

Recruitment and the role of reconnaissance in Spotted Sandpipers

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One critical issue in population dynamics is understanding factors affecting immigration to particular populations. We addressed this issue for a subset of immigrants in a population of polyandrous Spotted Sandpipers *Actitis macularia*. Data were collected from 1974 to 1990 for a population in northern Minnesota, USA. After peak arrival of breeding birds, and before peak departure at the end of the breeding season, there were many short-term visitors (transients) (present for <4 days) to the study site. Many of these transients returned the subsequent year to breed. We used step-wise discriminant function analysis (DFA) to determine the importance of absolute sex ratio (males/female), sex of the transient bird, number of nests and number of breeding males and females, during the week of visit, in predicting whether or not a visiting bird would return the following year. In addition, we used multiple regression to determine how much variability in the number of transient birds returning in subsequent years could be explained by annual values, during the year of transience, for numbers of breeding males and females, numbers of eggs laid and hatched and absolute sex ratio.

The DFA showed that transient females returned more often than transient males and that the number of transients returning in subsequent years was positively associated with the absolute sex ratio (males/female) during the week visited. When the sexes were analysed separately, none of the weekly variables significantly discriminated female return, but sex ratio was positively associated with male return. However, low male return rates diminish the significance of this result.

Regression showed that the number of transient birds returning in subsequent years was positively associated with the number of male breeders at our study site during the year a bird visited. Per cent return the year following transience was positively associated with the number of eggs laid at our study site during the year a bird visited. When females were analysed separately, the higher the number of male breeders during the year a bird visited, the greater the number of female transients returning in subsequent years.

Annual recruitment of foreign adults ranged from 1 to 20 birds, of which 0–56% were seen visiting in previous years. Female recruits were more likely than males to have been observed previously as transients. Twenty-two chicks hatched at our study site returned and bred for the first time more than one year after hatching. Of these, nine (41%) were seen as transients between the year of hatch and breeding.

Based on our results, we suggest that transient birds were searching for better breeding areas for future breeding and that intrasexual competition in this polyandrous species made this information more important to females than to males. The behavioural conspecific attraction exhibited by adults would result in large populations increasing; small populations, then, would have reduced immigration. Reconnaissance for future breeding sites and conspecific attraction could be important aspects of local population dynamics for other species, as well.