

Kanuti Refuge's Trumpeter Swan Population: "Brought Back" or Not, It's Booming

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Abstract

Since 1990, Kanuti National Wildlife Refuge has censused summering "white swans" (putatively, adult Trumpeter Swans [TRUS]) about every five years in wetland habitats within and near the refuge in north-central Alaska. Between 1990 and 2020, trend data for this population followed an exponential growth ($R^2 = 0.99$). Paired swans, which likely represent the best index of the breeding population's status among years, increased 657% since 1990 and 92% since 2010. In 1989 there were 16 (59%) pairs of Trumpeters and 11 (41%) pairs of Tundra Swans (TUSW) nesting in the study area; in 2020, there were 227 swan pairs, of which 62 were confirmed nesting. A 2019 sample of 33 nesting swan pairs suggested that ~95% of swan pairs were now TRUS. A longer growing season has seemingly benefited this population in recent decades. Continued growth may be limited by saturation of available habitat.

Study Area and Methods

- "TRUS breeding habitat" within 14 USGS quads of Bettles sectional surrounding Kanuti Refuge (Fig. 1)
- Aerial census following King (1973) and Conant et al. (2007) every ~5 years from 1985/1990 to 2020

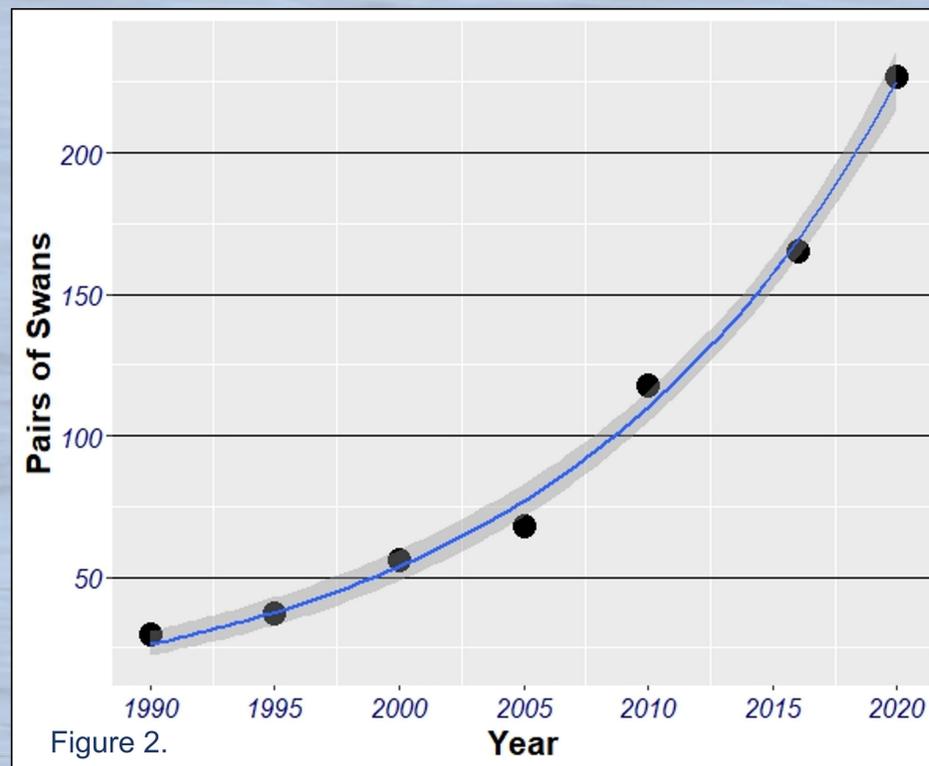


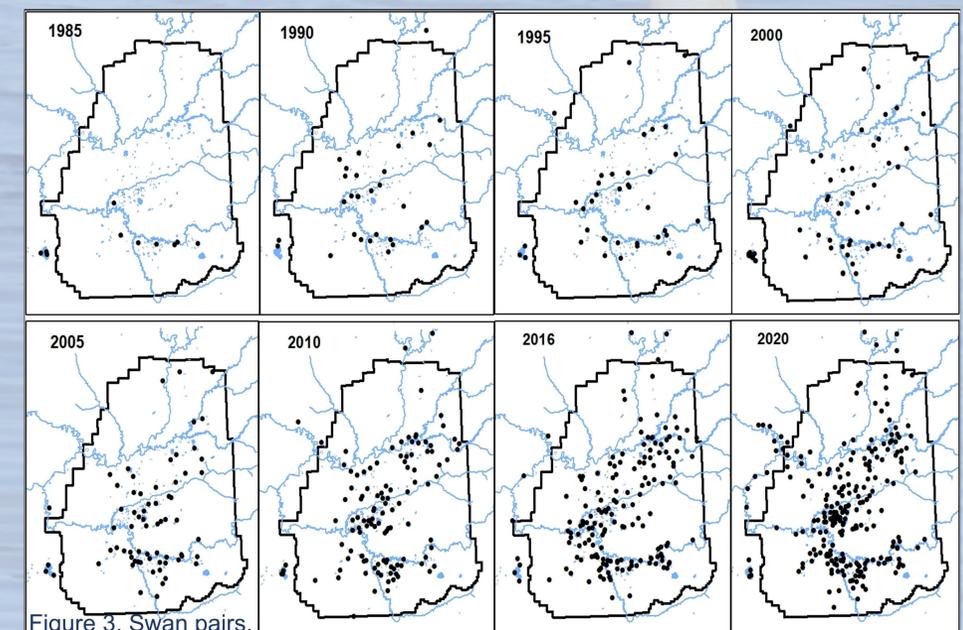
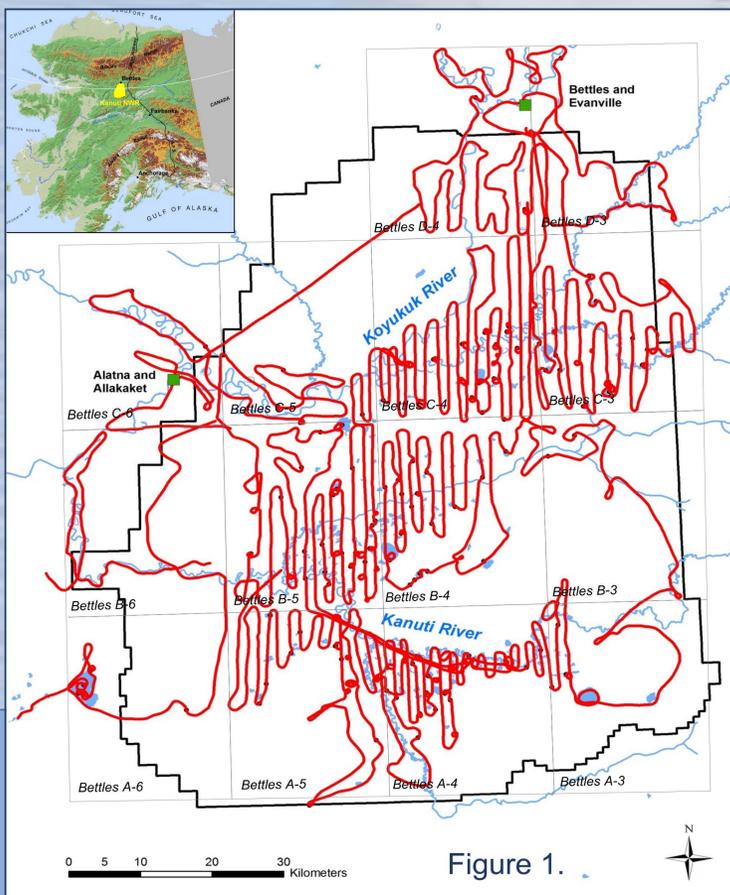
Figure 2.

Results

- The TRUS population on/near Kanuti Refuge has followed exponential growth to date (Fig. 2: fitted growth curve with 95% CI).
- TRUS pairs, best representing the locally breeding and potentially breeding population, have increased 657% since 1990.
- TRUS pairs have densely populated the wetland-rich areas of the Refuge, Kanuti Flats and Koyukuk Flats, and have continued to expand into more marginal habitats to the west and north (Fig. 3).

Discussion

- Hansen et al. (1971) created a theoretical northern breeding range limit for TRUS based on a 145–150-day ice-free period.
- Though the Refuge lies above this "barrier," the "Kanuti" population has followed statewide growth (see Groves 2017).
- TRUS occupation of Kanuti area appears recent; that is, colonization, not recolonization (see Gabrielson and Lincoln 1959, Mitchell and Eichholz 2020).
- Schmidt et al. (2011) suggested that increased breeding season length was positively related to expansion of Alaska TRUS.
- Bryant et al. (2021) found that TRUS make up ~95% of swans on Kanuti Refuge now, versus ~60% 30 years ago.
- Study of factors like local breeding season length, brood production, lake availability, and others is warranted to assess limits on future population growth.



Acknowledgments

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Literature Cited

Print-outs of the literature cited are available upon request.

Background image, a pair of Trumpeter Swans by U.S. Fish and Wildlife Service.