

TRUMPETER SWAN - CYGNUS BUCCINATOR

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Anseriformes Family: Anatidae Genus: Cygnus
Species: C. buccinator

Habitat:

Biomes: Breeding Trumpeter Swans seek relatively shallow (less than 6 feet deep), undisturbed bodies of freshwater with abundant aquatic plants. These heavy-bodied birds also need at least 100 yards of open water for their running take-offs, and muskrat or beaver dens or small islands on which to nest. Breeding sites include small ponds (including beaver and farm ponds), lakes, marshes, bogs, glacial potholes, and quiet stretches of river. As they prepare (or “stage”) for migration, Trumpeter Swans gather at sites near open water, such as inlets with moving water, and larger, deeper lakes. Wintering birds seek out ice-free sites where vegetation is available, including freshwater streams, rivers, springs and reservoirs.

Flight Ceiling: 8,200 meters or 27,000 feet

Temperature: -30 Degrees Celsius

Precipitation Levels: Prefers lower levels of rain so that the fluctuations of water in its habitat is very minimal.

Distribution:

In US: Breeds widely throughout central and s. Alaska south of Brooks Range to Gulf of Alaska, Cook Inlet, and occasionally ne. and w. coast ; also locally south from s. Yukon and Northwest Territories east across ne. and e. British Columbia and Alberta to s. Saskatchewan, w. Manitoba s. Ontario, south to New York, Ohio, Indiana and Illinois, Michigan, Wisconsin, Minnesota, Iowa, n.-central Nebraska, w. S. Dakota, nw. Wyoming, e. Idaho, s. Montana, Utah, central Nevada, s.-central Oregon, and e. Washington.

In Other Countries: Dalglish reported five Trumpeter Swans seen, and four shot, in Suffolk, England, in 1866. Murase (Murase 1993) documented a Trumpeter Swan wintering in Iwate Prefecture, Japan in 1991-92 and Dorogov reported a Trumpeter Swan in June 1991 the mouth of the Volchicka River, Chukotka, Russia.

Holistic Description: Trumpeter Swans demand superlatives: they’re our biggest native waterfowl, stretching to 6 feet in length and weighing more than 25 pounds - almost twice as massive as a Tundra Swan. Getting airborne requires a lumbering takeoff along a 100-yard runway. Despite their size, this once-endangered, now recovering species is as elegant as any swan, with a graceful neck and snowy-white plumage. They breed on wetlands in remote Alaska, Canada, and the northwestern U.S., and winter on ice-free coastal and inland waters.

Species Richness: NO SUBSPECIES

Population Dynamic: NO INFORMATION

Evolution and Systematics:

Evolution: Modern species well represented in prehistoric sites in Alaska, Illinois, Iowa, New Mexico, Ohio, and S. Dakota Emslie and Campbell have reported the living species from Florida in the early Pleistocene and late Pleistocene. Bickart considered the North American fossil record for Cygnus to be poor. There are 3 fossil species in Cygnus, however, and 1 species in the fossil genus Paracygnus, which lived during late Hemphillian NALMA to early Pleistocene of North America. In addition, there is fossil swan material from the Blancan, of Idaho and Mexico.

Systematics: The Trumpeter Swan typically is thought to be closely related to the Whooper Swan (C. cygnus), with which it has been considered conspecific; Banko and Schorger placed these taxa in a superspecies. Given their close phylogenetic relationships, some taxonomists have gone so far as to suggest that the Trumpeter, Whooper, and Tundra Swan (C. columbianus) complex ought to be merged into the “Northern Swan”, and Barrett and Vyse posited a “close taxonomic relationship” between the Trumpeter and Tundra Swans.

Number of Species: NONE, NO SUBSPECIES

Number of Genera: NONE, NO SUBSPECIES

Physical Characteristics:

Size and Length: Adults usually measure 138–165 cm (4 ft 6 in–5 ft 5 in) long, though large males can exceed 180 cm (5 ft 11 in) in total length. The weight of adult birds is typically 7–13.6 kg (15–30 lb). Possibly due to seasonal variation based on food access and variability due to age, average weights in males have been reported to range from 10.9 to 12.7 kg (24 to 28 lb) and from 9.4 to 10.3 kg (21 to 23 lb) in females.

Wingspan: The trumpeter swan's wingspan ranges from 185 to 250 cm (6 ft 1 in to 8 ft 2 in), with the wing chord measuring 60–68 cm (24–27 in). The largest known male trumpeter attained a length of 183 cm (6 ft 0 in), a wingspan of 3.1 m (10 ft 2 in) and a weight of 17.2 kg (38 lb).

Coloration: Adult Trumpeter Swans are entirely white with a black bill and black legs. Immatures are gray-brown.

General Body Features: The trumpeter swan has a large, wedge-shaped black bill that can, in some cases, be minimally lined with salmon-pink coloration around the mouth. The bill, measuring 10.5–12 cm (4.1–4.7 in), is up to twice the length of a Canada goose's (*Branta canadensis*) bill and is the largest of any waterfowl.

Special Features of the Body: The swan's exceptionally long neck enables it to forage for food at the bottom of ponds.

Special Features of the Head and Sensory Organs: BILL: In cygnets bill mottled pink and gray-black at base (normal), or entirely pink (leucistic). Gradual change to mostly black by 12–16 mo. Adult bill black, lower posterior tomium often with salmon red streak. Leucistic adult may show pale yellow or olive lores. IRIS: Brown

Dentition: Have beaks with serrated edges that look like small jagged 'teeth' as part of their beaks used for catching and eating aquatic plants and algae, but also molluscs, small fish, frogs, and worms.

Special Features of the Limbs and Digits: FEET AND LEGS: Gray-pink in cygnets (normal) or yellow (leucistic). Second-year feet and legs gray to black with olive yellow tinge (D. C. Lockman pers. comm.), through at least Dec (Pyle 2008). Adult legs and feet gray black to black. Leucistic phase feet and legs remain yellow.

Any Special Internal Anatomy: NONE

Sexual Dimorphisms: While male Trumpeters (21-38 pounds) are generally larger, weigh more than female Trumpeters (20-25 pounds), visually distinguishing the sexes is not possible without internal examination of the vent area. However, an observer can tell the sex of each bird of a pair by watching their behavior. It is only the female that incubates the eggs while the male will swim close by to protect the nest from predators. In mating, the male mounts the female and grasps her neck with his bill.

Differences Between Juvenile Stage and Adult: Trumpeter juveniles are darker sooty gray, especially in the head and neck area. Their leg and foot color varies from pink to yellowish to dusky brown through their first year. Trumpeter juveniles usually remain darker gray longer than Tundra Swans. Trumpeter juveniles have gray feathers on the head and neck persisting well into spring. Wintering Trumpeter juveniles may vary in age by up to 6 weeks due to geographic differences in hatching dates. As a result, they show considerable individual and geographic variation in the timing of their molt into white plumage during their second summer.

Behavior:

Diurnal, Nocturnal, or Crepuscular: Diurnal and Nocturnal, can change to both and feeding and other patterns have been recorded in the night with the animals.

Activity: Variable according to season, weather, sex, and reproductive status. Active at night. For breeders and nonbreeders, females spend 0–13.7% of time preening, males 5.7–25.1%; females feed 6.1–74%, males 5–43.4%; females rest/sleep 0.02–81.2%, males 5–21.7%; females alert 0–74.6%, males 7–31.3%; females display 0–13.6%, males 0–11.1%; females swim, walk, fly 0–22.9%, males 0–28.7%. Breeders spend less time feeding, sleeping, swimming, walking, flying than nonbreeders. Preening most common in morning, with peaks in early morning, early afternoon, and evening. In winter, preening occupies 3.3–26.9% of time; feeding 15.7–75%; resting/sleeping 2.6–84.6%; alert 1–20.6%; display 0.1–0.4%; and locomotion 2.1–27% (both sexes).

AND

Trumpeter Swans fly with rapid, shallow wingbeats, often traveling in pairs or family groups and flying lower than other swan and duck species. To feed, Trumpeter Swans skim vegetation from the surface, dip their long necks underwater to forage, and tip like dabbling ducks with the rear half of their body in the air as they scour for algae, leaves, stems and roots of pondweeds and other plants. They also pump their large, webbed feet up and down to create water currents that free roots from surrounding mud. Sometimes ducks join feeding swans to glean vegetation and feed on insects they disturb. On land, Trumpeter Swans dig into the soil to find tubers, and nibble or scoop up grain from the ground. The swans spend significant time preening, rubbing their bills in the oil-secreting uropygial gland near the base of the tail, then distributing the oil over the feathers to waterproof them. Swans form long-lasting pairs and may identify a nesting site when less than 2 years old, but often wait several more years to breed. Pairs stay together throughout the year and often migrate and winter in family groups and with other waterfowl, including Tundra Swans, Canada Geese, and Northern Pintails.

Locomotion: Awkward walk due to short legs, posterior to center of gravity. May walk > 2 km, even with cygnets < 1 wk old. Runs on water surface while flapping wings to gain flight. Neck often bent in "S" shape during and immediately after takeoff, but straightens out. Short distance flights tend to be 2–30 m above surface (CDM). Flights ≤ 3.8 km flown at 51.2 ± 4.2 m elevation, and 21.4 ± 0.2 m/sec; < 10 km at 106 ± 8.2 m elevation, and 23.4 ± 0.1 m/sec. Cygnets may swim at < 24 h old (CDM), but buoyancy prevents diving. Older cygnets and molting adults dive and may swim under water to feed, or escape capture (CDM).

Communication and Perception: Male and female Trumpeter Swans give the characteristic deep, trumpeting "oh-OH" call, with the second syllable emphasized. The call is softer and more nasal-sounding when made with the mouth closed.

Trumpeter Swans call to keep the pair or family together, to defend territories, or to sound an alarm. Both sexes also use a flat-toned, single-syllable “hoo” call to locate each other. Younger swans make a higher-pitched call, and develop their adult tone by the time they’re 6-8 months old.

Home Range: NONE

Degree of Sociality: Gregarious and social as nonbreeders, during migration, and in winter. Flocks are loose aggregations of families and individuals

Level of Aggression: Extremely defensive and not extremely aggressive. Displays are visual and vocal. “Raised wing” display often defensive; bird erect, wings spread, bent at carpal joint; body and neck feat.

Migration: Trumpeter Swans do not necessarily have to migrate south to survive (Gillette 2007), needing only open water and sufficient forage. Most northern flocks move to ice-free waters but several flocks from Alaska, British Columbia, Oregon, Montana, Idaho, Wyoming, South Dakota, Iowa, Minnesota, Wisconsin, Michigan, Ohio and Ontario are sedentary or migrate only very short distances. Most long-distance migration to historic southernmost wintering areas (see Distribution: historical changes) has been eliminated by over-shooting of migrants and/or loss of migratory or wintering habitat (Gale et al. 1987). Trumpeter swans from restored flocks are establishing new routes, and are found across a wide range (see Distribution: natural wintering range). Growing flocks and new range expansion programs allow Trumpeter Swans to continually pioneer new migration routes and wintering sites.

Predators:

Predators: Predators of trumpeter swan eggs include common raven (*Corvus corax*), common raccoon (*Procyon lotor*), wolverine (*Gulo gulo*), American black bear (*Ursus americanus*), brown bear (*Ursus arctos*), coyote (*Canis latrans*), wolves (*Canis lupus*), mountain lions (*Puma concolor*), and northern river otter (*Lontra canadensis*). Nest location can provide partial protection from most mammalian nest predators, especially if placed on islands or floating vegetation in deep waters. Most of the same predators will prey on young cygnets, as will common snapping turtle (*Chelydra serpentina*), California gull (*Larus californicus*), great horned owl (*Bubo virginianus*), red fox (*Vulpes vulpes*) and American mink (*Mustela vison*). Larger cygnets and, rarely, nesting adults may be ambushed by golden eagle (*Aquila chrysaetos*), bobcat (*Lynx rufus*), and probably both coyotes and gray wolves. When their eggs and young are threatened, the parents can be quite aggressive, initially displaying with head bobbing and hissing. If this is not sufficient, the adults will physically combat the predator, battering with their powerful wings and biting with their large bills; adults have managed to kill predators equal to their own weight in confrontations. Predation of adults when they are not nesting is rare; they may possibly be hunted by golden and bald eagles, but substantiated cases are few. Photos of an exceptional attack by a bald eagle (*Haliaeetus leucocephalus*) on adult trumpeter swan in flight were taken in 2008, although the swan survived the predation attempt.

Anti-Predator Defenses: UP

Parasites:

Diet and Nutrition:

Adult Diet: Trumpeter Swans are mainly vegetarians, although they occasionally eat small fish and fish eggs. Younger birds also eat aquatic insects before switching to a plant-dominated diet. Day and night, the birds feed on a broad range of aquatic plants, including pondweeds, eelgrass, maretail, sedges, rushes, duckweed, wild rice and algae. To feed underwater they tip in the air like dabbling ducks, rooting beneath the surface to twist and pull up vegetation or freeing roots by paddling their feet in the mud. In winter they eat a higher percentage of terrestrial plants and berries, such as blueberries, cranberries, lupine, wheatgrass, broom, and ryegrass. Grain crops, including corn and barley, and tubers such as potatoes and carrots also make up part of the wintertime diet.

Juvenile Diet: UP

Special Adaptations for Getting Prey: The swan’s exceptionally long neck enables it to forage for food at the bottom of ponds.

Reproduction:

Mode of Reproduction: Monogamous

Mating System: Initial pair bonding occurs mid- to late winter with a peak of activity from April to mid-May in wild Wyoming Trumpeter Swans, and during summer or fall in Alberta. In captivity, pairs formed in every month except May, September and December. Paired birds remain together year-round. Breeding swans that lose a mate will quickly re-pair.

Mating Season: April to Mid-May

Courtship: UP

Territoriality: While nesting, trumpeter swans are territorial and harass other animals, including conspecifics, who enter the area of their nest.

Mating: Nesting, laying, hatching and fledging dates vary widely even within areas, due to annual weather patterns.

Pheromones Involved: NONE

Nesting: Trumpeter Swans build their nests on a site surrounded by water and usually less than 600 feet from shore. The nest is usually built on an existing structure including muskrat and beaver dens, beaver dams, floating vegetation mats, small islands, or manmade platforms. Swan pairs often use the same nest site year after year. Both sexes collect plant material to build the nest, which includes a foundation topped by a mound of aquatic vegetation, occasionally including grasses and sedges. The female uses her bill and body to shape a nest bowl atop the finished mound. The bowl's lining may include a few feathers. Nests take 14 - 35 days to build and the completed oblong or circular nest mound can reach up to 11 feet across and 3 feet high, with a bowl measuring 10 - 16 inches across and 4 - 8 inches deep.

Egg-Laying: May begin 6 d after nest-building starts (Banko 1960, Hansen et al. 1971, Banko and Schorger 1976, Cooper 1979) but before nest is complete. Eggs laid at 39- to 48-h intervals (exceptionally 50 h) (Cooper 1979, Mackay 1988, Lumsden 2002). Lumsden (Lumsden 2002) observed laying female Trumpeter Swans and described egg laying. Females rest on their breast, raise their posterior slightly, center their feet and spread their tarsi. The female appears to push with her legs while her posterior is raised and lowered. Eggs take 130-138 s from first appearance in the cloaca to drop into the nest (Lumsden 2002:293). The female preens after laying, and arranges nest material over the eggs about 10 minutes after laying.

Egg Information: Clutch Size: 4-6 eggs Egg Length: 4.0-5.0 in (10.1-12.6 cm) Egg Width: 2.4-3.2 in (6.2-8.1 cm) Incubation Period: 32-37 days Egg Description: Creamy to dull white, often stained brown in the nest. Egg Thickness: 0.78 mm

Hatching and Incubation/Gestation: Eyes partially open, covered in mouse-gray or occasionally white down. Leaves nest within 24 hours of hatching and has the ability to swim and feed. Is able to fly at 90 - 122 days after hatching.

Development: When they are two to three years old, trumpeters choose mates during highly vocal courtship displays. In one such display, called the "triumph ceremony" the male and female face each other, raise their wings and call loudly. Mated swans usually stay together for life. Territories are staked out as early as February. Nests are constructed by both in water 0.3 to 0.9 metres deep. Marsh plants are uprooted by the males and the female tucks the material in place. The nest mound reaches a diameter of 1.8 to 3.6 metres, and an average height of 46 cm. The clutch size averages five to six white eggs. The female incubates the eggs while the male fiercely defends and protects the nest. Incubation is approximately 32 days. The fledgling period is three to four months. Both parents are attentive to their young, the family forming a tightly knit group with the young actively swimming and feeding flanked by each parent. **Males: cobs, females: pens and young: cygnets.**

Parental Care: UP

Lifespan: In captivity, members of this species have survived to 33 years old and, in the wild, have lived to at least 24 years.

Conservation:

Official Federal Status: Least Concerned

Special Statuses in Individual States:

Threats: Despite being driven nearly to extinction in the early 20th century, Trumpeter Swans have rebounded and their numbers are increasing. Widespread hunting for meat, skins and feathers from the 1600s - 1800s had reduced this once widespread species to 69 known individuals by 1935, although isolated pockets of the birds also survived in Canada and Alaska. Hunting them is now illegal throughout the U.S. Between 2000 and 2005 a continent wide survey found that Trumpeter Swan numbers had more than tripled, from 11,156 to 34,803. Although Trumpeter Swans have been dubbed "a classic conservation success" and numbers continue to increase, threats such as lead poisoning, habitat loss, power lines, and occasional shooting continue to affect the population. The swans are also extremely sensitive to human disturbance at their breeding sites and will abandon nests and cygnets if disturbed. Ongoing conservation efforts include a set of federal management plans for the three major populations: the Interior, Rocky Mountain, and Pacific Coast birds, along with several state plans. Managers are working to improve breeding and wintering habitat, limit human disturbance, and decrease lead pollution.

Conservation Efforts: UP

Extra Facts: Trumpeter Swans are impressively large—males average over 26 pounds, making them North America's heaviest flying bird. To get that much mass aloft the swans need at least a 100 meter-long "runway" of open water: running hard across the surface, they almost sound like galloping horses as they generate speed for take off. Starting in the 1600s, market hunters and feather collectors had decimated Trumpeter Swans populations by the late 1800s. Swan feathers adorned fashionable hats, women used swan skins as powder puffs, and the birds' long flight feathers were coveted for writing quills. Aggressive conservation helped the species recover by the early 2000s. Overhunting of muskrats and beavers may have harmed Trumpeter Swans, too: the swans nest on their dens and dams. As the rodents' populations recovered, breeding habitat for the swans also improved. Trumpeter Swans form pair bonds when they are three or four years old. The pair stays together throughout the year, moving together in migratory populations. Trumpeters are assumed to mate for life, but some

individuals do switch mates over their lifetimes. Some males that lost their mates did not mate again. Trumpeter Swans take an unusual approach to incubation: they warm the eggs by covering them with their webbed feet. The Trumpeter Swan's scientific name, *Cygnus buccinator*, is from the Latin *Cygnus* (swan) and *buccinare* (to trumpet). We humans have a buccinator muscle in our cheeks—we use it to blow out candles and to blow into trumpets and other instruments. A “voiceless” Trumpeter Swan named Louis was the main character in E. B. White's 1970 children's book, *The Trumpet of the Swan*. Louis courted his partner Serena by playing a trumpet. Although awkward on the ground due to short legs set behind their center of gravity, they can walk more than a mile at a time, even when traveling with cygnets less than a week old. The oldest known Trumpeter Swan was a female, and at least 26 years, 2 months old when she was identified by her band in the wild, in Wisconsin. One captive individual lived to be 32

Pet Information: NONE

Notable Species: NONE