

When you're a sitting duck, you learn to adapt

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Common Loon on a nest, dealing with black flies. Credit: Linda Grenzer

When sitting on a nest to incubate eggs, a bird is physically stuck and most vulnerable to attacks of any kind, so coping without stress and other significant costs is important. For Common Loons, black flies are

a common blood-feeding pest and can cause nest abandonment and decreased fledging rates. This has impacts on not only individual pair success, but on population dynamics as well. A new study from *The Auk: Ornithological Advances* presents some of the best data to date supporting hypotheses about the effects that black flies have on Common Loon nesting behavior and success.

Chapman University's Walter Piper and colleagues monitored Common Loon nests for 25 years in northern Wisconsin, USA. They marked individuals to track each bird's behavior, nesting success, and interaction with black flies. More than 2,050 nests were included in the study to apply the impacts of black flies on loons' [population](#) level. If the black fly concentration around an individual bird was high or there was a particularly intense fly outbreak year, loon incubation time decreased and nest abandonment increased. It was discovered that nest abandonment could be predicted using lake size, female age, and wind. The team found that the smaller the lake, the older the female, and the greater the distance across water that wind has to travel to reach the nest the more likely the nest will be abandoned. The cost associated with severe black fly outbreaks appears to be high enough that a nest can be abandoned and a second attempt made following the peak of the outbreak. The second nest is likely to be in the original location unless a predator destroyed the nest. In that case, the pair is more likely to choose a new and hopefully safer nest site.

Lead author Walter Piper comments, "Black flies, which we think of as a nuisance and no more, actually impact population reproductive success. This was a matter of studying an animal for 25 years and almost ignoring one aspect of their biology—until you finally look straight at that aspect of biology and realize it's crucially important! Loons get slammed by black flies, but they make a very good response by reusing the [nest](#) sites where the flies hounded them, instead of abandoning those sites altogether—as they do when raccoons get their eggs. This makes

sense, because the raccoons are their main enemies (that is, egg predation is a more severe problem than black flies), and a safe nesting site from raccoons is a vital resource."

"This study is one of the first that examines the negative influence of black flies on a population of birds rather than on individuals alone. Perhaps more importantly, by studying a marked population of loons for almost a quarter century, it is possible to determine the stochastic influence of black fly outbreaks on the population as well as understand the nuances of how these mechanisms might work," adds Jeb Barzen, an ecologist with Private Lands Conservation, who was not involved with this study. "Black flies severely reduce reproductive effort of loons periodically but not every year, a finding that is important to understanding the [population dynamics](#) of this iconic species. The more subtle examination of individual response to black flies provides insight into differences in how males and females, as well as individuals in different habitats and individuals of different ages, respond to [black fly](#) infestations. Collectively these results inform ecologists and managers alike in issues relevant to the conservation of loon populations and other long-lived, territorial bird species."

More information: Common Loons respond adaptively to a parasite that impacts nesting success, June 20, 2018, [DOI: 10.1642/AUK-17-239.1](#)

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