SNOW GOOSE - CHEN CAERULESCENS

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Anseriformes Family: Anatidae Genus: Anser Species: A. caerulescens

Habitat:

Biomes: Snow Geese breed in colonies on Canadian and Northern Alaskan tundra in the vicinity of the coast, from the high arctic to the subarctic. They choose areas near ponds, shallow lakes, coastal salt marshes, or streams (including river islands), preferring rolling terrain that loses its snow early and escapes flooding during spring thaw. Snow Geese form three separate regional populations—eastern, central, and western—distinctions that are more or less preserved as the geese migrate to their wintering grounds. After chicks hatch, families move to brood-rearing territories with a lot of grasses and bryophytes, including tidal marshes and wet areas near ponds. During spring and fall migration along all four major North American flyways, geese frequently stop in open areas like lakes, farm fields, protected freshwater and brackish marshes, sluggish rivers, and sandbars. They winter in regions on both American coasts as well as in some inland areas, frequenting open habitats like marshes, grasslands, marine inlets, freshwater ponds, and agricultural fields.

Elevation Ranges: Low Altitude Coastal and Sub-Coastal

Flight Ceiling: 2200-3200 m

Temperature: -15 Degrees Celsius

Precipitation Levels: ALL

Distribution:

In US: Look for Snow Geese in open fields and bodies of water in their wintering grounds across the United States, or passing high overhead during migration. During spring and fall migration, the geese will stop over in open habitats along the four major North American flyways. If the geese are around, they'll be hard to miss: a cacophony of honks accompanying a huge flock either on the ground or in the air. DOWN OTHER COUNTRIES

In Other Countries: This goose breeds north of the timberline in Greenland, Canada, Alaska, and the northeastern tip of Siberia, and spends winters in warm parts of North America from southwestern British Columbia through parts of the United States to Mexico. They fly as far south as Texas and Mexico during winter, and return to nest on the Arctic tundra each spring. It is a rare vagrant to Europe, but for a frequent escape from collections and an occasional feral breeder. Snow geese are visitors to the British Isles where they are seen regularly among flocks of barnacle, Brent and Greenland white-fronted geese. There is also a feral population in Scotland from which many vagrant birds in Britain seem to derive.

Holistic Description: The snow goose has two color plumage morphs, white (snow) or gray/blue (blue), thus the common description as "snows" and "blues". White-morph birds are white except for black wing tips, but blue-morph geese have bluish-grey plumage replacing the white except on the head, neck and tail tip. The immature blue phase is drab or slate-gray with little to no white on the head, neck, or belly. Both snow and blue phases have rose-red feet and legs, and pink bills with black tomia ("cutting edges"), giving them a black "grin patch". The colors are not as bright on the feet, legs, and bill of immature birds. The head can be stained rusty-brown from minerals in the soil where they feed. They are very vocal and can often be heard from more than a mile away.

Species Richness: 2 SUBSPECIES

Population Dynamic: The breeding population of the lesser snow goose exceeds 5 million birds, an increase of more than 300% since the mid-1970s. The population is increasing at a rate of more than five 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 likely higher. Lesser snow 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. The cause of this overpopulation may be the heavy conversion of land from forest and prairie to agricultural usage in the 20th century. Since the late 1990s, efforts have been underway in the U.S. and Canada to reduce the North American population of lesser snow and Ross's geese to sustainable levels due to the documented destruction of tundra habitat in Hudson Bay and other nesting areas. The Light Goose Conservation Order was established in 1997 and federally mandated in 1999. Increasing hunter bag limits, extending the length of hunting seasons, and adding new hunting methods have all been successfully implemented, but have not reduced the overall population of Snow Geese in North America.

Evolution and Systematics:

Evolution: NONE

Systematics: The 2 color morphs were formerly treated as 2 species, Chen hyperborea (Snow Goose) and C. caerulescens (Blue Goose). Genetic studies revealed that the 2 forms were a single interbreeding, dimorphic species with color dimorphism controlled by a single locus, the blue allele being incompletely dominant to the white. Although "Snow Goose"

is the English name retained for the species, the scientific name is based on the earliest described form, which was named Anas caerulescens by Linnaeus in 1758 based on a specimen from Hudson Bay in ne. Manitoba; the name hyperborea thus became a synonym. Some early naturalists considered the "Blue Goose" an immature plumage of the "Snow Goose."
Number of Species: NONE 2 SUBSPECIES
Number of Genera: NONE 2 SUBSPECIES
Physical Characteristics:
Size and Length: 27.2-32.7 in (69-83 cm) and 56.4-116.4 oz (1600-3300 g)
Wingspan: 54.3 in (138 cm)
Coloration: The Snow Goose is a white-bodied goose with black wingtips that are barely visible on the ground but noticeable in flight. The pink bill has a dark line along it, often called a "grinning patch" or "black lips." You may also see dark morph Snow Geese, or "Blue Geese," with a white face, dark brown body, and white under the tail.
General Body Features: Used their short but strong bills to dig up the roots of marsh grasses for food.
Special Features of the Body: Iris- Brown at hatching, becoming dark brown as adult
Special Features of the Head and Sensory Organs: Bill- At hatching, bill dark gray with buffy white nail; gradual change during Prebasic I molt, becoming pinkish during winter, and usually pink by Nov. In Definitive Basic plumage bill pinkish scarlet, tomia of both mandibles black, nail white.
Dentition: The Snow Goose's tomia are not as tough as teeth but are perfectly suited to slicing through slippery grass. These are not classified as teeth because they do not have an enamel coating.
Special Features of the Limbs and Digits: Feet and Legs- At hatching, legs and feet of white-morph geese dark olive-gray; dark-morph hatchling's legs and feet darker, almost black; gradual change during Prebasic I molt, becoming more pinkish; adult's legs and feet reddish-pink to purplish, soles yellowish, nails black.
Any Special Internal Anatomy: They can live on fat reserves for up to two weeks. Fat and protein invested in various reproductive tissues and body parts of female Snow Geese recorded during breeding season.
Sexual Dimorphisms: Male has a thinner and longer neck than the female, also 2-6 percent larger than the female.
Differences Between Juvenile Stage and Adult: Juveniles are slightly smaller than adults in the fall, and this can be noticeable in flocks during fall and early winter.
Behavior:
Diurnal, Nocturnal, or Crepuscular: Diurnal
Activity: In 24-h d during fall staging, Snow Geese feed 13% of time on highly nutritious corn diet (Frederick and Klaas 1982) and 36.9% on lower quality bulrush marsh (Giroux and Bédard 1990), with remaining time spent resting or vigilant and all other activities occupying only small proportion of time. In winter, total daily feeding times recorded range from as little as 2 h, or 8% of 24-h d in central U.S. (Davis et al. 1989), to 7.2 h, or 30% in Fraser River Delta (Burton and Hudson 1978), with most of remaining time spent resting and up to 12% being vigilant. During spells of extreme cold, feeding ceases completely (Davis et al. 1989). In spring, as Snow Geese build up nutrient reserves for migration and breeding, proportion of time spent feeding increases to >50% and resting time decreases accordingly; all other activities make up <10% of daily time (Gauthier et al. 1988).
Locomotion: Snow Geese don't like to travel without the company of another couple dozen geese and can form flocks of several hundred thousand. Family groups forage together on wintering grounds, digging up roots and tubers from muddy fields and marshes. In flight, they are steady on the wing with even wingbeats. Strong flier; undertakes long nonstop flights on migration from breeding to staging and wintering areas (up to 3,000 km; Gauthier et al. 1992b). Measured ground speeds during migration range between 31 and 135 km/h (air speeds between 49.3 and 74 km/h) in spring and between 67.3 and 83.3 km/h (air speeds between 70.6 and 80.7 km/h) in fall (Blokpoel 1974, Bellrose and Crompton 1981). Cooch (Cooch 1955) traced nonstop migration of a flock from James Bay, Ontario, to Louisiana (ca. 2,700 km) which took 60 h. Migration heights variable (Blokpoel 1974), but can reach up to 2,500 m, above low clouds (Hochbaum 1955). Birds on migration or during regional movements fly in long, diagonal lines or V-shaped flocks, calling constantly. Upon approaching landing site, perform "falling-leaf" maneuver (or tumbling) to lose height. Land with legs stretched forward, body tilted backward, tail fully extended, and wings flapping or opened to bell-shape. During winter, time spent in flight estimated at 10–12% of daylight hours, including flights to and from roosts and after disturbance by Bald Eagle (Haliaeetus leucocephalus; Davis et al. 1989). Swims well. Roosts mainly on water during migration and in winter. Does not dive for food, but capable of diving short distances when threatened (e.g., by Bald Eagle; Kortright 1942). Downy goslings sometimes too buoyant to dive successfully when pursued (BG).
Communication and Perception: Snow Geese are possibly the noisiest of all waterfowl. Their main call, made by both males and females, is a nasal, one-syllable honk given at any hour of the day or night, at any time of year, in the air or on the

ground. Distant calling flocks are reminiscent of a pack of baying hounds. Birds less than a year old have a clearer and higher-pitched whistle. Family groups use a series of guttural notes to communicate with each other while feeding. Parents make a fast, quiet series of notes as a brood call to round up goslings. During nesting, they use a penetrating alarm call that varies in intensity. The flight call is a continuous chorus of shrill cries, hoarse honks, and high-pitched quacks, audible both day and night.

Home Range: Breeding pairs defend territory around nest in colony. Densities of colonies and thus territory sizes highly variable in space (Kerbes 1975) and time (McLandress 1983b). Early nesters occupy nest sites and expel later-arriving pairs from vicinity. After nest sites settled, both partners defend nest and eggs from predators and intraspecific nest parasites and males defend females from intruding males seeking extra-pair copulations.

Degree of Sociality: Colonial during breeding, but isolated nests also common; very gregarious, flocking species during non breeding season. During brood-rearing period, family units gather in loose associations of 20–100 families. On staging and wintering grounds, flocks can be very large (tens of thousands of individuals). Life in flocks aids predator detection and food-finding (Drent and Swierstra 1977, Lazarus 1978), and Snow Geese alight preferentially in areas with conspecifics already on ground, a behavioral trait exploited by hunters positioning decoys in feeding areas. Coordinated take-off of flocks preceded by preflight signaling: lateral head-shaking and wing-flapping (McKinney 1992).

Level of Aggression: Extremely aggressive with threats more common than actual fights.

Temperament: ABOVE

Migration: Medium-distance migrant. All populations migrate, making long flights broken up by long stopovers in staging areas. They fly quickly and at high altitudes in narrow flight lanes, heading more or less due south from the breeding grounds to a wintering site at roughly the same longitude. Some Snow Geese that winter in western North America breed in Siberia, and some that winter along the Atlantic coast breed in Greenland.

Predators:

Predators: During the breeding season, eggs and nestlings are at risk from arctic and red foxes, Glaucous Gulls, Herring Gulls, Parasitic Jaegers, caribou, polar and black bears, gray wolves, Common Ravens, Long-tailed Jaegers, and Snowy Owls. Adults may be hunted by foxes, wolves, bears, Bald Eagles, or Golden Eagles, more so during nesting season than during migration and winter.

Anti-Predator Defenses: During breeding season, both parents defend clutch and brood. Egg predators can generally be successful only when both parents absent (Harvey 1971) or exhibit unusually weak nest-defense behavior. Upon leaving nest, female covers eggs with down or nest material, unless disturbed. Parasitic eggs laid near nest are rolled into nest cup to reduce conspicuousness of nest site to predators (Lank et al. 1991). Steadily incubating females not displaced by most predators. During laying and incubation recesses, both parents usually stay in vicinity of nest and return quickly when predator approaches. Typical response to predator consists of standing or running toward intruder, calling, with wings and neck outstretched; avian predators sometimes pursued in air (Harvey 1971, Abraham et al. 1977). Females defend nests with tail spread, scapular-feathers ruffled, and bill held near ground (Johnsgard 1965). Birds that lose their first 1 or 2 eggs to predators during laying almost always abandon nest site (Collins 1993a), but sometimes establish a new nest in which they lay remainder of clutch (Ganter and Cooke 1993). Parents defending broods against predators face and threaten predator with wings spread wide open over goslings.

Parasites: Avian cholera (Pasteurella multocida) observed in northward-migrating Snow Geese in Saskatchewan. During an epizootic in 1967, an apparently healthy flock of 20,000 geese returned to a refuge after feeding, and the next morning 1,100 dead geese were found on roosting area (Wobeser 1997). Pastuerella multocida serotype 1 isolated from Snow Geese at Banks I., NWT; evidence for carriers among wild Snow Geese (Samuel et al. 1997). Infection by Goose Hepatitis Virus, followed by sudden death of a domesticated Snow Goose gosling reported in Germany (Schettler 1971).

Diet and Nutrition:

Adult Diet: Snow Geese are vegetarians with voracious appetites for grasses, sedges, rushes, forbs, horsetails, shrubs, and willows. They will consume nearly any part of a plant—including seeds, stems, leaves, tubers, and roots—either by grazing, shearing plants off at ground level, or ripping entire stems from the ground. In winter and during migration they also eat grains and young stems of farm crops, along with a variety of berries. Goslings may eat fruits, flowers, horsetail shoots, and fly larvae.

Juvenile Diet: Goslings may eat fruits, flowers, horsetail shoots, and fly larvae.

Special Adaptations for Getting Prey: NONE CHECK DENTITION and ADULT DIET

Reproduction:

Mode of Reproduction: Monogamous

Mating System: Lifelong socially monogamous pair bonds (Cooke et al. 1981). Individuals in dimorphic populations mate assortatively by color morph by actively choosing mates according to color of family in which they were raised (Cooke and McNally 1975). By contrast, assortative mating according to body size (Davies et al. 1988) probably due to environmentally induced body-size variation among cohorts and not result of active mate choice.
Mating Season: Courtship displays and pairing take place mainly during spring, some during winter. Individuals first pair in second winter or on second spring migration; i.e., when almost 2 yr old (Prevett and MacInnes 1980, FC). Because pairs remain together throughout life, this first pairing is crucial. No paired yearlings ever detected on breeding grounds or on fall migration (Prevett and MacInnes 1980, FC).
Courtship: Courting males enlarge their body contours, adopt an exaggerated erect posture and closely follow female. Courtship behavior does not necessarily imply imminent pair formation. Pursuit flights, with 2 males following 1 female, most frequent during time of pair formation (late winter, spring migration), but exact function is unclear. Females assume outwardly passive role in courtship (Prevett and MacInnes 1980). Males very alert during pre laying and laying phase to detect any intruders seeking extra-pair copulations.
Territoriality: EXTREMELY TERRITORIAL SEE ABOVE
Mating: NONE SEE ABOVE
Pheromones Involved: NONE
Nesting: Accompanied by the male, the female chooses a nest site, typically sheltered among vegetation like sea-lyme grass or willows, along with rocks or small shrubs. They build nests on dry ground when possible—although, being close to melted snow, the site is often moist. They use island sites or areas near to small ponds when those are available. The female sometimes starts several scrapes before choosing the final location. She may lay the first egg within an hour of selecting the site. The female builds the nest by herself, working at any time of day. She starts with a simple scrape in the earth, but as she lays more eggs she adds fluffy down feathers plucked from her own breast (sometimes in very large amounts) and may add material like sea-lyme grass, eelgrass, leaves and twigs of willow and birch, or seaweed. The less protected the site, the heftier the nest: they range from 3 to 6.5 feet across.
Egg-Laying: Clutch Size: 2-6 eggs Number of Broods: 1 brood Egg Length: 3.1-3.3 in (7.9-8.3 cm) Egg Width: 2.0-2.2 in (5.1-5.5 cm) Incubation Period: 24 days Nestling Period: 1 day Egg Description: Elongated oval with variable texture. Creamy white but easily staining to dirty gray.
Hatching and Incubation/Gestation: Eyes open and body fully covered with down. Precocial, eyes open, fully covered with down. At La Pérouse Bay, mass at hatching 95.1 g ± 1.5 SD (males), 94.9 g ± 1.5 SD (females). Identifiable to color morph at hatch (see Appearance: molts and plumages, below). Egg tooth disappears within 24 h; capable of walking, swimming, diving, and feeding when they leave nest. Goslings hatching from larger eggs have relatively more lipid reserve than those from smaller eggs and may have an initial energetic advantage during periods of nutritional or thermal stress
Development: Snow Goose goslings have exceptionally rapid growth rates for geese and for precocial birds in general. Males tend to grow faster than females, despite similar feeding habitat.
Parental Care: Female broods young for periods of 59 min ± 40 SD (n = 28; Fortin et al. 2000). Brooding declines from 31.7–37.5% of 24-h d just after hatch to 9.8–10.8% by day 16, with brooding reduced during warm weather (Lessells 1987). Goslings leave nest with their parents within 24 h of hatch; occasionally late-hatching goslings abandoned. Goslings begin to feed themselves within a day of leaving nest. As they grow, feeding becomes more discriminating. Although their main foraging strategy is grazing, they occasionally catch and eat aerial insects. Both parents accompany young, with male spending time in vigilant behavior and female actively feeding to replenish nutrients lost during incubation.
Lifespan: Oldest known Snow Goose 26 yr 7 mo (Clapp et al. 1982b); no evidence of increased mortality among old individuals, at least to 15 yr (Francis et al. 1992a).
Conservation:
Official Federal Status: Least Concerned
Special Statuses in Individual States:
Threats: Snow Goose numbers have grown rapidly since the mid-twentieth century, possibly because of warming conditions in their arctic breeding grounds. Populations in the eastern and western arctic have tripled since 1973, and the central arctic population has grown by a factor of 25. These birds can be found breeding in the far north of Canada and winter principally in the U.S. and Mexico. Snow Geese are federally protected migratory game birds, and their hunting is managed on a population-by-population basis. The species is not on the 2014 State of the Birds Watch List. Throughout much of the twentieth century management officials restricted hunting in the interest of conservation, but by the 1970s they switched to worrying about keeping goose numbers in check. In the late 1990s both Canada and the United States began to permit extra hunting to reduce Snow Goose populations. About 400,000 Snow Geese are now hunted annually in the U.S. and Canada.

Because Snow Geese nest in remote areas, their breeding colonies have suffered little impact from humans. The geese themselves may degrade their own habitat by grubbing vigorously for food during the early breeding season, not only reducing their own breeding success but also compromising nesting shorebirds. Like many waterfowl, Snow Geese can suffer from lead poisoning when they ingest fallen lead shot while foraging. This problem can be reduced by switching to steel shot or other non-toxic ammunition.
Conservation Efforts: UP
Significance to Ecosystem:
Positive Impacts: NONE
Negative Impacts: NONE
Keystone: NONE
Major Symbioses: NONE
Significance to Humans:
Significance: NONE
Culture: NONE
Positive Economic: NONE
Positive Health: NONE
Negative Economic: NONE
Negative Health: NONE
Extra Facts:
The dark color of the blue morph Snow Goose is controlled by a single gene, with dark being partially dominant over white. If a pure dark goose mates with a white goose, the offspring will all be dark (possibly with white bellies). If two white geese mate, they have only white offspring. If two dark geese mate, they will have mostly dark offspring, but might have a few white ones too.
Snow Geese chicks are well developed when they hatch, with open eyes and down-covered bodies that already show whether the adult will have white or dark plumage. Within a few days they are able to maintain a constant body temperature on their own. They grow very quickly, with the males outpacing the females.
The creamy white eggs of Snow Geese stain easily. People can sometimes tell what order the eggs were laid in, just by the color of the shells (the dirtiest shells belong to the oldest eggs).
In wintering and migrating flocks that are feeding, lookouts keep an eye out for eagles and other predators. Upon sighting a threat they call out to the rest of the flock, which may take flight.
Snow Geese make epic journeys by air, but they are impressive on foot, too. Within the first three weeks of hatching, goslings may walk up to 50 miles with their parents from the nest to a more suitable brood-rearing area. Molting Snow Geese can outrun many predators.
Females forage up to 18 hours a day once they arrive at breeding grounds, but eat little once they begin incubating the eggs. Food passes through the Snow Goose's digestive tract in only an hour or two, generating 6 to 15 droppings per hour. The defecation rate is highest when a goose is grubbing for rhizomes, because such food is very high in fiber and the goose inevitably swallows mud.
The oldest Snow Goose on record, shot in Texas in 1999, was 27 and a half.
Snow Goose hunting in the eastern United States was stopped in 1916 because of low population levels. Hunting was allowed again in 1975 after populations had recovered. Since then, their populations have continued to grow, to the point that some areas of tundra nesting habitat are starting to suffer.
Pet Information: NONE
Notable Species:
A. c. caerulescens (Lesser snow goose) (Linnaeus, 1758)
A. c. atlanticus (Greater snow goose) (Kennard, 1927)