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Chatter about the clouds of white: using social media to track the annual migration of Belenois aurota

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Abstract

Butterflies are among the most sensitive biota to climate change and variability in the animal kingdom. Shifts in phenological events are spatially and temporally specific. *Belenois aurota* is one of the most commonly occurring butterfly species in South Africa. There is limited phenological data in South Africa about butterfly migrations including that of the *Belenois aurota* migrations. This lack of data poses challenges to the monitoring of local ecosystems, especially in understanding changes under the climate change umbrella. To determine whether data from social media can address this paucity of data, a mixed method approach was used obtain 1063 temporally constrained accounts of the *Belenois aurota* butterfly migration through social media and historical newspapers. For the period 1914-2020, dates of butterfly migrations from newspaper articles were obtained from a secondary source for the initial part of the study period. For the previous decade, social media observations from Twitter, Instagram and Facebook were collected. An advance in the migration date of 2.4 days per decade was calculated for the study period, with a median migration date shift from 269 Julian Days (25 March) to 214 Julian Days (30 January). However, when compared to the citizen science project LepiMAP, a delay of 2.3 days per decade is calculated. Spatially, observations from the database were concentrated in the northern and eastern parts of the country. Peak observations for the entire dataset were between December and February for all years. These changes are consistent with shifts in global phenology whereby butterfly species are experiencing an advance in phenology due to increases in temperatures.

Key words: *Belenois aurota*, butterfly migration, social media, Facebook, South Africa