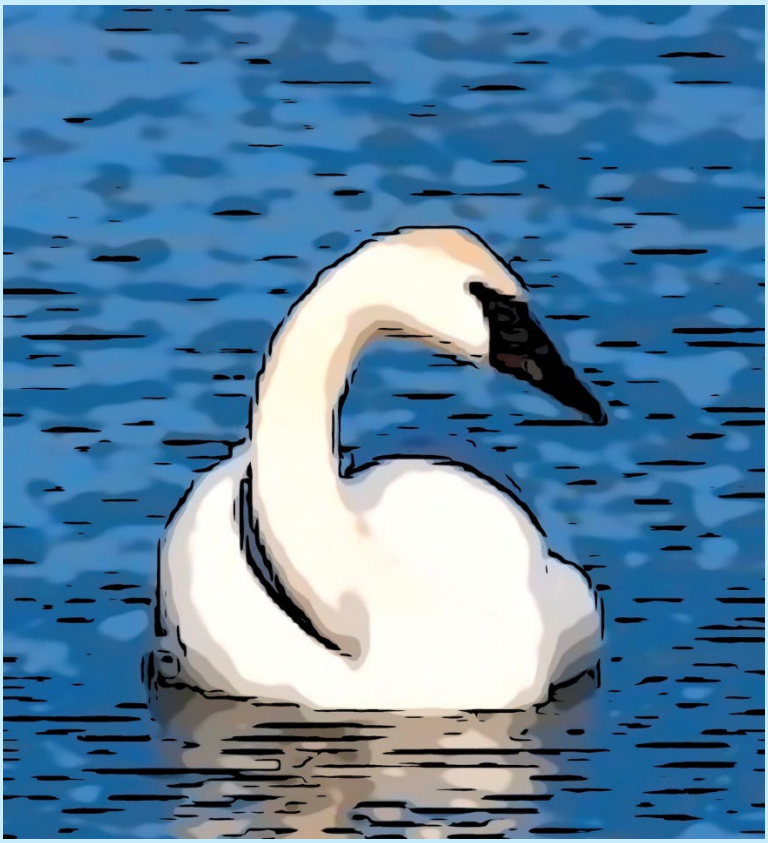
Oregon Trumpeter Swan Research Education Packet



Explore Oregon Trumpeter Swans With Us!

QR codes have been added to this information with links to audio/video clips related to trumpeter swans. Please only use these codes with adult approval.

What is a Trumpeter Swan?

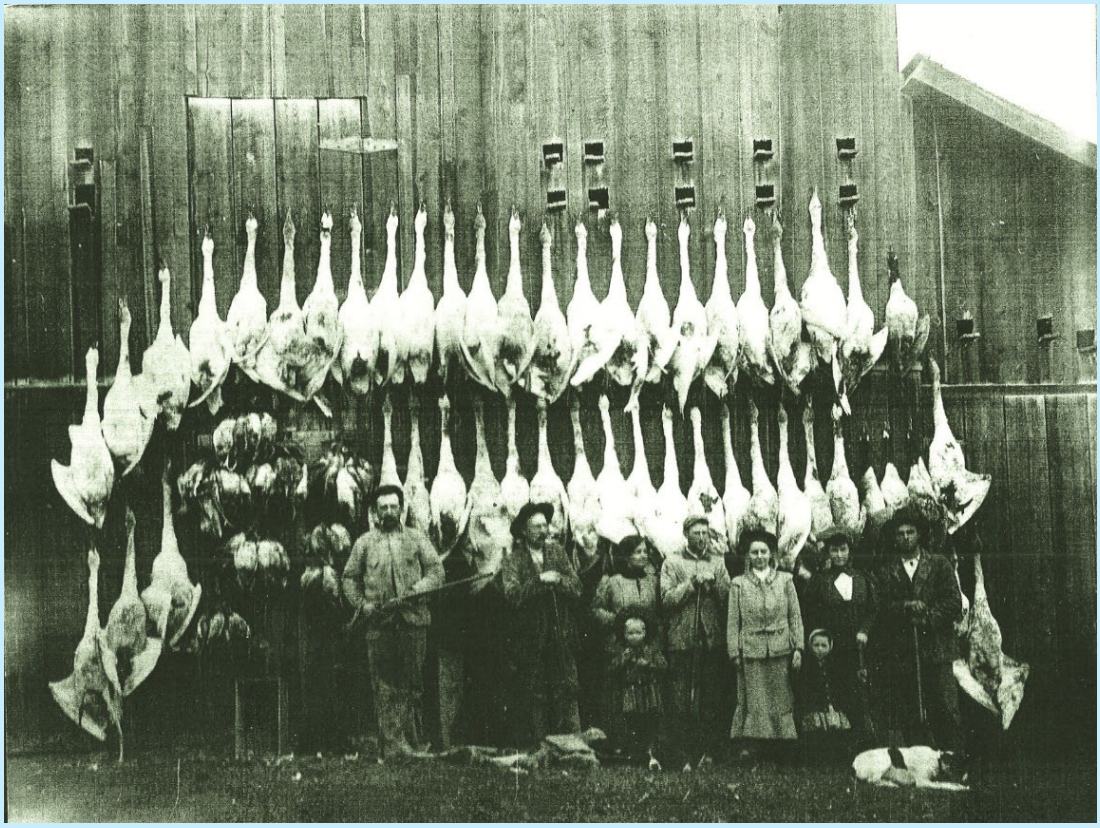
Snow-white Trumpeter Swans are a spectacular bird. With a wingspan of more than 7 feet and a height of about 4 feet, the Trumpeter Swan ranks as the largest native waterfowl species and the heaviest flying bird in North America. Along with ducks and geese, Trumpeter swans belong to the Class Aves (birds), Order Anseriformes, Family Anatidae. They have broad, flat bills with fine tooth-like serrations along the edges which allow them to strain aquatic plants and water. The birds' long necks and strong feet allow them to uproot plants in water up to 4 feet deep. Most Trumpeter Swans weigh 21–30 pounds, although the record for a male Trumpeter is 37 pounds. For swans, males are called cobs; females pens; and young swans in their first year are cygnets.

The Trumpeter is often confused with the far more common Tundra Swan, the only other native swan found routinely in North America. Tundra Swans breed in the arctic tundra and can be seen in the lower 48 states during spring and fall migration. You can distinguish between the two species by listening to their calls. The Trumpeter's call is resonant, deep, loud, and trumpet-like—hence their name. The Tundra Swan has a high-pitched, quavering call resembling a sandhill crane. Scan this QR Code or click this link to learn more about the calls and tips for identifying these two species: Trumpeter Swan Identification

A Little History

During European settlement of North America, the Passenger Pigeon, the Labrador Duck, and the Great Auk were hunted to extinction. Other species like the American Bison, the Whooping Crane and the Trumpeter Swan were killed at such numbers that few remained at the turn of the 20th Century. Trumpeter swans were hunted for their meat, their feathers and their skins. Their meat was prized. Their quills, the largest flight feathers, were used as ink pens. Their body feathers were used to stuff pillows and mattresses. Their skins were plucked clean of feathers leaving the down were tanned and sold as powder puffs for makeup. There were companys that paid fur trappers non only for furs, but also swan skins. There were also people who made their living “market hunting” by shooting birds for their meat, feathers and skins. In 1932, there were only 69 Trumpeter Swans known to be left alive in the lower 48 states and those were in the Yellowstone region. Market hunting ended with the passage of the Migratory Bird Treaty Act of 1918, which afforded protection to migratory birds, including Trumpeter Swans. Since that time, Trumpeter Swan populations have slowly recovered to over 60,000 in North America by 2015.

The following photo shows the market hunting harvest of one family who made their living shooting birds at what is today Malheur National Wildlife Refuge.



Trumpeter Swan Populations

There are 3 Trumpeter Swan populations that are identifed for management purposes by government wildlife agencies. Including the Pacific Coast Population, the Rocky Mountain Population, and the Interior population. The Trumpeter Swans in Oregon are members of the Rocky Mountain Population and they winter in the Pacific Flyway. The Rocky Mountain population is the smallest, numbering about 12,000 Trumpeter Swans.

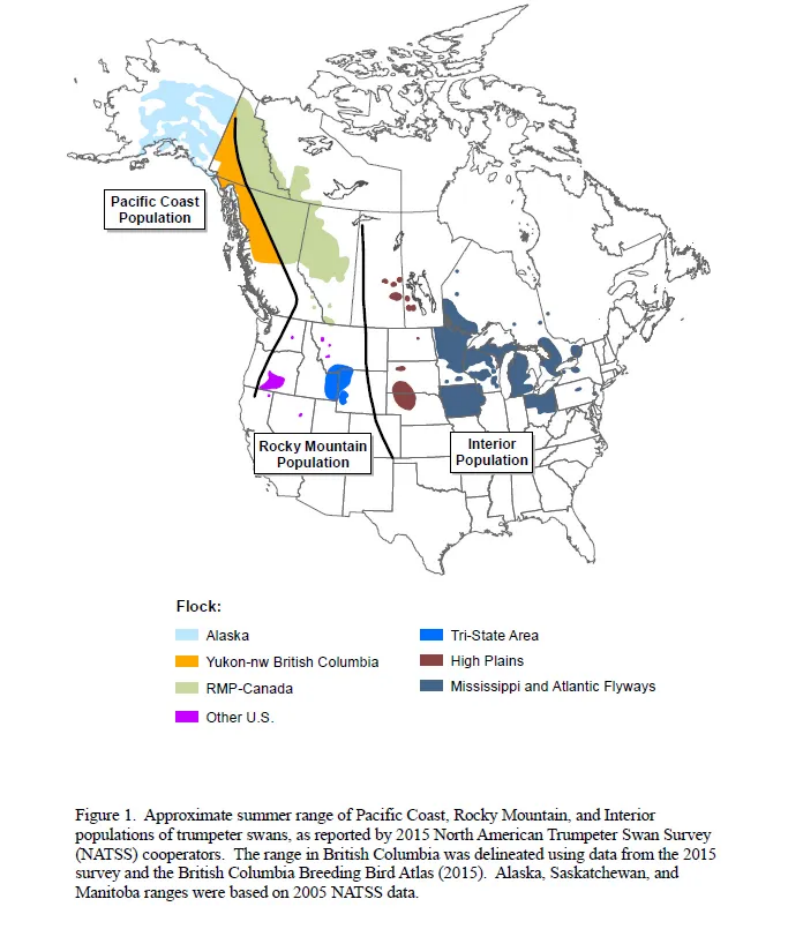
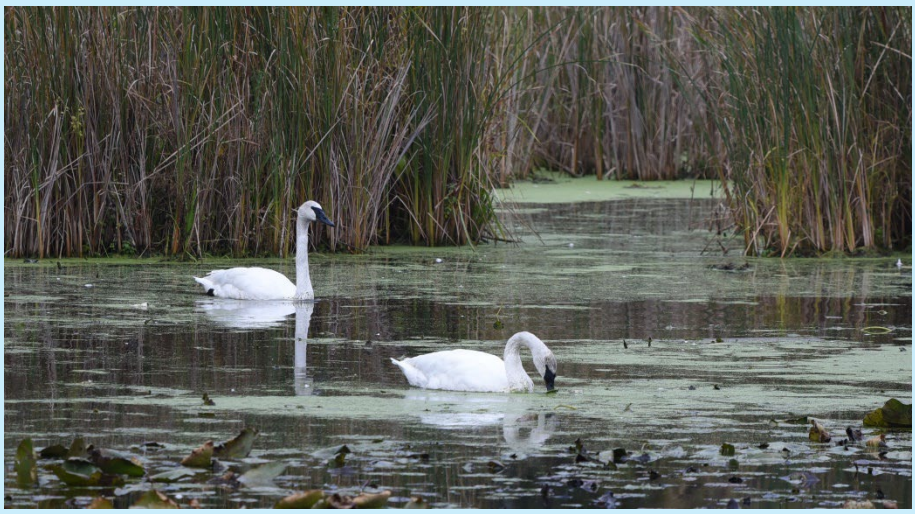


Figure 1. Approximate summer range of Pacific Coast, Rocky Mountain, and Interior populations of trumpeter swans, as reported by 2015 North American Trumpeter Swan Survey (NATSS) cooperators. The range in British Columbia was delineated using data from the 2015 survey and the British Columbia Breeding Bird Atlas (2015). Alaska, Saskatchewan, and Manitoba ranges were based on 2005 NATSS data.

For more information on these populations and Flyways,click this link or scan this QR Code: Populations and Flyways		For more information on the Rocky Mountain Population, click this link or scan this QR Code: Rocky Mountain Population	

Trumpeter Swans Need High Quality Wetlands

Healthy wetlands are vital to Trumpeter Swans. They depend on large wetlands and complexes of wetlands with very clean water and an abundance of aquatic vegetation for food. They prefer areas of mostly open water dispersed with patches of tall emergent vegetation which provide cover and nest sites for raising their families. Many waterfowl biologists consider Trumpeter Swans to be “ambassaduers” for wetland conservation; reminding us that we need to protect and provide healthy wetlands for swans and other wetland-dependent wildife.



This wetland above is a site at Malheur National Wildlife Refgue called Buena Vista Pond that has been used by breeding Trumpeter Swans.

The Oregon Trumpeter Swan Research Project

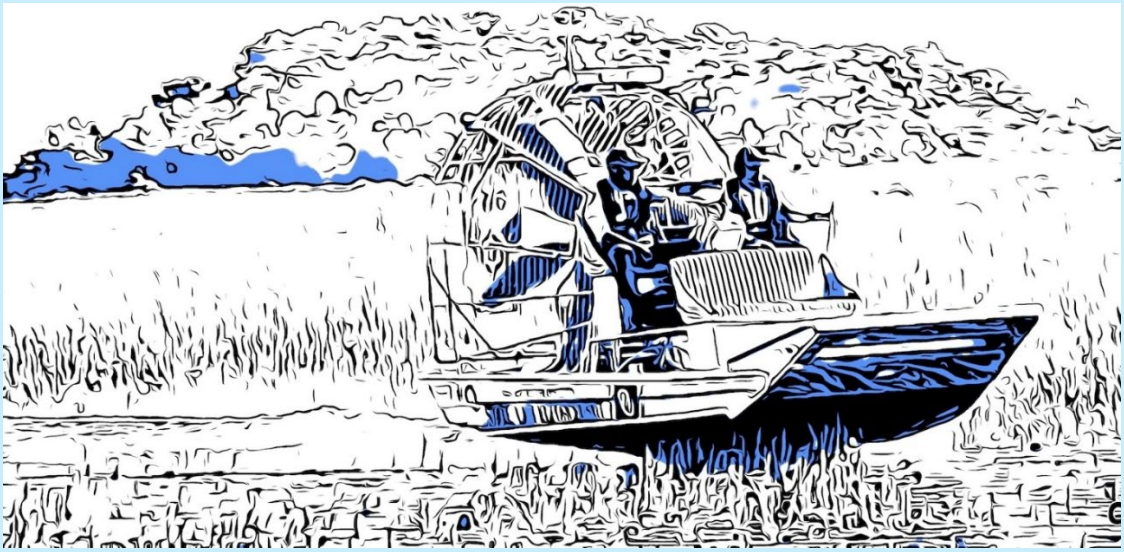
The numbers of migrant Trumpeter Swans moving through eastern Oregon have increased dramatically over the last 30 years, particularly at Malheur National Wildlife Refuge and Summer Lake Wildlife Area. The Trumpeter Swan Society (TTSS), Oregon Dept. of Fish and Wildlife, and Malheur National Wildlife Refuge partnered in a study of the origins and migration paths of this once much rarer species. In 2022, TTSS was awarded a grant from the Oregon Conservation and Recreation Fund to support research on these migrant swans. The research involved marking them with solar powered Global Positioning System (GPS)/Global System for Mobile Communications (GSM) neck collars and tracking their paths to their summer and winter destinations. The purpose of the study is to identify the source (summering sites) of the Trumpeter Swans wintering in eastern Oregon.

These movements between summer and winter sites is called migration. Swans migrate in spring from wintering areas to their summer homes to find food and a good place to raise their family, and to their winter homes in the fall to avoid ice and cold weather and find food during winter. They migrate to meet their survival needs.

More details on this study can be found at this link or by scanning this QR Code: Oregon Trumpeter Swan Research

Swan capture

Catching flighted swans is no easy task. One of the best methods is to use bright spotlights to confuse them on a very dark night when the moon is waning, or with heavy cloud cover; the darker the better; and rain or snow really helps. Capture also involves a fast airboat that will allow access to shallow wetlands the swans are using. February 13, 2023, was such a night. Twelve Trumpeter Swans were captured and marked that night; seven at Malheur National Wildlife Refuge and five at Summer Lake Wildlife Area. Swans were released on the same wetlands where they were captured.

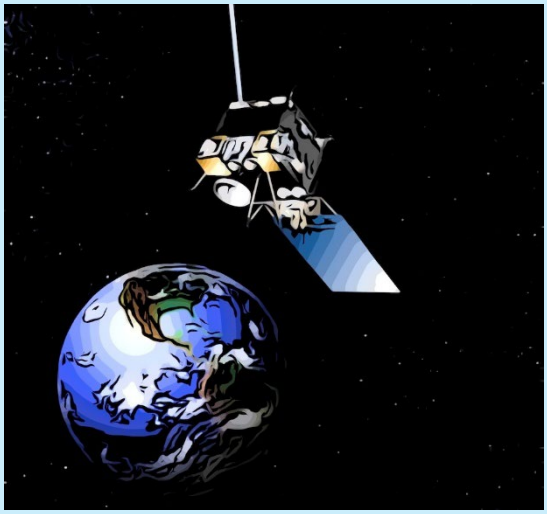


Swan marking

Captured swans were fitted with GPS – GSM plastic neck collars, plus a metal band from the Bird Banding Laboratory on their legs. The collars' batteries are charged by solar panels. The collars have a plastic insert which snaps into place, securing them around the swan's neck. The metal band allows the swans to be identified at a future time, perhaps long after the collars quit working if the swan is recaptured or found dead.

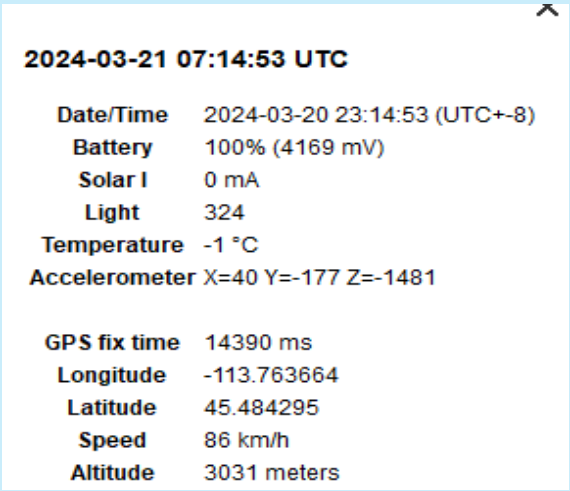
GPS-GSM units

The built-in GPS units in the collars pick up signals from Global Positioning System satellites. The system utilizes signals from a network of satellites orbiting Earth to enable GPS receivers on the ground to triangulate their exact positions based on the time it takes for signals to reach them from multiple satellites. These are the same satellites that provide your location on your phones or other GPS units. Each satellite orbits the Earth twice a day. The GSM units use Global System for Mobile Communications, which is the same technology used by cell phones and they allow the data to be downloaded via cell phone networks. When the swans move into range of a cell phone tower the stored data is downloaded.



Data collected by the collars

For each downloaded point, the collars record date, time, battery status (micro Volts), solar and light status, temperature (°C), time to fix the GPS location (milliseconds), location (longitude and latitude), flight speed (kilometers/hour), and altitude (meters). From these data, we can learn where their important sites for migration and breeding are and help focus conservation and protection of those sites. We can also learn how fast and how high they fly during migration.



2024-03-21 07:14:53 UTC

Date/Time	2024-03-20 23:14:53 (UTC+-8)
Battery	100% (4169 mV)
Solar I	0 mA
Light	324
Temperature	-1 °C
Accelerometer	X=40 Y=-177 Z=-1481
GPS fix time	14390 ms
Longitude	-113.763664
Latitude	45.484295
Speed	86 km/h
Altitude	3031 meters

The data is uploaded into a program which provides a spreadsheet of all the data points collected. Using longitude and latitude, the locations can be displayed on a map. The program also provides files in formats that can be uploaded into GoogleEarth®.

Let's Explore the Study Data Using GoogleEarth®

You need to download GoogleEarth® to your computer. **Save to your Desktop the file that you will receive by emailing: ttss@trumpeterswansociety.org , Subject line: GoogleEarth file of Oregon GPS trumpeter swans**

1. Double-click the file and it will open in GoogleEarth®.

2. Practice zooming in and out on GoogleEarth®.

3. You will see the data for 2 Trumpeter Swans (collar marked @24 from Summer Lake and collar marked @11 from Malheur Refuge) showing their migration between winter sites at Summer Lake Wildlife Area and Malheur National Wildlife Refuge.

4. Type Summer Lake, OR in the search box or zoom into Summer Lake at the south end of the route on your left and examine the wetlands on the Wildlife Area. You can click on the sun-shaped marker for Summer Lake to see a web page for more information on the Wildlife Area.

5. Next zoom out to find Malheur Refuge and then zoom in, click the icon and check out their webpage.

6. Now zoom into the yellow route line for swan @11 from Malheur showing the swan's travels and see what it says. How long was the route in meters? This is the total length of the route between the winter and summer location. Do the math to convert the meters to miles. How many miles did this swan travel?

7. Go back to Summer Lake and repeat the steps in number 6 for swan @24.

8. Zoom out and look at the routes for each swan. For swan @24, which state and provinces did it fly through to get to its summer location? For swan @11, which states and provinces did it fly through? If you want to learn more about Trumpeter Swans in Yukon, click this link or scan this QR Code: Swans in the Yukon

9. For each swan and click on one of the pushpin icons along the route showing them leaving the wintering site and see the data for that point. Write down the date and time, temperature, flight speed and elevation. Now go to the summer site at the north end of the route and choose a point just south of the summer site and write down those same data. How much time (days and hours did it take for @24 and @11 to travel between their winter and summer sites?

10. For those 4 points in number 9, what is the temperature (°C). Can you convert the °C to °F? Check some other locations along their routes and see where the temperatures were the coldest.

11. How fast were the swans flying? Click on a point somewhere between the summer and winter site and look at the speed (km/hr). Can you convert that to miles/hour? Check out other points along the route to look for faster flight speeds.

12. Now examine the data for flight elevations (m). Can you convert them to miles? How high did they fly. Check out some other points and see if you can find the higher flight elevations.