BODY MASS OF FEMALE COOPER’S HAWKS IS UNRELATED TO LONGEVITY AND BREEDING DISPERSAL: IMPLICATIONS FOR THE STUDY OF BREEDING DISPERSAL

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In our long-term study of Cooper’s Hawks (Accipiter cooperii) in Wisconsin, we have found no evidence that habitat (i.e., urban vs. rural, conifer plantation vs. non-plantation nests, presumptive site quality as indexed by consistency of nesting area use and high breeding density) was related to indices of reproductive success, phenology, annual adult survival, production of recruits, or fitness (Rosenfield and Bielefeldt 1999, Rosenfield et al. 1995, 2000, 2009, 2013, 2015a). Rather, reproductive success of Wisconsin Cooper’s Hawks was apparently related to intrinsic qualities of individuals. For example, body mass (i.e., size) of Cooper’s Hawks ≥2 yr old of both sexes, which was also unrelated to nesting area habitat, was positively correlated to brood size and number of detected recruits; larger birds also tended to breed earlier in the year than smaller ones (Rosenfield and Bielefeldt 1999, Rosenfield et al. 2013). However, longevity was more important than body mass in determining lifetime reproduction of male Cooper’s Hawks in our Wisconsin study areas (Rosenfield et al. 2009). Similarly, longevity was strongly correlated with lifetime production for several other raptor species (Newton 1986, Gehlbach 1989, Postupalsky 1989, Marti 1997).

Annual survivorship in Cooper’s Hawks is similar between the sexes (81% males, 75% females) for breeding adults ≥2 yr old on our Wisconsin study areas (Rosenfield et al. 1995, 2009, 2013, R. Rosenfield unpubl. data), although the sexes of this highly dimorphic raptor (females on average 1.7 times heavier than males) exhibit different roles in parenting and other aspects of reproductive biology (Rosenfield and Bielefeldt 1993a). Male Cooper’s Hawks establish breeding territories, invest more in reproductive effort via nest building and anti-predator behavior before fertilization, and are principally responsible for procuring prey for themselves, their mates, and their young (Rosenfield and Bielefeldt 1993a, Rosenfield et al. 2013). Females leave the brood in the fledgling stage, while males continue to defend and deliver prey to young for up to 6 wk after fledging (Rosenfield and Bielefeldt 1993a, R. Rosenfield unpubl. data).

Males exhibit lifetime fidelity to their nesting areas in Wisconsin, but we estimate that 23% of experienced breeding females move to different nesting sites annually (range of detected distance of such breeding dispersal: 1.0–14.6 km; Rosenfield and Bielefeldt 1996, Rosenfield et al. 2009, R. Rosenfield unpubl. data). Thus, body size of breeding male Cooper’s Hawks is necessarily unrelated to the rate of nesting area reoccupancy in our study sites in Wisconsin. We also have demonstrated that mass is not related to longevity in breeding males (Rosenfield et al. 2009). We have not, however, explored the relationship of body size in females to several of the aforementioned ecological correlates documented for male Cooper’s Hawks.

Some researchers suggest or have found that size of females is related to survival and breeding dispersal in other Accipiter species (e.g., Newton 1986, Sunde 2002, Kenward 2006). Larger body size allows for a greater...