland and Virginia) and North Carolina, where they winter. On the way back, many stopover at Middle Creek, then continue north through the Finger Lakes and the St. Lawrence River Valley back to their breeding grounds.*

Distances and Flight Speed: *Snow geese fly both day and night, usually in large groups. Strong fliers, snow geese can reach speeds of 50 miles per hour. They have been recorded covering nearly 1,200 miles in a single flight and migrate roughly 3,000 miles one way, sometimes taking several months with long stopovers at traditional staging grounds.*

Altitude: *Snow geese can fly at altitudes up to 7,500 feet.*

Scheduled Stops: *En route to and from southern wintering grounds, they stop to rest at well-established large wetlands, including Middle Creek Wildlife Management Area in Lancaster and Lebanon counties. They sleep floating on the water, or on land, sitting down or standing on one leg; the head is held low or tucked partway beneath one wing and eat in surrounding farm fields.*

Travel Timing: *Fall migration begins when freezing sets in on their northern range. They follow the open water south along their migration routes. Those that migrate through Pennsylvania typically pass through between February and March. They make the most of good weather, preferring to fly on clear days with no precipitation.*

Navigation: *It is believed, because they make long flights at high altitudes and often during the night, that snow geese navigate with the help of the stars or magnetic fields. They gather in large noisy flocks which look cloud-like when thousands of individuals lift simultaneously.*

Hazards: *One of the most abundant waterfowl species in the world, they feed voraciously on vegetation, and population increases have led to damage of the species' habitat, mainly on its subarctic staging areas. Urban sprawl and loss of agricultural lands where snow geese feed is also a problem.*

Other Information: *Anser caerulescens has two distinct subspecies, the greater snow goose and the lesser snow goose. The lesser snow goose is **dimorphic**, which means it comes in two different colors phases, a white phase and a blue phase. The white phase is all white with the exception of black primary wing feathers. On the blue phase, the head and front of the neck are white, and the body is gray-brown, with white or gray underparts. Intermediate color forms also occur. Juvenile snow geese often have gray feathers rather than white.*