

Year-round courtship and maintenance of pair bonds at a Peregrine Falcon *Falco peregrinus* nest-box

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Abstract. Observations via webcam were made of the year-round pair bond maintenance and mating behaviour of pairs of Peregrine Falcons *Falco peregrinus* sequentially using a nest-box on a water tower at Orange, New South Wales. Between 2012 and 2024, five Peregrines used the site – two females and three males. The courtship and pair bond maintenance behaviour studied included prey delivery, prey-holding (for potential transfer between mates), pair bonding displays and scrape preparation. At least one member of the pair performed all these activities in each month of the year, not just in the pre-breeding season. The delivery and holding of prey increased in July and August (particularly by males), dropped in September during incubation and peaked in October when nestlings were growing. Pair bonding displays and scrape preparation were reasonably constant throughout the year, both peaking in August. Duration of pair bonding varied from less than a minute to over two hours. Scrape preparation dropped in September and showed little difference between the sexes over the year except in August, when the female effort increased fivefold. There was some variability among the behaviour of individuals and pairs in each of these activities. Copulation began over 80 days before egg laying and well before the female's fertile period. Copulation frequency and duration increased until the first egg was laid and ceased shortly after the second egg. The combination of webcam and citizen science provided a chronology and pattern of courtship behaviour that would have been challenging to obtain using traditional field methods.

Keywords: Peregrine Falcon; *Falco peregrinus*; webcams; courtship; pair bonds