

Wallander, Johan. 2001. Reproductive tactics, mating and parental care system in the ringed plover

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ABSTRACT

One of the most intriguing aspects of animal behaviour is the diversity of mating and parental care systems found in waders (Aves: Charadrii). Although this variation has received much attention, the factors causing it are far from clear. In addition, most studies of mating and parental care systems and individual reproductive tactics in waders have focused on polygamous species. This thesis examines such aspects in socially monogamous waders, in particular ringed plovers *Charadrius hiaticula* studied during seven years at three sites along the Swedish west coast.

Ringed plovers experience high and unpredictable nest predation, resulting in low mean breeding success per clutch. However, these plovers regularly replace lost clutches and broods, and may even lay a new clutch in the same season after rearing their first brood. The ability to quickly produce new clutches, with similar expected success over several months, is important because of high nest predation. Selection may therefore favour a long reproductive period in the ringed plover.

Reviewing multiple clutching in non-polyandrous waders, we find that short inter-clutch interval and extensive brood overlap are associated with parental role division, whereas a long inter-clutch interval is associated with biparental care. We suggest that the relative timing of the second clutch influences these parental roles in waders.

Social monogamy is not always genetic monogamy, and one way to increase reproductive success is to pursue extra-pair copulations. In the ringed plover, however, we found that all young (57 chicks from 21 broods) were sired by the tending parents. This was the case even though males did not appear to guard the mate during her fertile period. Therefore, reproductive tactics rarely include extra-pair fertilisations; the population is monogamous, genetically as well as socially.

High certainty of paternity is also consistent with the high levels of parental care provided by male ringed plovers. Males and females were found to share incubation about equally, both during day and night.

Despite the otherwise great variation in life histories among waders, variation in clutch size is low, with most temperate breeding species laying a clutch of four eggs, only exceptionally exceeding this number. In a field experiment with redshanks *Tringa totanus*, we added a fifth egg to four-egg clutches and shifted one egg between control clutches. Incubation time increased by one day, but five-egg clutches hatched on average one more young than control clutches. Given this potential increase in reproductive output by 20-25%, the four-egg clutch limit is even more intriguing. Possible reasons for its existence and ways of testing the alternatives are discussed.

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