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BREEDING TRUMPETER SWANS IN NORTHEASTERN NORTH DAKOTA

—The trumpeter swan (*Cygnus buccinator*) is North America's largest waterfowl species and breeds in wetland habitats across the northern United States, Alaska and Canada. Summer observations by ornithologists, including those of John James Audubon in 1843, indicated a substantial number of trumpeter swans were breeding in North Dakota prior to European settlement. However, the species was extirpated by the late 1800s and there were no subsequent breeding records for over a century (Stewart 1975). Since 2007, 5 recent nesting records indicate that trumpeter swan has returned as a regular breeding species in North Dakota.

A continental range-wide breeding trumpeter swan survey conducted every 5 years since 1968 has shown that the population across North America has increased at an annual growth rate of 6.2%, from an estimated 3,722 birds in 1968 to 46,225 in 2010 (Groves 2012). From 2005 to 2015, the population of swans in the Central, Mississippi and Atlantic flyways has increased from 4,647 to 27,053 in 2015 (Groves 2012). The High Plains sub-unit of the Interior population (which includes North Dakota, South Dakota, Nebraska, Wyoming, Manitoba and Saskatchewan) increased from 471 birds in 2005 to 573 birds in 2010 (Groves 2012). However, breeding trumpeter swans were not recorded in North Dakota.

North Dakota Trumpeter Swan Breeding Record—In June 2007, a pair of trumpeter swans with cygnets was observed along the north branch of the Turtle River northeast of McCanna in Grand Forks County (48° 2' N, 97° 43' W). After several visits to the site, we photographed a pair with 3 fully grown cygnets on 22 September 2007, which represented the first known breeding record documented in North Dakota in over 100 years. In April 2008, an adult swan was found dead near McCanna and later confirmed to have been shot (Mike Szymanski, North Dakota Game and Fish Department, personal communication). Repeated visits to the McCanna area 2008–2015 provided no further evidence of a breeding pair.

In early September of 2015, an adult pair of trumpeter swans was observed at Wood Lake National Wildlife Refuge (WLNWR; 47° 54' N, 98° 50' W) in Benson County, North Dakota. On 18 September 2015, the previous WLNWR sighting was confirmed when an apparent family group of 2 adults and 6 fully feathered but flightless cygnets was observed. In 2016, 3 trumpeter swan nests were recorded in northeastern North Dakota; all of which successfully hatched. Nest site 1 was located in Grand Forks County south of Emerado (47° 49' N, 97° 23' W). The adult pair had been observed for several weeks and was photographed with 2 small cygnets 17 June 2016. Nest site 2 was located at WLNWR in Benson County. The nest was first observed 26 April 2016 and hatching occurred circa 27 May 2016. On 30 May the pen and cob were observed tending 5 cygnets. Nest site 3 was located 10 km east of Lawton (Ramsey County) in western Walsh

County (48° 17' N, 98° 13' W). An adult pair was observed tending 6 cygnets on 23 June 2016.

The 2007 and 2016 nesting and brood-rearing locations in Grand Forks County were 33 km apart in dissimilar wetland habitats. The 2007 breeding site near McCanna was along the North Branch of the Turtle River and comprised a palustrine semi-permanent wetland (Cowardin et al. 2013). The brood was occasionally observed moving within the channel of the Turtle River as far north as 1 km from the wetland. The adjacent uplands to the Turtle River are pasture, hayland, and cropland including soybeans, corn, small grains and potatoes. Numerous riverine oxbows and braided channels exist throughout this location with cattail (*Typha* spp.) as the abundant emergent hydrophyte. The 2016 Grand Forks County nest site and brood location was in a semi-permanent palustrine wetland resulting from gravel extraction (Cowardin et al. 2013). This site lies within a prominent north-south glacial beach ridge formed by glacial Lake Agassiz (Bluemle 2000). The wetland is surrounded by cattail and a small cattail island in the center of the wetland was used for nesting. A post hoc assessment of the site using satellite imagery (DigitalGlobe, Inc., Westminster, CO, USA) indicated an actively nesting swan from late April to late May.

Wood Lake NWR consists primarily of a 13.3 ha lacustrine wetland with an adjacent palustrine semi-permanent wetland along the western periphery of the lake (Cowardin et al. 2013). The 2016-nest site was within the semi-permanent wetland. Submerged aquatic hydrophytes within all wetlands at WLNWR are dominated by coontail (*Ceratophyllum demersum*) and sago pondweed (*Stuckenia pectinata*). The edge of the wetland is dominated by a stand of emergent cattail approximately 5 m in width. The lacustrine wetland of WLNWR is impounded by a dike that is intermittently exposed. Wood Lake NWR is within rolling to hilly topography with upland habitat of American basswood (*Tilia americana*) and bur oak (*Quercus macrocarpa*), and native western wheatgrass and green needlegrass mixedgrass prairie (USNVC 2016).

The 2016 Walsh County nest was located on an earthen island in a 21.5 ha palustrine seasonal wetland (Cowardin et al. 2013) within typical prairie pothole habitat with numerous palustrine and lacustrine wetlands scattered across a temperate grassland biome. The edge and large expanses within the wetland (hemi-marsh) are dominated primarily by hybrid cattail (*T. glauca*) and open water with submergent hydrophytic vegetation consisting mainly of coontail, sago pondweed, and floating duckweeds (*Lemna* spp.). Grasslands surrounding the wetland are a mix of tame and native grasses and forbs typical of a Northern Great Plains mesic mixedgrass prairie group (USNVC 2016).—Mark R. Fisher¹, Matthew D. Sprenger, Chris R. Roed, and David O. Lambeth, U.S. Fish and Wildlife Service, Devils Lake Wetland Management District Office, 221 2nd St NW, Devils Lake, ND 58301, USA (MRF, MDS, CRR), University of North Dakota, 417 Terrace

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