

## **Philopatry: A return to origins**

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**Philopatry: A return to origins.**—The word “philopatry” is a combination of the prefix *philo* (from the Greek *philos*, “beloved”) and the Latin *patria*, which means “fatherland” or “homeland.” Since the first English-language use of “philopatry” in an ornithological context by Huntington (1951), the term has been applied to two types of site-faithful behavior in birds. Closest to the etymological meaning is the first, “natal philopatry,” which means not dispersing far from, or returning to, a birthplace for reproduction. The second is “breeding philopatry,” which means returning to the same breeding area each year, though that area may not be an individual’s birth place (Shields 1982, Anderson et al. 1992). Therefore, any assessment of breeding philopatry likely includes some immigrant individuals, whereas assessments of natal philopatry include only locally hatched or born individuals.

In the past several years, the use of philopatry in the ornithological literature has widened further, to include site fidelity to nonbreeding areas, such as sites used for molting (Iverson et al. 2004), wintering (Robertson and Cooke 1999, Mehl et al. 2004), or stopover during migration (Merom et al. 2000). Use of the term “philopatry” to describe not only natal

homing, but general site fidelity to both breeding and nonbreeding sites of individuals whose natal areas are unknown is, I believe, problematic and warrants reconsideration. This is because there are substantial genetic and demographic implications of philopatry in its purest and historical sense (i.e., natal philopatry), such as increased relatedness and population differentiation (Greenwood 1980, Quinn and White 1987, Avise et al. 1992). Indeed, the historical and theoretical discussions of natal philopatry focus on the behavior of limited dispersal from a birth place, how this promotes inbreeding, why inbreeding might be adaptive, and how a lack of gene flow might promote speciation (Mayr 1963, Shields 1982, Anderson et al. 1992). I believe that these population-genetic and demographic implications are potentially misapplied when "philopatry" is used to describe site-faithful behavior in general (see Pearce and Talbot 2006).

The potential danger of applying philopatry to non-natal and nonbreeding conditions is that it creates the expectation of certain outcomes, such as low dispersal rates, population genetic differentiation, and unique population segments, when such conditions may not exist. Given that most avian species do not molt, winter, or have migratory stopovers where they breed, I propose that the term "philopatry" and its genetic expectations be used only in relation to natal philopatry and not extended to (1) breeding-site fidelity of individuals whose natal areas are unknown and (2) nonbreeding areas where site-faithful behavior is observed. I believe this correctly distinguishes natal philopatry as a specific type of site fidelity with its own implications for population genetics and dynamics. Thus, philopatry should be viewed as synonymous and interchangeable with the terms "natal-site fidelity" and "natal philopatry," and the term "breeding-site fidelity" should replace "breeding philopatry," because it reflects the unknown natal origins of birds captured as adults. Although the broader condition of site fidelity may have implications for fitness, mate pairing, and population delineation—as examined in several studies (Robertson and Cooke 1999, Merom et al. 2000, Iverson et al. 2004, Mehl et al. 2004)—future investigations of site fidelity should be pursued without automatically invoking the term "philopatry" and assuming that the genetic and demographic connotations of natal philopatry also apply. In contrast to philopatry, the probability of fidelity ( $F$ ) and dispersal ( $1 - F$ ) are estimable parameters (Burnham 1993, Kendall and Nichols 2004), and the demographic and genetic consequences of site fidelity, regardless of where it occurs, can serve as hypotheses for testing with multiple data types (e.g., Arsenault et al. 2005). Such data mergers should enhance our understanding of the demographic, behavioral, and genetic implications of natal philopatry and site fidelity.

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