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Floral preference, flower constancy, and pollen transfer efficiency of the ruby-throated hummingbird (*Archilochus colubris*) in mixed arrays of *Iris nelsonii* and *Iris fulva*

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ABSTRACT

Background: *Iris nelsonii* is a homoploid hybrid species derived from three *Iris* species. (Homoploid hybrid species have the same number of chromosomes as their parent species.) *Iris nelsonii* shares a majority of its genome with one of its parents, *I. fulva*. The two species differ in floral colour and morphology. Pollinator isolation is a potential form of ecological divergence between a homoploid hybrid species and its parental species but the primary pollinator of both species is the ruby-throated hummingbird (*Archilochus colubris*).

Questions: Do hummingbirds prefer one of these two *Iris* species? Do hummingbirds exhibit flower constancy? Do hummingbirds transfer a pollen analogue between species?

Study system: The homoploid hybrid iris, *I. nelsonii*; its most closely related parental species, *I. fulva*; and the ruby-throated hummingbird.

Field site: Cypress Island Preserve, Breaux Bridge, Louisiana, USA.

Methods: We assayed hummingbird preference and constancy in a simple experimental array containing two flowers of each species. We assayed pollen analogue transfer efficiency in a separate experimental array containing two flowers: one dyed, the other not dyed.

Results: Hummingbirds did not show an initial preference for either flower when they entered multispecies arrays. But when a hummingbird first visited an *I. nelsonii* flower, it then visited another *I. nelsonii* flower significantly more than expected, revealing flower constancy that may result in reproductive isolation between these species of iris. Hummingbirds readily transferred pollen analogues both within and between species, so despite their morphological differences, mechanical isolation does not result in reproductive isolation of these species.

Keywords: pollinator isolation, floral isolation, mechanical isolation, ethological isolation, pollinator preference, homoploid hybrid speciation.

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