

# SNOW BUNTING - PLECTROPHENAX NIVALIS

**Taxonomy:** Kingdom: Animalia Phylum: Chordata Class: Aves Order: Passeriformes Family: Calcariidae Genus: Plectrophenax Species: P. nivalis

## **Habitat:**

**Biomes:** Snow Buntings spend the summer in the arctic tundra, nesting in rocky areas and foraging in patches of sedges and other vegetation. In the winter they use open fields, croplands with grain stubble, shorelines, and roadsides.

## **Distribution:**

**In US:** The snow bunting lives in very high latitudes in the Arctic tundra. There is no apparent limit to its northern range, while the southern range is limited by the duration of daylight, which influences their reproductive activity. This species is found in the high Arctic tundra of North America, Ellesmere Island, Iceland, higher mountains of Scotland, Norway, Russia, North Greenland, Siberia, Novaya Zemlya, and Franz Josef Land. During the winter, this bird migrates to the circumglobal northern temperate zone including the south of Canada, north of the United States, north of Germany, Poland, Ukraine, and east to central Asia. During the last ice age, the snow bunting was widespread throughout continental Europe.

**In Other Countries:** ^^^^^^^

**Holistic Description:** Cold and dark winter days come alive with the flurry of black-and-white Snow Buntings tumbling in flight across barren fields and lakeshores. These restless birds flock up by the hundreds in winter, scattering across Canada and the United States. Snow Buntings breed in the high Arctic among rocky crevices where their crisp white plumage blends in with the snowy landscape. In the winter they acquire rusty tones that help them blend in with their winter homes of bare ground and crop stubble.

**Species Richness:** 4 SUBSPECIES

**Population Dynamic:** CHECK THREATS

## **Evolution and Systematics:**

**Evolution:** All fossils of P. nivalis are from Eurasia; a 9- to 10-million-yr-old fossil Plectrophenax humerus from Kansas is a different species.

**Systematics:** Despite this species' Holarctic distribution, phenotype varies only slightly. Size is relatively constant worldwide, although birds around the Bering Sea tend to be larger, and size appears to increase clinally from west to east across Eurasia. Plumage is paler and more extensively white in n. Asia and Bering Sea region; darker and browner in Iceland.

**Number of Species:** 4 SUBSPECIES

**Number of Genera:** 4 SUBSPECIES

## **Physical Characteristics:**

**Size and Length:** Length: 5.9 in (15 cm) Weight: 1.1-1.6 oz (31-46 g)

**Wingspan:** 11.8 in (30 cm)

**Coloration:** Snow Buntings have several plumages, but they always show white inner wings with black wingtips and a black-and-white tail. Breeding males are sharp white with a black back. Breeding females are whitish overall with a brown, streaky back and a dusky head. Nonbreeding males are white below with rusty patches on the crown, "ear," and shoulder, and dark streaks down the back. Nonbreeding females have a rusty wash on the face and darker rusty patches on the breast. Breeding males and females have a dark bill that turns yellowish orange during the nonbreeding season.

**General Body Features:** A medium-sized, full-bodied songbird with a small conical bill.

**Special Features of the Body:** One of the Snow Bunting's most obvious adaptations to its extreme environment is its color. Like the Snowy Owl, Arctic Hare, Arctic Fox, Polar Bear, and ptarmigans, its mostly white coloration serves as effective camouflage in its open, snow-covered habitat.

**Special Features of the Head and Sensory Organs:** NONE

**Dentition:** BEAK/LAMELLAE/GIZZARD

**Special Features of the Limbs and Digits:** Snow Buntings also have feathering on their ankles, an adaptation providing added warmth on the high Arctic tundra of North America, Europe, and Russia.

**Any Special Internal Anatomy:** Even though Snow Buntings migrate southward to avoid the worst of the Arctic winter, they seldom stray far from cold temperatures. Little wonder one of this bird's nicknames is "snowflake!"

**Sexual Dimorphisms:** Males have white to mostly white inner secondaries and primary coverts, and contrasting limited black wingtips. Females have blackish inner secondaries and darker upper-wing and primary coverts, creating a much more restricted white wing patch. Breeding male is entirely black and white, with white head, nape, breast, belly, rump, and outer tail feathers, and black back and central tail feathers; black-and-white wings. Breeding females have wings and tail like the

breeding male but have some rufous tones, streaked with gray, on the back; crown, lores, and auriculars are pale rufous; underparts are white with a pale rufous wash on the flanks and a band across breast.

Differences Between Juvenile Stage and Adult: Juveniles have gray body plumage, darker on back and head, with whitish chins and dark brown-black wings and tails; attain adult-like plumage aspect through an extensive preformative molt in late summer/early fall.

#### **Behavior:**

Diurnal, Nocturnal, or Crepuscular: Diurnal

Activity: Snow Buntings are ground dwellers, walking or running to find seeds and insects. In the spring, they use hard-packed snow to clean their feathers, which results in a wearing of the feather tips to reveal the bright white feathers below. Males arrive on the breeding grounds 3–4 weeks before females to establish a territory. Males fight and chase all territory intruders. They approach intruders with a flight song display, rising into the air in song where they meet. The two birds often grapple with bills and feet as they tumble back to the ground. Males also use the flight song display to attract a female; males fly steeply up and glide back to the ground with their wings held in a "V." Following the flight display, males show prospecting females potential nest sites before they settle into a monogamous pair bond for the breeding season. Males may occasionally mate with another female. In the winter, restless flocks constantly flush along like blowing snow, with members leapfrogging over each other.

Locomotion: On the ground, adults walk or run, and occasionally hop. When foraging in winter, Snow Buntings run rapidly on the snow between plant stalks; winter flocks are constantly restless, frequently flushing rapidly and low over the ground for short distances. Flocks move along by members at the back flying forward to the front, creating the impression that the flock is rolling along.

Communication and Perception: Male Snow Buntings sing a finch like low and husky warble. Males sing in flight or while perched on a rock. Males and females give a clear chew, a husky rolling rattle, a short buzz or snarl, and a sharp chi-tik while foraging on the ground or in flight.

Home Range: On the breeding grounds, males establish territories before females arrive, often singing from favorite song perches, and defending borders with Flight Song Displays, songs, and physical interactions. Females do not defend territory borders; female aggression primarily involves mate defense. Much of the food for nestlings is obtained off territories.

Degree of Sociality: Gregarious on migration and on the wintering grounds. In a 2-yr study in Quebec, a flock of about 100 wintering birds remained in 400-ha home range from early Dec to early Mar.

Level of Aggression: Fighting and "bickering" occur continuously in winter flocks. On the breeding grounds, fights and chases by both sexes are common. Male territorial interactions are frequent; usually involving chases, but physical fights are also common; males often approach intruders with Flight Song Displays. During fights, birds rise in the air, fighting with their bills and feet, often tumbling and continuing to fight on the ground. Fights between males are common when males follow their foraging mates onto the territories of other males.

Migration: Medium-distance migrant. Migrates in loose flocks numbering in the teens to the thousands. Sometimes flocks with Lapland and Smith's Longspurs during migration.

#### **Predators:**

Predators: Gyrfalcon, Peregrine Falcon, Jaeger, Snowy Owl, Weasels, Arctic Foxes, Ground Squirrels, Lemmings,

Anti-Predator Defenses: In response to a Peregrine Falcon chasing an adult Lapland Longspur, several adult Snow Buntings gave the Wee Call from the ground. Adults do not give distraction displays when they are flushed from their nests by humans or when biologists capture nestlings.

#### **Diet and Nutrition:**

Adult Diet: Snow Buntings eat grass and flowering-plant seeds as well as insects and spiders. They pick seeds and insects from the ground or leap up from the ground to grab a seed or other prey.

Juvenile Diet: ^^^^^^^^^^

Special Adaptations for Getting Prey: Walk along the ground, pecking at food. On warm sunny days on breeding grounds, they capture basking spiders by darting around rocks. Occasionally flycatch for insects close to the ground. In winter, they walk on snow, collecting seeds from the protruding stems of tall weeds, occasionally reaching or leaping up to take seeds from taller stems.

#### **Reproduction:**

Mode of Reproduction: Monogamous

Mating System: Normally socially monogamous; polygyny uncommon; at Sarcpa Lake, NT, 1 of 16 males was polygynous, and one was suspected of polygyny.

Mating Season: February to May

**Courtship:** On the ground, the male walks around the female once or twice with his wings held up in a V prior to mounting female's back; the same display is used for within-pair and extra-pair courtship. Sometimes the male grabs the female's tail or upper back feathers and hangs on for 20–30 s. Sexual chases are common; usually between paired birds when the female resists copulation after a male displays to her.

**Territoriality:** HOME RANGE

**Mating:** NONE

**Nest Placement:** Snow Buntings nest in rocky areas and boulder fields. The nest is typically in a hole in a rock, in a crevice between rocks, or in a crevice under a rock. Females put the nest at the back of the hole or crevice, such that it is rarely visible from the outside. In areas where nest sites are limited, instead of nesting among rocks, they nest in barrels, metal cans, boxes, buildings, and construction rubble.

**Nest Description:** Female Snow Buntings collect moss and grass to create a thick open cup that they line with fine grasses, rootlets, fur, and feathers. Because nest sites are limited, Snow Buntings use old nests, adding new lining to nests from the previous season.

**Egg-Laying:** Clutch Size: 2-7 eggs Number of Broods: 1 brood Egg Length: 0.8-1.0 in (2-2.6 cm) Egg Width: 0.6-0.7 in (1.5-1.8 cm) Incubation Period: 10-15 days Nestling Period: 9-15 days Egg Description: Creamy white with variable brown spots and scrawls.

**Hatching and Incubation/Gestation:** Helpless, with long, gray-brown down.

**Development:** Altricial. Eyes closed. Mean mass at hatching is 3.0 g. Chicks grow rapidly, doubling their mass by day 2, weighing 30 g by day 10.

**Parental Care:** Both sexes feed nestlings. By female only; broods up to 50% of the day for the first 1–2 d after hatching, decreasing on day 3–4, with little brooding after day 4 except at night.

**Lifespan:** Up to 9 years.

#### **Conservation:**

**Official Federal Status:** Least Concern

**Special Statuses in Individual States:** NONE

**Threats:** Snow Buntings are common, but according to Partners in Flight their populations declined 38% between 1970 and 2014. Partners in Flight estimates that the global breeding population is 29 million. The species rates an 8 out of 20 on Partners in Flight's Continental Concern Score, which means it is not on the Watch List and is a species of low conservation concern. Because Snow Buntings breed outside of areas monitored by the North American Breeding Bird survey, estimates of population size come from the Christmas Bird Count. Still these counts do not cover all of the wintering areas they use, so estimates of population size and trends may not be accurate.

**Conservation Efforts:** ^^^^^^^

#### **Extra Facts:**

1. Male Snow Buntings head to their high arctic breeding grounds when the ground is still covered in snow and temperatures can dip to -22° F. That doesn't seem like a good time to arrive, but males need to arrive early to make sure they get one of the limited nesting spots in a rock crevice. Females join them 3 to 4 weeks later when things start to warm up.
2. The Snow Bunting places its nest deep in cracks or other cavities in rocks. Although such nest sites are relatively secure from predators, rocks are cold. The thick nest lining of fur and feathers helps keep the eggs and nestlings warm, but the female must stay on the nest for most of the incubation period. Because the female can't leave the nest very often, the male brings her food almost every 15 minutes.
3. Although breeding and nonbreeding Snow Buntings look quite different, the change from nonbreeding to breeding plumage isn't caused by growing in a new set of feathers (molt). The change from brownish to pure white happens when males rub their bellies and heads on the snow, wearing down the brown feather tips to reveal immaculate white features below.
4. The oldest recorded Snow Bunting was a male, and at least 8 years, 9 months old when he was recaptured and rereleased during banding operations in Alaska, the same state where he had been banded.

#### **Notable Species:**

1. *Plectrophenax nivalis nivalis* (Linnaeus, 1758): Arctic Europe, Arctic North America. Head white, rump mostly black with a small area of white.
2. *Plectrophenax nivalis insulae* (Salomonsen, 1931): Iceland, Faroe Islands, Scotland. Head white with a blackish collar, rump black.
3. *Plectrophenax nivalis vlasowae* (Portenko, 1937): Arctic Asia. Head white, rump mostly white.

4. *Plectrophenax nivalis townsendi* (Ridgway, 1887): Aleutian Islands, Kamchatka, coastal far eastern Siberia. As *vlasowae*, but slightly larger.