

Migrating birds drawn by light face higher chemical exposure

October 25 2022, by Pat Leonard



The American Redstart migrates through Texas along the Gulf of Mexico. Credit: Cameron Rognan/Cornell Lab of Ornithology

Birds attracted by the glow of artificial light at night are drawn into areas where they are also exposed to higher concentrations of airborne toxic chemicals, according to a new study.

"We examined the correlation between the concentration of airborne



toxic chemicals, artificial light at night, and the weekly abundance of 165 nocturnally migrating songbird species," said Frank La Sorte, a research associate at the Cornell Lab of Ornithology and lead author of the study in *Global Change Biology*.

"What we found is that light pollution does indeed increase exposure to toxic chemicals when birds stop to rest during spring and fall migration," La Sorte said. "Surprisingly, we also found that exposure to toxic chemicals is high during the non-<u>breeding season</u>, a time when birds typically avoid light pollution."

The only time period that did not reveal increased exposure to toxic chemicals was during the breeding season, when songbirds typically nest in habitats away from areas of intense human activity.

The researchers first compared levels of artificial light at night with the presence of 479 toxic chemicals from 15,743 facilities across the continental United States. They found that more light pollution did correlate with higher levels of airborne toxic chemicals. The scientists then cross-referenced this data with the weekly abundance of 165 night-migrating songbird species throughout their annual life cycles, using data from the Cornell Lab's eBird program.

"One region of special concern is along the Gulf of Mexico, especially in Texas and Louisiana," La Sorte said. "Migratory birds that spend the winter in this region are being exposed to higher concentrations of airborne toxic chemicals for a longer period—the non-breeding season makes up the largest portion of these species' annual life cycles."

Studies have shown that air pollution has caused some species to stop migrating, change migration altitude or alter their course. Long-term exposure to <u>toxic chemicals</u> can interfere with cell and organ function, and contamination can carry over to young through the transfer of



chemicals from a nesting female to her eggs.

In total, the study shows that observations provided by volunteer eBird participants are allowing scientists to better understand the full range of implications of light pollution for night migrating birds.

"Efforts to reduce <u>light pollution</u> during the spring and autumn would reduce the chances of toxic chemical contamination during migration stopovers, which would improve survival and <u>reproductive success</u>," La Sorte said. "However, this would have no effect on the long-term exposure occurring along the U.S. Gulf Coast, a region that could be a significant source of toxic chemical contamination for North American birds."

More information: Frank A. La Sorte et al, Light pollution enhances ground-level exposure to airborne toxic chemicals for nocturnally migrating passerines, *Global Change Biology* (2022). DOI: 10.1111/gcb.16443

Provided by Cornell University

Citation: Migrating birds drawn by light face higher chemical exposure (2022, October 25) retrieved 28 April 2024 from <u>https://phys.org/news/2022-10-migrating-birds-drawn-higher-chemical.html</u>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.