



## Seewiesen Colloquia

Speaker invited by: Dept. Gahr

Thursday, November 15, 2012, 13h, House 4, Lecture room

## Fitness costs of anthropogenic noise in passerine birds

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Noise generated by humans has been shown to influence behaviour, abundance and species composition in birds, but the underlying mechanisms affecting fitness remain obscure. But in order to understand the role of chronic noise for urban ecology it is crucial to understand how exactly urban noise impinges on fitness. Here, I examine several potential mechanisms of how noise might reduce reproductive output in passerine birds: by impairing mate choice, by reducing territory quality and by impeding chick development. I used long-term data from an island population of house sparrows, *Passer domesticus*, in which I can precisely estimate fitness. Nests in an area affected by the noise from large generators produced fewer young, of lower body mass, and fewer recruits, supporting the idea that noise can interfere with chick development. These results suggest a previously undescribed mechanism to explain how environmental noise can reduce fitness in passerine birds: by acoustically masking parent–offspring communication. I then present data in favor of this hypothesis. Most importantly, using a cross-fostering set-up, these results demonstrate that birds breeding in a noisy environment experience significant fitness costs. Chronic noise is omnipresent around human habitation and may produce similar fitness consequences in a wide range of urban bird species.

### Who is Julia Schroeder?

2010 PhD University of Groningen, NL

2009 NERC postdoctoral researcher Sheffield University, UK

2012 Volkswagen Foundation Advanced Postdoctoral Fellowship, MPIO

### Selected publications:

- Schroeder J, Nakagawa S, Cleasby IR, Burke T (2012) Passerine birds breeding under chronic noise experience reduced fitness. *PLoS ONE* 7, e39200.
- Schroeder J, Cleasby IR, Dugdale HL, Nakagawa S, Burke T (2012) Social and genetic benefits of parental investment suggest sex differences in selection pressures. *J Avian Biol*, in press.
- Schroeder J, Burke T, Dawson DA, Mannarelli ME, Nakagawa S (2012) Maternal effects and the heritability of annual productivity. *J Evol Biol* 25, 149–156.
- Schroeder J, Cleasby IR, Nakagawa S, Ockendon N, Burke T (2011) No evidence for adverse effects on relative fitness of fitting passive integrated transponders (PITs) in wild house sparrows. *J Avian Biol* 42, 266–270
- Schroeder J, Nakagawa S, Hensch M (2011) Behavioural ecology is not an endangered discipline. *Trends Ecol Evol* 26, 320–321.