

Investigating the juvenile phase of migratory birds: a period of high individual flexibility and learning and a key period for conservation?

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Since 2004 groups of human-raised Northern bald ibises (NBI; *Geronticus eremita*) follow their foster parents in ultra-light planes from a breeding area in Upper Austria to wintering grounds in southern Tuscany, Italy. There, the birds are released into independence. We tracked the behaviour of the free-flying birds via sightings. Our observations indicate complex spatio-temporal patterns in juvenile NBI with far-distant flights northwards, which regularly follow the route of the human-led autumn migration. However, none of these flights ended up in the breeding area. This pattern corresponds with observations in wild migratory NBI as well as in other species, where first vernal migration takes place not after the first, but after the second or third winter. Observations indicate that during the intervening juvenile phase the birds make far-distant flights without reaching the breeding area. Based on the preliminary data we assume this juvenile phase to be a period of high individual flexibility and learning, therefore a period of high risk but also of high potential for the individuals to reaction onto environmental changes, e.g. due to global warming. Knowledge about this period seems us to be of high relevance for conservation and reintroduction efforts. However, hardly any systematic data are available about this period and, to our knowledge, it is also not yet included in theoretical approaches and models on bird migration. Based on our outcomes I discuss methods to investigate the juvenile period (e.g. by the use of GPD data logger) ad well as approaches to integrate this phase into theoretical approaches on birds migration (e.g. the finite state machine theory).