CLIMATE CHANGE, SPRING TEMPERATURES AND TIMING OF BREEDING OF TREE SWALLOWS IN SOUTHERN ONTARIO.

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ABSTRACT. - Several European studies have indicated advances in breeding dates of birds in the last 30 years, which authors attributed to climate change. In North America, Dunn and Winkler (1999) reported a continent-wide advance of 5-9 days in breeding dates of Tree Swallows *Tachycineta bicolor* between 1959 and 1991. I present results of an intensive study of Tree Swallows breeding on and near Long Point, Ontario, at 4 sites monitored 1969-2001, 1977-1986, 1978-2001 and 1987-2001. Local air temperatures varied among sites, according to distance from Lake Erie, but there was no significant regional trend in April and May temperatures between 1969 and 2000. Median and 10th percentile dates of clutch initiation by females that were at least 2 years old varied among years by up to 20 days overall and 18 days within sites, and differed by 0-14 days between sites in the same year. There were no significant differences in average timing of laying among the 1970-1980, 1980-1990 and 1990-2000 periods. Nevertheless, there was a significant trend towards earlier laying in 1990-2000, which was attributable to exceptionally early laying and warm May weather in 1998-2001. Across all sites, median dates of clutch initiation were strongly correlated with average daily maximum temperatures in the first four 5-day periods in May, but clutches at one site were initiated 3 days earlier than predicted by temperatures alone. I estimate that climate warming of 5°C in May could result in an average advance of about 7 days in the median date of laying of Tree Swallows at these sites. My results indicate that spring temperatures are strongly correlated with timing of laying, but show that spring temperatures have not increased in the Long Point region and timing of the breeding season has not advanced throughout North America.