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Sex ratio in lesser black-backed gull in relation to environmental pollutants

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Abstract

In birds, there is ample evidence that the mother can manipulate the sex of the young and produce more of the sex, which gives the highest fitness return. This has previously been documented in gulls, Laridae. Gulls are sexually size dimorphic with males larger than females, and there is good evidence that parents in poor body condition switch their investment to the smallest sex. In the present study, we examined the primary sex ratio and the survival of male and female chicks of lesser black-backed gull (Larus fuscus fuscus) in relation to their blood levels of organochlorines (OCs), perfluorinated compounds (PFCs) and polybrominated diphenyl ethers (BDE-47). We show that females with high levels of OCs (but not PFCs and BDE-47) are likely to skew their sex ratio at hatching towards female offspring. Few females had very high levels of OCs, and the many females with low levels of OCs overproduced sons resulting in a male skew at hatching (59%). The survival of female offspring was lower than the survival of male offspring, causing an even stronger male skew in sex ratio (71%). There is evidence to conclude that circulating levels of OCs in the blood of females may have detrimental effect on the sex allocation strategy and could be of serious threat to the population.

Keywords: Lesser black-backed gull . Sex ratio - Environmental pollutants - Chick survival