

Skewed sex ratios causes single fathers to bring up the young

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Plover chick. Credit: Luke Eberhart-Philips

When the balance of the sexes is skewed towards one gender, parents are more likely to split up, leaving the father to care for the offspring, says a study from an international team of scientists studying bird populations.

The researchers, including scientists from the Milner Centre for Evolution at the University of Bath, studied six different populations of

plovers located across Africa, Asia and Latin America.

Whilst three populations of plover had a balance in the [sex ratio](#) of [males](#) to females and shared parenting of their offspring, the scientists found that in populations where there were more males than females, or vice versa, the parenting roles shifted leaving the males to look after the chicks.

Professor Tamás Székely, Professor of Biodiversity at the Milner Centre for Evolution at the University of Bath said: "When there are more males in the population, the females have more opportunities to find partners and so they are more likely to leave the family and mate with multiple partners in the breeding season, leaving their male partner to look after the chicks.

"Conversely, it is harder for males to get another partner and so they are more likely to stay monogamous and be the primary parent and invest time in raising their offspring.



The research found a skewed sex ratio led to fathers becoming the primary carer of the offspring. Credit: Luke Eberhart-Phillips

"By influencing mate availability, adult sex ratio bias can alter social behaviour with divorce, infidelity, and parental antagonism being more common in sex-biased populations.

"Moreover, in human societies, adult sex variation is shown to be linked to economic decisions, community violence, and disease prevalence. So we wanted to look at what factors were related to imbalances in adult sex ratio of plover populations."

The study, published in *Nature Communications*, took data collected over 10 years from six wild shorebird populations that were closely related but displayed different parental strategies.

Dr Luke Eberhart-Phillips, from the Max Planck Institute for Ornithology (Germany), was first author on the paper. He said: "We found that the chicks had a 50:50 sex ratio at hatching in all these species, and that the skewed adult sex ratios were caused by a difference in survival of male and female juveniles, although it's still unclear why this happens.



The study found that the adult sex ratio of some Plover populations was imbalanced due to differences in survival of juveniles. Credit: Luke Eberhart-Phillips

"Our study highlights the knock-on effects that differences in survival rates between the sexes can have on [population](#) dynamics and social behaviour."

The researchers hope in the future to investigate the effects of sex ratio on [social behaviour](#) in other animal populations including humans.

More information: Luke J. Eberhart-Phillips et al, Demographic causes of adult sex ratio variation and their consequences for parental cooperation, *Nature Communications* (2018). [DOI: 10.1038/s41467-018-03833-5](https://doi.org/10.1038/s41467-018-03833-5)

Provided by University of Bath

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