

# Bluebirds struggle to find happiness on island paradise

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This is an Eastern bluebird (*Sialia sialis*). Credit: Kitty Kono

Island plants and animals are often different from their mainland relatives. In general, the lack of top predators and large herbivores on isolated oceanic islands influences traits of island organisms. Consider, for example, the dodo: this island-dwelling, flightless bird was so fearless that it was hunted to extinction by humans within 200 years of first contact. Human interaction is just one threat to conservation. Differences in the threats posed by pathogens and parasites may also be

important for conservation of today's extinction-prone island populations.

Eastern bluebirds (*Sialia sialis*) are familiar to many people living in the eastern United States, and also to residents and tourists in Bermuda, an archipelago with a total area of about 54 square kilometers that lies in the North Atlantic about 1,100 km off the East Coast of the United States. Although the current outlook for the bluebirds in the U.S. is good, their Bermuda relatives have been designated as threatened and vulnerable.

Comparisons of island and continental bird populations can offer new insights to people interested in conserving island birds. We compared island (Bermuda) and continental (Ohio, U.S.) populations of the Eastern bluebird, studying these birds from egg to adult. We investigated how nestlings and adults differed in growth, size and shape, immune function, numbers of eggs and nestlings that pairs produce, and how frequently parents deliver food to their young. We also attempted to identify differences between continental and island birds that, either individually or as part of a broader phenomenon, might intensify the risks of decline typically associated with small and geographically isolated populations, such as the Bermuda bluebirds.

Our study showed that bluebirds in Bermuda differed in a variety of ways from bluebirds in Ohio. For example, adults in Bermuda were lighter weight and had longer wings than the Ohio birds. These differences contrast with the usual changes associated with small animals living on isolated [islands](#). Parents fed their nestlings at equal rates throughout the season in both locations. However, island nestlings grew slower and, as the breeding season progressed, more chicks died in their nests in Bermuda, though no similar seasonal pattern was observed in Ohio. Overall, our results suggest that the Bermuda bluebirds may be adjusted to certain aspects of the island environment but not to others.

Efforts to conserve Bermuda bluebirds may be improved by focusing on the intraseasonal patterns in nestling mortality and, more generally, the survival rates of birds of all ages. Furthermore, conservation planners in Bermuda may benefit by considering the consequences of (1) introduced mammalian and avian predators and competitors and their removal and (2) human-driven changes in populations of the insects that [bluebirds](#) eat and feed their chicks. These factors may not only affect survival and mortality rates but may also shape bluebird physiology and reproduction. Ultimately, our study highlights the value of considering the match between an organism, its environment, and its evolutionary history on a population-specific scale. Without this context, identifying detrimental trends is a more challenging proposition.

**More information:** K.D. Matson, R.A. Mauck, S.E. Lynn, and B.I. Tieleman, "Island Life Shapes the Physiology and Life History of Eastern Bluebirds (*Sialia sialis*)," *Physiological and Biochemical Zoology* 87(1), January/February 2014.

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