

## Abstract

One of the most intriguing animal behaviors are these performed by birds during courtship (pre-laying) period, which leads up laying eggs and incubation. Describing the function of these behaviours can help to explain mate choice mechanisms in birds. Harriers (genus *Circus*) are good research objects for behavioral studies. Harriers have several peculiarities among other raptors (Accipitriformes), including following behaviors: aerial displays – sky-dancing, food passing from male to female – food transfers and ritualized aggression within pair – flight-play. The most common Harrier species in Poland is Marsh Harrier (*Circus aeruginosus*). It's widespread in Lublin Region, what makes it possible to reach optimal sample size. Courtship period and behaviors occurring during this time have not been analysed in detail yet, although the general biology of this species is well-studied. The main objective of the research was to characterize the behaviors occurring during the courtship period and to analyze the relationships between the parameters of these behaviors and parameters of Marsh Harrier breeding biology. The study, conducted in 2018 – 2021, covered 49 pairs of Marsh Harrier, nesting in fishponds and calcareous marshes in Lublin Voivodship. The population number and density, terms of birds arrival to breeding sites, behaviors occurring during courtship period and throughout breeding cycle, nest site choice criteria, time budget of adult birds, interspecific and intraspecific interactions, duration of reproductive cycle seasons, brood parameters, growth of young parameters, reproductive success, nest predation and post-fledging season course were described. A link between sky-dancing parameters (performed by males and females) and their breeding success was revealed. A connection between the vigour of sky-dancing and number of hatched chicks as well as fledged nestlings was found. Birds with total brood losses performed sky-dancing less vigorously than birds with breeding success. The frequency of food transfers was positively correlated with the number of fledged birds. Therefore, a link between parameters of behaviors occurring during courtship period and reproductive success was demonstrated.

Keywords: *Marsh Harrier*, *Circus aeruginosus*, *mating behaviour*, *mate choice*, *reproductive success*

