



Seewiesen Colloquia

Speaker invited by: Dept. Kempenaers

Thursday, 27 February 2014, 13:00 h, in House 4, Lecture Room

Investigating the evolution of extra-pair reproduction in a natural song sparrow population

Dr Jane M. Reid

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Understanding the forces that drive the evolution and persistence of extra-pair reproduction by socially monogamous females remains an elusive goal in evolutionary ecology. Key hypotheses involve genetic covariances between extra-pair reproduction and fitness components in females and their offspring, and cross-sex genetic covariances with components of male fitness. However, these hypotheses have not been tested by explicitly estimating key genetic covariances in wild populations. I used 20 years of comprehensive paternity and pedigree data from song sparrows (*Melospiza melodia*) to test the hypotheses that 1) there is additive genetic variance in the degrees of female extra-pair reproduction and male paternity success, 2) that polyandrous females produce offspring of higher additive genetic value through extra-pair reproduction, and 3) female extra-pair reproduction is positively genetically correlated with male paternity success. I demonstrate substantial additive genetic variance in both female polyandry and male paternity success, potentially allowing rapid evolution in both traits. I show that, opposite to prediction, polyandrous females produce offspring of lower additive genetic value through extra-pair reproduction, implying a component of indirect selection against polyandry. Finally, I show that the genetic covariance between female extra-pair reproduction and male paternity success is constrained by genetic covariances among male fitness components. I thereby identify components of selection that could shape the evolution of polyandry and the current maintenance of genetic variation in polyandry under conflicting components of sex-specific selection.

Who is Jane Reid?

1994-1997	MA Natural Sciences (Zoology), University of Cambridge, UK
1998-2001	PhD in behavioural ecology, University of Glasgow, UK
2001-2003	Killam Postdoctoral Research Fellow, University of British Columbia, Canada
2003-2006	Junior Research Fellow, Jesus College, University of Cambridge, UK
2006-2013	Royal Society University Research Fellow, University of Aberdeen, UK
2014	Senior Research Fellow, University of Aberdeen, UK

Selected publications:

- Reid JM** (2012) Predicting evolutionary responses to selection on polyandry in the wild: additive genetic covariances with female extra-pair reproduction. *Proc. R. Soc. B* 279, 4652-4660.
- Sardell, RJ, Keller, LF, Arcese, P, **Reid, JM** (2012) Indirect benefits of extra-pair reproduction: lifetime reproductive success of within-pair and extra-pair offspring in song sparrows (*Melospiza melodia*). *Am. Nat.* 179, 779-793. Featured in Nature Research Highlights.
- Reid, JM**, Sardell, RJ (2012) Indirect selection on female extra-pair reproduction? Comparing the additive genetic value of extra-pair versus within-pair offspring. *Proc. R. Soc. B* 279, 1700-1708.
- Sardell, RJ, Arcese, P, **Reid, JM** (2012) Offspring fitness varies with parental extra-pair status in song sparrows, *Melospiza melodia*. *Proc. R. Soc. B* 279, 4078-4086.
- Reid, JM**, Arcese, P, Sardell, RJ, Keller, LF (2011) Heritability of female extra-pair paternity rate in song sparrows. *Proc. R. Soc. B* 278, 1114-1120.
- Reid, JM**, Arcese, P, Sardell, RJ, Keller, LF (2011) Additive genetic variance, heritability and inbreeding depression in male extra-pair reproductive success. *Am. Nat.* 177, 177-187.
- Sardell, RJ, Keller, LF, Arcese, P, Bucher, T, **Reid, JM** (2010) Comprehensive paternity assignment: genotype, spatial location and social status in song sparrows. *Mol. Ecol.* 19, 4352-4364.