

Migratory bird arrivals

Songbird species are showing a diversity of changes in arrival dates at their breeding and wintering grounds.



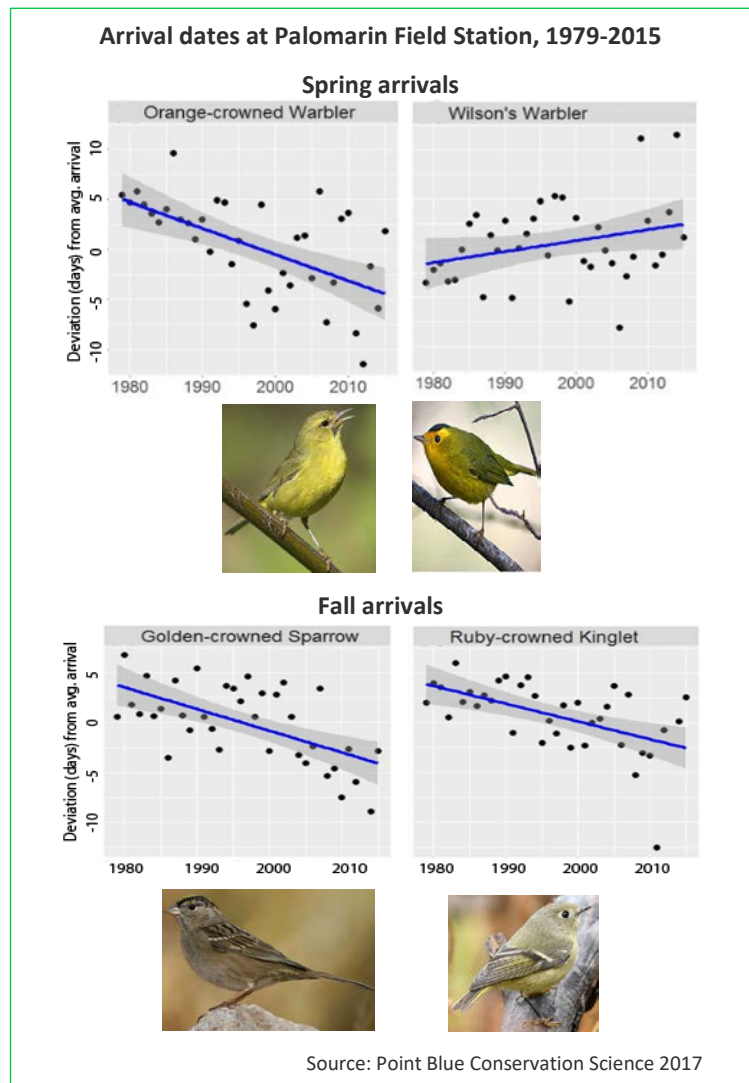
Certain migratory songbirds have changed the times at which they arrive at a coastal site in northern California. Birds move seasonally between breeding and wintering grounds to take advantage of abundant resources, or to avoid predators or exposure to harsh conditions. Throughout the Northern Hemisphere, birds migrate north in the spring to nesting locations where food sources are plentiful and migrate south as temperatures drop in the fall to spend winter where environmental conditions are more favorable. As temperatures begin to warm earlier in the spring and remain warm later in the fall, birds may respond by shifting their migration times.

The earlier onset of spring, along with the emergence of the plants and insects that birds rely on, has been observed globally. A general trend of earlier migratory bird arrivals in the spring has also been reported. However, there is considerable variation – different species (or even populations of the same species) have shown both earlier and later timing of spring migration. While there are less data on fall migration, some studies have indicated shifts to later arrivals.

What does the indicator show?

A 36-year record of observations at the Palomarin Field Station at Point Reyes National Seashore in Marin County reveals differences in how the spring and fall arrival patterns of seven songbird species are changing. Of the three species studied that arrive in the spring, two are showing opposite trends: the Orange-crowned Warbler has been trending towards earlier arrivals (2.6 days earlier per decade), while the Wilson's Warbler has been arriving later (1.1 days later per decade). No significant trend was observed for the Swainson's Thrush (graph not shown).

Among the four fall migrant species studied, two have been arriving earlier: the Golden-crowned Sparrow and the Ruby-crowned Kinglet, 2.1 and 1.8 days per decade, respectively. Fall arrival of the Hermit Thrush has been trending earlier since 1995, while the Fox Sparrow shows no significant trend (graphs not shown).



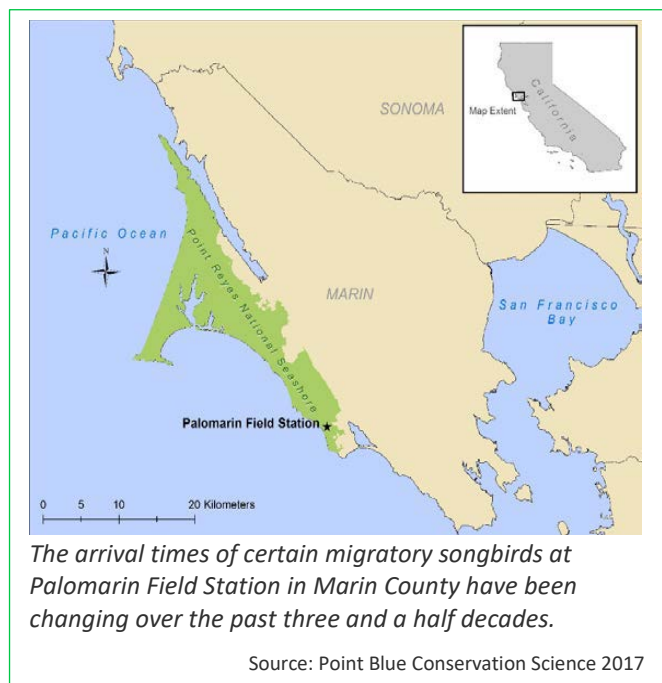


Why is this indicator important?

The timing of bird arrivals at breeding territories and wintering grounds is a key factor in their breeding success and survival. With warming spring temperatures, plants and insects in breeding grounds may emerge before migrating birds typically arrive. Food, nesting materials and other resources may be less available if the timing of bird arrivals remains unchanged. During the fall, insects and plants may be available longer as temperatures stay warm, delaying bird departures to wintering grounds. A mismatch between arrival dates and when conditions become suitable at the arrival grounds can adversely impact bird populations. Of particular concern are species that are unable to modify their spring arrival times and find poor environmental conditions during the breeding period. A study of European bird species reported population declines for those species that did not advance their migration in response to warming temperatures.

Tracking changes in migratory bird arrivals, such as songbirds at Palomarin Station (shown on map), adds to the body of evidence of how terrestrial animals are responding to regional changes in climate. Other factors that influence arrival times include migration distance, bird feeding habits, and environmental conditions at stopover locations.

Knowledge of how migratory birds are responding to climatic conditions is critical in assessing and projecting the impacts of those changes on bird populations.



For more information about this and other climate change indicators, visit:

<https://oehha.ca.gov/climate-change/report/2018-report-indicators-climate-change-california>